B4RN - The Early Years

Written by the community, for the community


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Winster
Ashton
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Levens
Witherslack
Crosthwaite
Nether
Kellet
Swarthdale
Over
Silverdale
Storrs
Yealand
Redmayne
Conyers
Priest
Hutton
Borwick
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Cheshire
Goosnargh
Bleasdale
Oakenclough
Chipping
Whitewell
Dunsop
Bridge
Newton
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Vale
Nether
Wyresdale
Delphinholme
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Quernmore
Brookhouse
Caton
Littledale
Roeburndale
Wray
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Aughton
Gressingham
Arkholme
Docker
Newton
Whittington
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Table of Contents

Prologue 4
Introduction 7
Chapter 1 9
WrayNet and WenNet 11
Twicket 18
The Four 'A's 19
A New Plan 21
Day of the Spades 24
Roeburndale 28
Blowing Fibre 30
Tom Hartley 35
Bruce Alexander 38
Abbeystead 44
Wray 56
Alistair Adams-Huset 63
George Gordon 65
Dolphinholme 67
Chapter 2 91
Arkholme 92
Melling 108
Hornby 119
Farleton 123
Claughton 123
Caton Green 126
Chapter 3 127
Gressingham and George. 128
Aughton 134
Halton Eco Housing 140
Halton Central 144
Chapter 4 150
Wennington 152
Burton-in-Lonsdale 166
Wrayton 192
Cantsfield 197
Tunstall 197
Burrow and Overtown 202
Leck 206
Ireby and Masongill 210
Thornton in Lonsdale 211
Ingleton Central 216
Chapel-le-Dale 223
Chapter 5 230
Dent 231
Garsdale 245
Lunds and Cotterdale 262
Mallerstang 263
Chapter 6 269
Casterton 270
Barbon and Middleton 276
Killington 284
Firbank 289
Howgill and Lowgill 291
Marthwaite 292
Sedbergh 1 296
Milthrop and Frostrow 300
Sedbergh 2 - into the town 302
Cautley 304
Chapter 7 306
Keasden and Clapham 307
Newby 325
LEWFA 328
Austwick 332
Eldroth and Lawkland 334
Wharfe 337
Feizor 338
Knight Stainforth 339
Rathmell 340
Chapter 8 349
Capernwray 350
Borwick, Tewitfield and Priest Hutton 353
Yealand Conyers, Redmayne and Storrs 361
Burton-in-Kendal 371
Silverdale 378
Storth 389
Over Kellet 396
Swarthdale 404
Nether Kellet 406
Chapter 9 408

Tatham 409
Old Moor Road project 411
Millhouses 413
Lowgill 420
Chapter 10 440
Docker and Newton 441
Whittington 444
Hutton Roof 450
Mansergh 454
Lupton 455
Hincaster 457
Stainton 460
Heversham 464
Levens 468
Witherslack 474
Crosthwaite 478
Crook 482
Cartmel Fell 492
Winster 503
Chapter 11 504
Showtell days 505
Chapter 12 526
Old and New Hutton, Preston Patrick - Dad's Army 527
Preston Richard (Endmoor) 558
Mint and Sprint. 563
Longsleddale Valley 576
Skelsmergh 586
Chapter 13 589
Goosnargh 590
Bleasdale 601
Oakenclough 603
Goosnargh Village 606
Chipping 608
The Hodder Valley 615
Whitewell 616
Dunsop Bridge 617
Newton 621
Slaidburn 622
Calder Vale 628
Nether Wyresdale 653
Chapter 14 656
Brookhouse and Caton 657
Soft dig in Brookhouse. 662
The Caton hard dig 666
The Caton urban dig 670
Chapter 15 676
Burston and Shimpling 677
Gissing 681
Chapter 16 685
Allen Valleys 686
Chapter 17 696
Cheshire 697
Chapter 18 707
Melmerby 708
Kirkoswald 710
Gamblesby and Unthank 712
Kirkoswald build 723
Mungrisdale 751
Chapter 19 758
Staff 759
Directors 772
Senior staff 774
Epilogue 778
The B4RN family tree 778
The B4RNraising 780
A valley that changed communities and lives 783
Waking the dragon 785
The hostile environment 787
And then you win 788
Thank you 794

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Prologue



Kira, interviewing a new B4RN customer in Knight Stainforth, 2019.

I'm an academic researcher who studies the digital divide. Specifically, I study how people come up with innovative solutions to overcome the digital divide on their own terms with interventions that work best for them and their communities. I think community-owned internet networks are among the most exciting and innovative examples of people tackling digital exclusion, and that's what brought me to B4RN. I first visited B4RN-land in 2019, and over the past five years, I've done countless interviews, and I've gotten to know the network and the people who have built it. The story of B4RN is a human story of frustration, resilience, grit, creativity, and collaboration. It's a powerful reminder that digital connectivity is rooted in human connectivity... and sometimes you need to JFDI!

This book has been written by B4RN community members. It's a compilation of written stories, oral histories, photographs, and links. It's a non-linear, branching tale of key people, places, milestones, and memories, intertwining and intersecting like the roots of a tree. I hope you enjoy this book – it's your book. These are your stories, and they belong to you.

Kira Allmann, Ph.D. Co-editor.

B4RN demonstrated what can be done for a fraction of the money that HM Government eventually spent to bribe BT to do what it had postponed after being nearly bankrupted by local loop unbundling.

The other achievement of B4RN, possibly its most politically relevant, is to demonstrate that community self-help can deliver more appropriate solutions more reliably and consistently than central government, of whatever hue.

Philp Virgo



Beyond the book
The book weblink

The story of B4RN isn't simply about the many people who have joined our ranks over the years - from our first shareholder, Walter Willcox, onwards. It isn't about geography, geology, rural and remote - all of which our incredible team has overcome. It isn't about technology - fibre optics are well understood and proven. It includes politics. And some phenomenal connections amongst people world-wide trying to achieve one thing - connectivity and ubiquitous comms.

I do so hope that others will read this book and understand just what a phenomenon B4RN is, the history of how it came to be, and the potential for similar projects, not just in broadband, but across all aspects of community infrastructure. People Power is the most extraordinary thing to behold and B4RN illustrates just how amazing that force can be.

Lindsey Annison, founder member of B4RN.

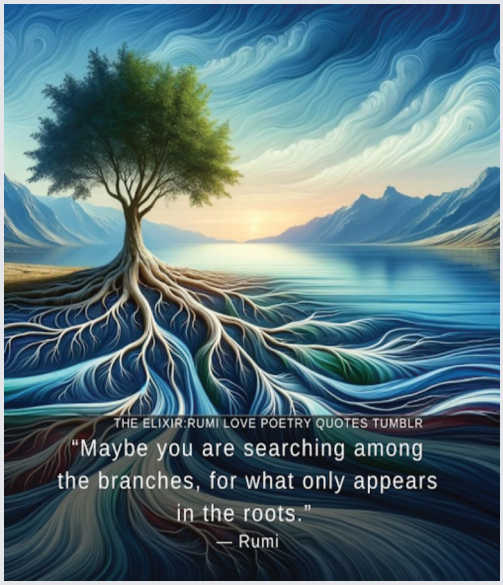




B4RN, or to give it its full name, Broadband for the Rural North, did not spring fully-formed into life in 2011. Events 30 years previously ensured that the farmers and housewives of Cumbria could end their isolation from the digital world and relieve their frustration by JFDI (Just F****** Doing It) themselves.

Ian Grant, co-editor.

Some 15 years ago in the late 90s, farming communities across the UK were paralysed by a government decision to go digital for all documentation. Unfortunately, the farming communities were isolated with very poor, or non-existent, broadband. None of the established service providers would address this problem as it was not an economic opportunity!



During my life I have come to respect many groups of people including farmers because they don't take, and will not be discouraged, by BS. Today B4RN serves communities from Northumberland to Norfolk and Surrey and brings world class broadband to thousands of customers that no other supplier will consider viable.

Only 15 years ago the industry scoffed at the B4RN vision, and no one foresaw the outcome. And it all started with the frustration of just one area of Lancashire and the people of grit. As a friend, colleague and admirer of all that B4RN has done and achieved, I can salute you as champions of broadband, workers of miracles, and a changer of lives! So impressive and so very well done to you all.

Professor Peter Cochrane, OBE DSc



Some 13 years later, that same AltNet sector, is responsible for over £20 billion pounds worth of investment, which is greater than the combined value of any subsidy and private investment from BT.

B4RN played a significant part in the birth of the AltNet sector, and the sizeable investment in the UK it would later bring.

Lloyd Felton

More from these contributors in the Epilogue.

Introduction

Roots, Routes, Nodes, and Branches

To embark on a book of this kind is a big undertaking. It is a compilation of the many stories from the people who actually built the network. We lived through it. These are our stories. This book belongs to all of us, in all ways.

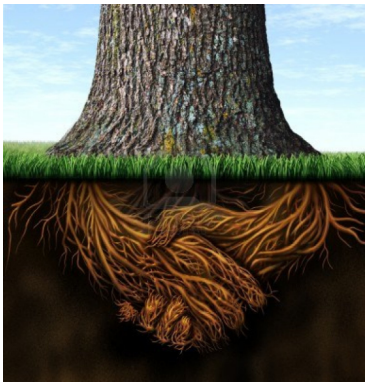
Broadband for the Rural North started as the seed of an idea, fertilised by frustration—twenty years of struggle had already gone into deciding to grow our own internet network. Indefatigable gardeners, campaigners and advocates like Lindsey Annison, Aidan Paul, Peter Cochrane, Adrian Wooster, Lloyd Felton (and actually the list is endless) have fought for years for the right to internet access for all. They often feel like they have toiled in unforgiving ground in vain, but without them B4RN would not be standing today. By sharing their knowledge they ended up designing and building their own networks too, or helping others to build them. This knowledge was shared, and nourished the roots of B4RN.

There is so much that came before the full-fibre network we call B4RN now, and some of that history is in this book, too.

We decided to become self-sufficient when it became clear no company or government was going to get us connected. The digital revolution was happening around us, and if we wanted to be part of it, we had to do something about it ourselves.

The roots of B4RN run deep. We had spent years cultivating the seed, before a tiny shoot finally emerged and became the mighty, sprawling B4RN family tree. That moment came on August 3rd, 2011, when B4RN was officially registered with the FCA (Financial Conduct Authority) as a community benefit society.

The roots are almost as extensive as the branches. There are literal roots of the network, underground: the ducts, fibre, and bullets. You can not see them, yet they are essential for the network to work. The other roots are the people who helped on the way. That is also partly why we wanted to write a book, so that we remember the roots are there, because our impressive tree would not be here without them. The network is amazing, both from a technical viewpoint as well as from the perspective of social impact.



Like branches on a tree, we may grow in different directions, but our roots remain as one.

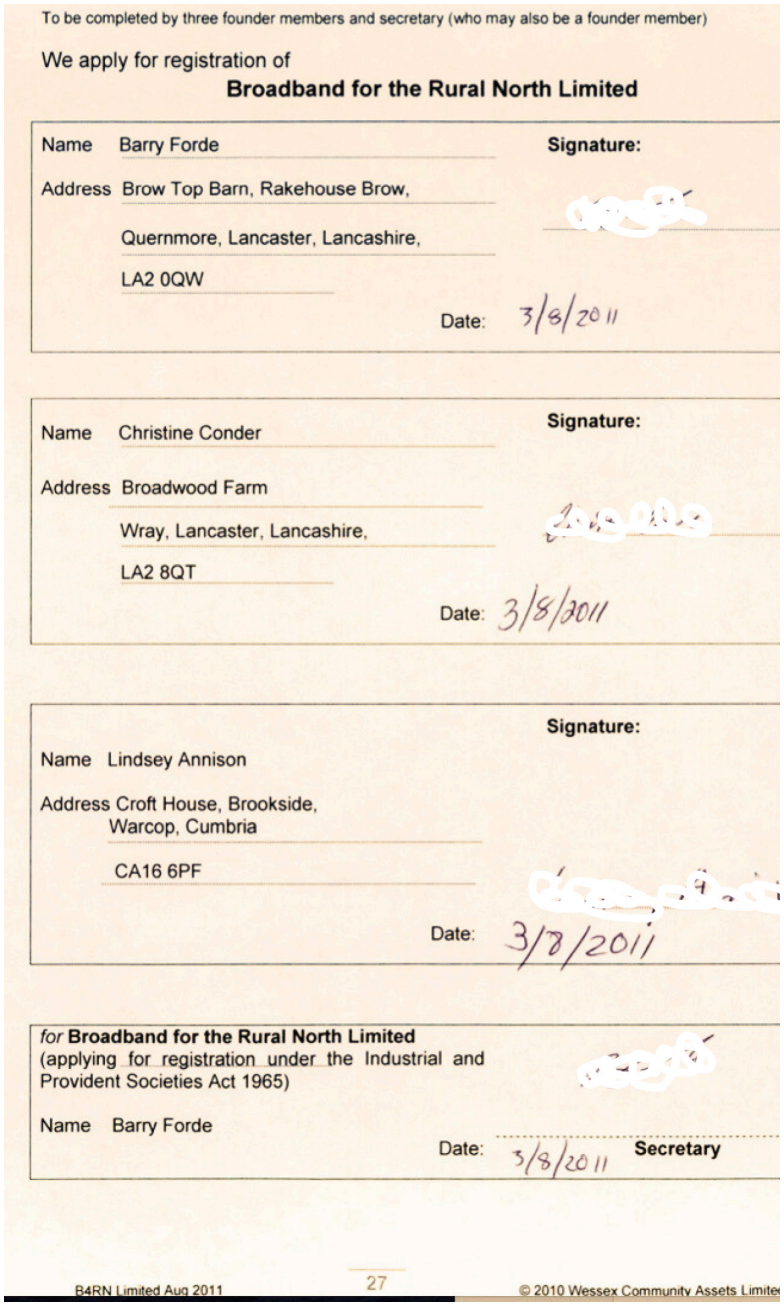
We have faced many obstacles, as the stories here will explain, but the challenges–from the weather, to the landscape, to the bureaucracy we have gone up against– have made our tree stronger.

This is the story of B4RN. It is the story of how each community, fed from the roots, grew its own branch and flourished into a live network of people and machines.

The B4RN network is built underground; you cannot see it, but you can see the impact on people and communities.

This book has been written by the community. The photos have come from the community. Like the network, this written record is by and for the community.

Chris Conder, story collector.



To be completed by three founder members and secretary (who may also be a founder member)

We apply for registration of

Broadband for the Rural North Limited

Name Barry Forde — **Signature:**

Address Brow Top Barn, Rakehouse Brow,
Quernmore, Lancaster, Lancashire,
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Date: 3/8/2011

Name Christine Conder — **Signature:**

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LA2 8QT

Date: 3/8/2011

Signature:

Name Lindsey Annison

Address Croft House, Brookside,
Warcop, Cumbria
CA16 6PF

Date: 3/8/2011

for **Broadband for the Rural North Limited**
(applying for registration under the Industrial and Provident Societies Act 1965)

Name Barry Forde

Date: 3/8/2011 **Secretary**

B4RN Limited Aug 2011 27 © 2010 Wessex Community Assets Limite

B4RN is officially registered as a Community Benefit Society



Chris Conder, 2019.
Photo by *Kira Allmann.*

Chapter 1

Quernmore | Abbeystead | Roeburndale | Wray | Dolphinholme

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This story started in 2000, when the people in one of the villages of rural Lancashire—Wray —came together to lobby for 'broadband.' Our area, which is in the top corner of Lancashire, close to Yorkshire and Cumbria, was sparsely populated as the photo shows. We, like many others, struggled with dial up internet access. We did not then know we were too far from the telephone exchanges ever to get it—and we still can not, over that technology. Despite our lobbying of local and national government, we got no help at all from councils, rural agencies, or Whitehall. (All this is explained in later chapters).

Our frustration led us to build a community that could help us overcome it. That acorn became B4RN. Other roots were nurturing what would become a giant, branching tree of connectivity, and we will get to many of those roots in this book, but this was the group that nurtured the seed of an idea and made it burst forth into the sunshine.

When we first started B4RN, we talked a lot about tribes and how to build a tribe. The idea came from Seth Godin—building a tribe meant finding people with shared interests who can connect with an idea and run with it. The concept comes from marketing, but it applies to mobilising a movement, too.

Think about it like this: the village of Wray, and 6 miles away, the nearby village of Caton, have a great rivalry in team sports. Wray always desperately wants to beat Caton at football. However, in order to beat the stronger team from the town of Lancaster, 10 miles away, suddenly Wray and Caton have to work together. Now maybe there are two players from Wray, two from Caton, two from Hornby—and we all get along because we are on the same side. A better team. Then if Lancashire is playing Yorkshire, Lancaster becomes part of our team, and now we are part of the same tribe, united in a shared mission. We are in it to win. That is how we knew we had to build B4RN. There is a lot of competition, and different interests, like in a team sport, but we had to fix it so all these different communities would work together. Barry Forde called it 'herding cats', but we were really building a cohesive tribe, slowly and surely. (We will get to Barry later, as he is the genius whose vision enabled hundreds of people to build the early network and who still volunteer and support it.

WrayNet and WenNet

The Wray campaign to get 'broadband' started in 2000 but went nowhere for a while, as we all believed BT would bring broadband to us. It actually got going when about ten villagers formed a group, headed by Aftab Gujral in 2003. Aftab lived in Wray, and we elected him as the first chairperson of our group. We called it WrayNet. Deborah Perrins was Treasurer and applied for funding for an internet connection from different places – with absolutely no luck, but she was absolutely brilliant and indefatigable.

At the time, all we had was dial-up internet. It was very slow, and each time the phone rang it would cut out. Web pages were starting to have photos on, and there was a button on the browser that you could click to turn the photos off, to let the pages load.

So, we looked around for support. It was probably Aftab who first mentioned that there was a research department at the University of Lancaster, working on digital connectivity, and we could ask them for help. The university took a bit of convincing, but eventually we persuaded Dr Nicholas Race, then Head of the Network Research Special Projects (NRSP) unit, to help us. It had the potential to be a mutually beneficial project: he could do experiments on our village, which advanced his research, and gave his students hands-on experience, and we got the connectivity we wanted. With the help of a (very) little bit of money, and several keen students, Nick got us a two-megabit-per-second (2 Mbps) internet feed into the village of Wray in 2003/4. Almost no website could run on a 2 Mbps connection today, but back then, it was revolutionary.



"JFDI" - the unofficial B4RN motto, which stands for either "Just Farmers Doing It" or "Just Flippin' Do It (depending on who you ask); On the left: Tommy putting antennas on the buildings for the mesh network, two of which were on the post office and the tea rooms; On the right: Sheila, Tony and son Paul interacting with the new digital notice board, available via a computer in the post office, which was the village's first taste of broadband internet.

There was a free internet connection that anyone could use if they did not want to disrupt the calls on their own phone lines. The technology Nick and his NRSP team were using was a wireless mesh network, which used Locust World mesh-boxes, with antennae on them, and it shared the feed around the village. In 2009/10 it was upgraded to a newly designed mesh unit the NRSP built themselves.

A mesh network is a type of wireless internet network that uses a network of wifi routers (or "nodes"), that communicate with one another to transmit an internet connection across a large area. In the case of the Wray mesh network, the main internet signal came from a radio receiver at the village school, which was then shared across several mesh boxes with antennae on people's roofs to pick up the signal on them.

Our local group helped the NRSP build out the wireless mesh wifi network to people's homes. We also started a club to show people how to use computers, and we put a digital noticeboard in our post office, and another in the village pub. The feed for the network– known as "backhaul" –was from CLEO (Cumbria and Lancashire Education Online), an internet network that had been built by LUNS (Lancaster University Network Services) serving educational institutions.



The computer club in Wray Institute, 2004-2015.

"WrayNet" brought free internet to the village, and in return, we supported several student projects. We were very happy to be the white mice in the Living Lab.

Online at last, we started using the internet to learn about how we could improve our internet access, and we joined online communities of allies and supporters.

We started a village website and kept a diary of progress.



This is Paul Colton on the left, observing a university project on display in the village, where an internet connected robot would drop a sweet, so the kids were big fans.



"If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas."

- George Bernard Shaw

Beyond the book:

The digital scarecrow story

NRSP Wray project, the Living Lab

Diary of Wray Wifi Network

Many of us around Wray (and Wennington) could not get a signal from the WrayNet village mesh, because our houses and farms were too far away, and the signal was impeded by various blockages (like hills and trees). You need a clear line of sight to get a strong wifi/mesh connection. So, we joined a trial with a company called Avanti, and it installed a satellite dish at a farm and used wifi to share it with other farms.

That initial connection allowed us to join a nationwide tribe, bringing different ideas, skills and talents together and freely sharing them. Lindsey Annison organised meetings across the country to exchange information between diverse communities and make plans. Lindsey had travelled to Europe, South America and the USA, visiting altnets, and brought their ideas back to the tribe. She was a great motivator and inspired many projects. She lived in a tiny village in Cumbria that desperately needed connectivity and she needed it for her family and business. It is fair to say that Digital Britain would not have happened without her input. Originally, the meetings Lindsey organised were part of a Yorkshire Dales project–Digital Dales–which, with the ABC (Access to Broadband Campaign), organised events around the country from tiny villages through to the City of London with the goal of raising awareness of the growing digital divide, and trying to convince the Department of Trade and Industry and politicians to open their minds and offer help.Later, once it was clear that there was more than enough demand, a national group called the Community Broadband Network (CBN) was formed with funding and support from then-Minister Stephen Timms. CBN provided mentors for community groups to share information and learn the technology to build their own networks.



Lindsey Annison with Rory Stewart, MP, when we filmed our Archers video.

During this time, other villages in the valley, near to Wray, started asking for help, and the technical challenges were different in each case. Abbeystead (15 miles away) wanted to join the Wray Network, or to have help building their own, but despite lots of site surveys, we could not find a way to get the signal over the fells to them. In 2004-2005, Deborah (still chasing the funding) finally managed to secure some money, with the goal of connecting a nearby valley - Old Wennington.

Old Wennington (WenNet), was within sight of Wray. It was a long valley served by three different exchanges in three counties, on extremely long line lengths, and even dial-up would not work because of the distances involved. The money came from a funded approach called "Project Access."

The Northwest Regional Development Agency (NWDA) had £20 million, and thanks to Debbie in 2005 they gave us £25,000 + VAT for six case studies. The idea was that we would write the case studies of the different businesses in the valley and why they needed broadband connectivity. This was to advance the NWDA's own agenda.

We used all that money to build them a wireless mesh network using the knowledge we had gained from the university project WrayNet, and the CBN tribe, and we wrote the case studies for free. Joel Smith, who we knew from CBN, built and configured the first Locustworld mesh boxes and showed Ian Threlfall, a WenNet

activist and resident, how to run it for ourselves. We bought an internet feed from the university, again on CLEO. This became the WenNet network, giving access to six businesses initially, which later we grew to 23 users. Out of the £20 million that Project Access allocated, our little project (0.125% of the fund) became the flagship network and arguably the most successful, in Project Access. They even made a video about us. Almost all the rest of the £20 million went to BT Openreach which provided little or nothing to show for it.

Lindsey Annison wrote a book about the Wennington case studies. We set up a Community Interest Company (CIC) and paid a monthly subscription to it.

Beyond the book:

JFDI Wennington Lindsey's book link

Project Access Video -

European Commission

The Reivers' Archers video link



We streamed the Prince Williams's wedding on YouTube in the Village Hall, - everyone came to watch it so we did not each individually use up bandwidth streaming at home.

Both Wraynet and Wennet had a 2Mbps internet feed to share for the next few years, and that was proving to be insufficient to stream video. The university started another project for TV for WrayNet, and bought a fibre feed from Openreach at massive expense. They built a new mesh system to run the faster service. The University's WrayNet project had been a great success, and we could stream the royal wedding from our village hall on the 29 Apr 2011. WenNet also upgraded their network from the CIC funds. We knew we needed more backhaul, but CLEO would not support us. The County Council made it quite clear they believed BT Openreach could supply rural areas.

In 2014 we joined the WenNet network to WrayNet via a node at a farm on the top of a hill above the village which had line of sight between them. Thanks to that link, WenNet finally had a bigger feed and joined the Living Lab.

The Living Lab ticked along for a few more years, but the satellite solution (for the more distant farms) could not be extended, and the upload speed was dire. Latency on the satellite connection was also a big problem, especially for video calls, which were coming into use. And there were other villages around us interested in getting a connection, but we could not support them unless we had an internet backhaul feed or a clear "line of sight"—a real challenge. We also knew the University projects would not be a permanent solution to our problems, and both WenNet and the WrayNet activists looked for solutions. Once Arkholme got a B4RN feed we put both the networks on to it via a wireless link, and that kept them going until they got their fibre in. One of the experiences we had at WenNet back in 2009 led to the solution to our problems.



Laying electric cables in Wray in the 1930s.

The WenNet group had been worrying about two customers whose signal had been blocked by growing trees and had an idea – inspired by farmers digging in mains water, and an old photo that sat in the village hall, of when Wray got electricity in the 1930s

Chris, who was on both the WrayNet and the WenNet teams, had married a local farmer in 1973 and promptly had three children. From May to October every year they had no water from their spring and had to cart it from the river for the house and the animals. Chris used to wash the nappies in the river every day, and bathe the children, and do the main family wash at her parents' house in the next village.

No matter how much she moaned, her husband and his family said there was nothing that could be done and she would have to get used to it. 'It had always been that way'.

Then, in 1978, a new family moved into the big house higher up the hill, and they had the same issue. So did the other three farms near them. The new arrival in the community (Richard Bond), looked at what they thought was normal and said 'we have to do something." He looked into the legal and technical requirements to get running water to the homes. Four farms joined forces, one provided a digger, another money, two did the manual work, and they connected themselves to the water mains system. Chris learned that problems can be solved by working with neighbours. Working together, they came up with a plan to dig to the nearest mains supply and join on. Chris's youngest child was 3, and no longer in nappies by then, but she says, "The joy I have in turning on a tap and water comes out, and flushing a loo without carting a bucket full of river water to it has never decreased".

It was a case of JFDI - Just Farmers Doing It.Necessity, the mother of invention. - The origins of "JFDI")?

The WenNet tribe knew this story of getting water by working together, and so they took it upon themselves to lay the first rural fibre to the home in the UK themselves. 1930,1978 and 2009 - learning from history. **This community experience was the tap root of B4RN**.



We called a CBN team member, Guy Jarvis, and asked him whether he could get us some fibre optic cable. We told him we would bring the diggers. Well, he had to cut a bit off the reel to get it to fit in his car, but a few hours later, he arrived in Wray with the fibre.



Guy's car with the cable crammed in the boot.

We rang John Colton at Lucid Optical Services and asked if he could source the kit needed to convert wifi to fibre and fuse the fibre for us. John said yes, so we rang a friend called Rusty (Ian Mason) and asked if he could dig a trench from one farm to the two customers up the road whose connections were down. He told us about mole ploughs—machines that bore a narrow channel in the ground in which you can lay a duct, usually used for water pipes or soil aeration, but also for fibre optic cable—and he knew someone who had one we could rent.



Simon Davidson, John Colton, Dave Galivan and Guy Jarvis, all there by 3pm. Simon and Guy built a wifi network in Hull, Dave Galivan worked for John Colton at Lucid.

By 3 o'clock that afternoon, we were all at the farm, and by 7:30 pm, we had moled in and laid 800 metres of fibre, accidentally cut and then mended a water pipe, and drunk a great deal of tea. That left us with 400 metres to dig the next day, through a wood.



Tony Swidenbank's mole plough arrives and we put the fibre on its reeler.



Oops. We struck water.

Julie, who lived in the first house, (where the man who got the water had lived), had to dig through her lovely tennis court with a spade.

Dave from Lucid fused the fibres and coupled the ends to the university wifi feed at the farm, making a network called a "FiWiPie"—Fibre-to-Wireless network solution—and our neighbours got their internet back.

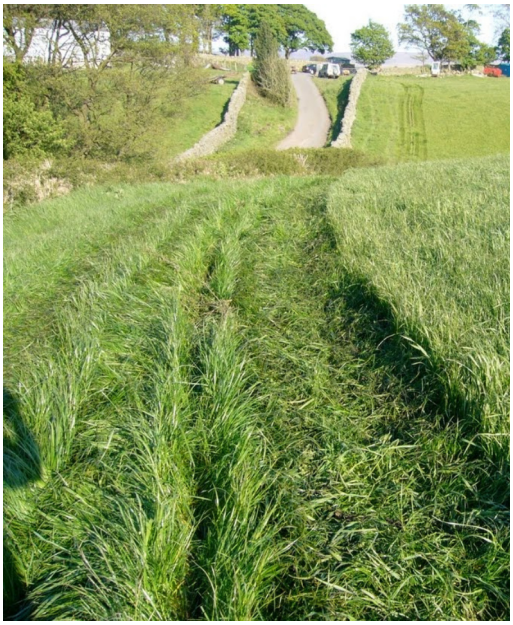
In a matter of 18 hours work over three days, we proved that we could do what British Telecom stated was impossible: connect rural properties to fibre. This was probably the first rural fibre-to-the-home connection in Britain.



The media convertor that would turn the farm wifi via ethernet into light to feed the fibre to Julie's house.



John Colton and Dave Galivan from Lucid fusing the first rural fibre watched by Debbie.



The 800 metre mole plough, the first done by a rural altnet.



A few days later and Julie's tennis court looks great after the fibre went through.



Julie's house, Cragg Hall, at Wray.

Beyond the book:

JFDI video

It was easy, it was fun, and it was a challenge. It cemented our motto: JFDI - Just Farmers Doing It. We knew this was only the beginning.

Video was not going to go away, and everyone would eventually need higher speeds, which meant we needed a serious upgrade for our wireless network.

Twicket

We mercilessly campaigned for and publicised the JFDI dig and the Wray and WenNet networks we had built with the University. One such campaign was the village cricket match and tug of war, masterminded by John Popham. #Twicket became a global phenomenon. This event was held on Easter Monday, 25th April 2011. John came from Huddersfield and was an expert on social media, which at the time was still gathering pace. Facebook and Twitter were the main contenders and John had many followers. Even Stephen Fry joined in.



Stephen Fry's tweet.



Brenda Mickle commentating. *Photo by Mike Rawlins*

John came up with a plan to livestream an event that was held in Wray every year, using the amazing symmetrical upload that the living lab had given WrayNet access to. He built a massive tribe of people to help him, including the brilliant Brenda the commentator. The full story is in the blue box 'beyond the book' link and is well worth a read. A great tribute to a great man, who is sadly missed but was a massive supporter of B4RN. We did TV and Radio interviews, spoke to the press, politicians and government departments, but still nobody would or could help us.

Beyond the book:

Twicket story

Twicket video



The Tug of War. *Photo by Mike Rawlins*



Aunt Sally invades the pitch. *Photo by Mike Rawlins*



John Popham interviews John Marshall, the umpire.
Photo by Mike Rawlins

The Four ‘A’s

This is where Barry comes in. The genius who enabled B4RN to exist. A highly experienced professor of networking and technical services, Barry Forde had just retired from Lancaster University. He was bored. Also, luckily for us, he happened to live in Quernmore, one of the parishes near Wray that wanted connectivity. He also wanted to help all the other parishes as well as his own. He had vision.

Barry and his team at LUNS had already helped the Wray and WenNet networks. Barry had been the brains behind CLEO, an enormous network built for Cumbria and Lancashire councils, providing broadband connections for educational institutions in the area. CLEO had provided backhaul for the village mesh projects, so Barry knew all the technical details. Plus, he had contacts in “the trade” for fibre network equipment. The stage was set for our community connectivity projects to get a major upgrade.

First, a little background on CLEO. When the network was built to connect local schools, it was also intended to eventually provide connectivity for rural networks. In that sense, building our village mesh networks on the back of CLEO was a natural extension of its original purpose. For whatever reason, the local councils hedged at pursuing this other use case, while rural communities waited and waited for the internet. The Wray and WenNet networks were driven by us, the local people, so we were able to take advantage of CLEO before the project was handed over fully from LUNS to the councils in 2010. And with that, Barry and his team’s ambitious vision came to an abrupt end. The councils handed CLEO to BT, which promptly stripped the assets, absorbed them into its much bigger commercial network, and put all the schools back on its inferior service, while charging the schools a lot more money.

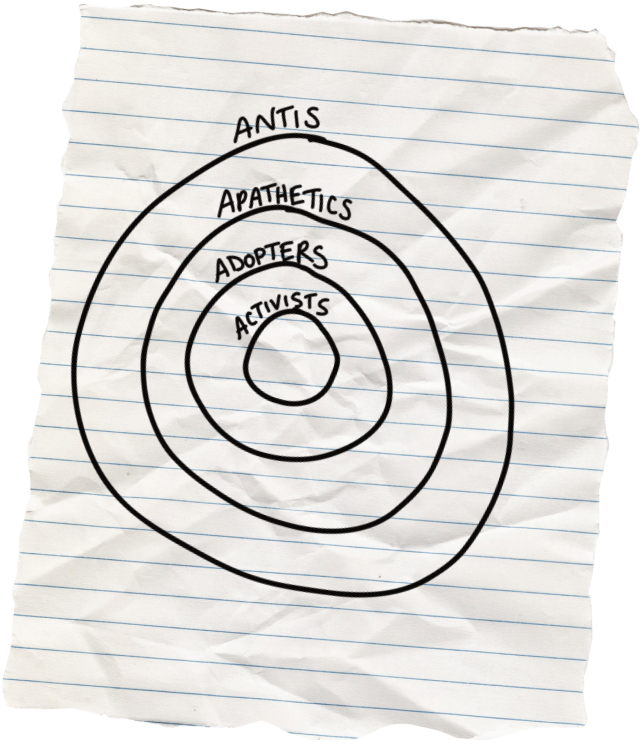
But back to B4RN. Lindsey, from Digital Dales, Access to Broadband Campaign, BSG and CBN, had travelled extensively abroad, returning with information, equipment, and contacts. She visited community broadband networks in many countries, bringing people, suppliers, network engineers, mayors, and many more, together to help the many others delivering valuable connected communities. Meanwhile, the Wray and Wennington communities were forming a tribe of people committed to getting better connectivity for the local area. We had the motivation, skills, contacts, and commitment, and were ready for action.



Lindsey and Walter at the Day of the Spades

We were the Activists. The first of the “Four ‘A’s”, as we often said. Every social movement starts with this small core, packed with energy and passion. Success hinges on understanding and engaging with more people, several degrees removed from the first circle. In the next category were the Adopters, people whom the Activists inspired to get involved. They were massively important. There are always more Adopters than Activists, and they get the word out to more people, and they can speak from their own experience about why they got interested and engaged. Beyond the Adopters are the Apathetics, who are not too bothered either way about what is going on. Last come the Antis—people who are just against the whole idea and the hardest to bring around.

Among the new tribe's Activists there was Tommy Hartley, the installer for the WenNet network and an agricultural engineer. Then there was Ian Threlfall, a security specialist from the original WenNet network, and Martyn Dews, an IT consultant, who joined us. Together we formed a management team around Barry. We also recruited new folks from the local parishes, who also brought new skills. Bruce Alexander, Tim Dawson, Iain Robertson, Mary Jackson, Carl Hunter, and Chris May – each village that became part of the original project plan had a representative. There was also Monica Lee, who had worked with Barry to get the CLEO network to the school in Abbeystead, and who had been gathering information about the number of businesses, householders and potential users in the area. We were building momentum.



Barry had a plan to build a resilient fibre loop from Quernmore to Arkholme, where there were already breakout points, connecting to the UK's dark fibre backbone, (a kind of wholesale fibre network), and connect all the parishes in between. Barry's first plan for building a new, fit-for-purpose network involved working with the local government to access funding for rural broadband. He made a business case to get a backhaul feed to all our parishes. Each parish would then build their own local network, either quickly and cheaply with wifi, or a more permanent solution with fibre-optic cable. It was going to be the feed we needed to keep WrayNet and WenNet going. More representatives from the other villages were continuing to join our team.

We bid for funding from Defra, the Department for Environment, Food, & Rural Affairs, but the North West Development Agency (NWDA) had the final say in the funding allocation, and they decided to give it to the Lancashire County Council rather than Lancaster City Council, who were supporting our proposal. Lancashire County Council gave the money to BT Openreach, which was rolling out a much inferior 'Fibre To The Cabinet' (FTTC) solution, protecting its existing copper assets and tying people to phone lines.

It was frustrating.

The UK Government claimed to want to address the problem of slow internet in rural communities, but all the funding went to BT, whose technical approach did NOT fulfil the promise of fast internet for all.

We knew we needed a more radical solution—an overhaul of the way things had traditionally 'been done'.

With Barry we all put our heads together and we came up with another plan. This might seem like a lengthy preamble, but this is really where the story of B4RN begins.

A New Plan

We came up with a new name and a new plan, namely to build our own fibre to the home network that would



give each home a 1Gbps link for both uploads and downloads. We called it Broadband for the Rural North, or "B4RN" for short. We registered as a Community Benefit Society, a CBS. The WenNet project had been a Community Interest company, a CIC, and we did not have the complication of shares back then. Under Community Benefit Society rules shares are known as ' withdrawable' and can only be sold back to B4RN, and all surplus has to go back to the community. This was one of the key reasons why people were initially willing to invest in B4RN. As a start-up company, B4RN fell within the requirements of the Enterprise Investment Scheme (EIS), which meant that people who invested in shares got 30% tax back. This incentivised the richer members of the community to invest, subsidising those who could not afford shares, allowing everyone to get a connection, shareholders or not.

We also added a bonus that for each £1500 investment, the shareholder would get a free connection and would receive 12 months of free service. We set the monthly subscription fee for internet service at £30. We gave free service to churches, village schools and other community assets. We would also give farmers shares for volunteering their time on the project, rather than pay them. They would be called 'digging shares'.

We knew we could build a sustainable network and let each community decide if they wanted to do it, and that if they did, then we would help them achieve it. We paid £1.50 per metre for digging the duct into the trenches.

All the areas that wanted connectivity were divided into phases, and we sketched out a timeline for completing each phase. We included the original seven parishes that had been part of the failed funding bid and we added Tatham, so there were eight parishes in Phase 1. (Light-green on the map.) Every parish brought different gifts, skills and know-how, and some really good ideas came from all sorts of places. For example, take our postman, Keith, who said to his barber (one of the Activists) "Why don't you dig across the fields to put the fibre in the ground"? - This was a game-changing suggestion.

It made technical sense: fibre networks are most robust when they are laid underground in ducting that is not subject to weather disruptions. When the farmers were willing to help with labour and equipment that they already had, the whole process would be much cheaper than digging up the roads.

We asked the AONB (Area of Natural Beauty) group if they could help us with a grant for publicity. They gave us some money, and we used it for leaflets, posters, application forms and banners. A local photographer, John Hamlett, provided the photo for the banners, which we still use to this day.



The Original B4RN poster 2011

We approached every parish council in the area, told them what we wanted to achieve and how we would do it, and invited them all to hold a public meeting for all their residents. Then we held a meeting in each parish. There was a lot of interest, and pretty soon, our circle of Adopters or should we call them Advocates? was growing rapidly and bringing in many Apathetics to see the light and join us.

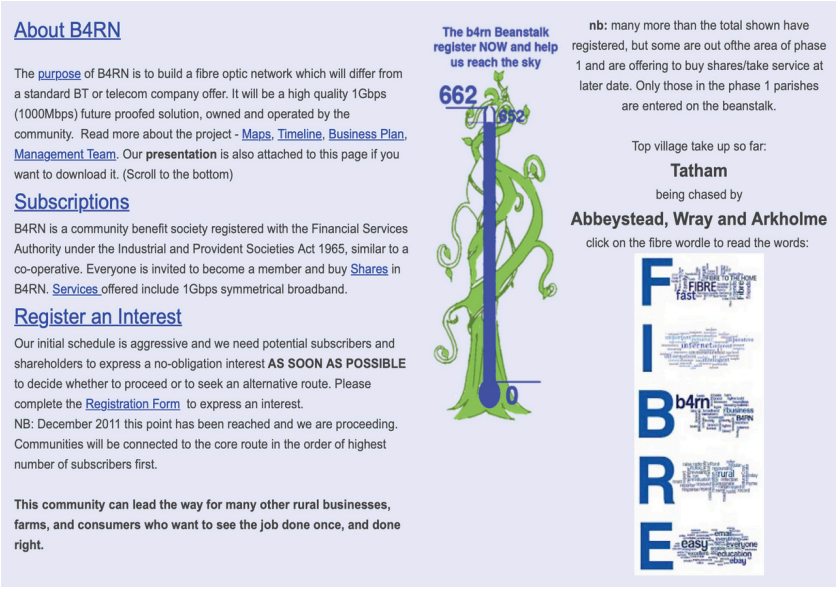


Tatham (Lowgill) parish meeting.

We determined that we needed 1200 connections for the network to be viable, and if 600 people registered their interest, we would form a company. We leafleted every house, so those without the internet could register, too. Each community seemed to have its own champions and motivators, so we were growing our Activist base, and they inspired others to sign up. We did not think about it in terms of leaders and followers– Activists motivated Adopters, and Adopters worked on convincing the Apathetics. Everyone had a role to play.

Lindsey made a website on Google sites for free during a marathon 36-hour work session, and we invested £10 in a domain name. We had a Google form to register interest, and a counter on the website for each registration.

On the 15th December 2011 we held a big public launch meeting in Lancaster, as we had passed the mark of 662 registrations on the visitor counter.



About B4RN

The purpose of B4RN is to build a fibre optic network which will differ from a standard BT or telecom company offer. It will be a high quality 1Gbps (1000Mbps) future proofed solution, owned and operated by the community. Read more about the project - Maps, Timeline, Business Plan, Management Team. Our **presentation** is also attached to this page if you want to download it. (Scroll to the bottom)

Subscriptions

B4RN is a community benefit society registered with the Financial Services Authority under the Industrial and Provident Societies Act 1965, similar to a co-operative. Everyone is invited to become a member and buy Shares in B4RN. Services offered include 1Gbps symmetrical broadband.

Register an Interest

Our initial schedule is aggressive and we need potential subscribers and shareholders to express a no-obligation interest **AS SOON AS POSSIBLE** to decide whether to proceed or to seek an alternative route. Please complete the Registration Form to express an interest.
NB: December 2011 this point has been reached and we are proceeding. Communities will be connected to the core route in the order of highest number of subscribers first.

This community can lead the way for many other rural businesses, farms, and consumers who want to see the job done once, and done right.

The b4rn Beanstalk register NOW and help us reach the sky

662

nb: many more than the total shown have registered, but some are out ofthe area of phase 1 and are offering to buy shares/take service at later date. Only those in the phase 1 parishes are entered on the beanstalk.

Top village take up so far:

Tatham

being chased by

Abbeystead, Wray and Arkholme

click on the fibre wordle to read the words:

The original B4RN website on Google sites (Wayback Machine).

Barry told everyone the plan: that first the community needed to raise the money, invest in shares to fund the materials, then start digging. He said that it would not be easy, but that if we did not do this, no one else would. Serving the remotest properties would be unprofitable for the traditional telecoms companies so they would never connect us, he said.

Our goal was to raise £200,000 to get the project off the ground. We had an earlybird scheme, where anyone investing £1500 before our deadline of February 29th in the leap year 2012 would not only get a free connection and the benefits of the Enterprise Investment Scheme, EIS, they would also get 15 months of free service.

Our first shareholder was Walter Willcox from Surrey. (He also became our millionth shareholder on April 1st 2015.) Walter was a great supporter of B4RN and made many trips up to our northern villages to help out. He wanted to do the same thing in his own area, and working on the B4RN project gave him the inspiration to found his own local group called B4SH, Broadband for the Surrey Hills. This has since become a viable network and a credit to Walter's persistence.

On the 29th of February 2012, Barry announced that instead of our target of £200,000, we had raised £300,000. So we pressed the "Go" button. We held regular meetings in the Wray village hall, or in the pub if it was too cold in the hall. We kept working on our plans. One month later we all met up for the Day of the Spades.



Walter Willcox buying the first shares in the company. Dec 15th 2011


Walter presented with the millionth share by Barry a few years later!

Beyond the book:

John Hamlett's video of the launch

John Popham's video of Day of the spades

John Hamlett's video of Day of the spades

Radio Wales interview

Radio interview Twicket


David Smith and Eric Lange, Arkholme champions, talking to Walter on one of his visits.



The Day of the Spades, with John Popham (on the left) filming it for posterity. The video lives on - in his memory on YouTube.



Paul Woodruff, Barry, Eric Ollerenshaw MP.



Paul Woodruff cuts the first sod.



Paul Woodruff, accosted by Walter.

Day of the Spades

On the 31st of March 2012, people came from far and wide to join our local mayor, Paul Woodruff, and our MP, Eric Ollerenshaw, for the "Day of the Spades," as we called it—the day we started digging on John Metcalfe's land just below Jubilee Tower.

Paul, the mayor, cut the first sod. (He was promptly accosted by Walter, who told him about his plans to replicate B4RN in Surrey.)

Many of the Activists were there, and a fair few Adopters, too.



Walter talks to John Metcalfe, a local farmer, about the problems they have with connectivity.



Lindsey and Barry at the Day of the Spades.

The original start point for Phase 1 was Quernmore. This was where Barry had identified a breakout point where we could join to the Geo dark fibre. That cabinet came live in the summer of 2012. Immediately, it was picked up by Abbeystead, who were really desperate for connectivity. They had no reliable dial-up, no mobile, no terrestrial TV signal and limited areas where satellites worked due to south facing hills. The major landowner there also bought digging shares for all his properties, so that meant duct was available, and made starting with Abbeystead an obvious choice.



Map of Phase 1.

However a few problems emerged at the first AGM in 2012, when the Adopters (or "cats" in Barry's terminology) started clamouring for information about when 'we' were going to connect 'them'. We told them that, like Abbeystead, they would have to dig it in themselves and we all would work together as a community.

Dealing with people's expectations became a running issue in the roll-out of B4RN. Sometimes we found there was a lot of enthusiasm and little patience for the phased roll-out, which required an existing connection nearby to connect a new community and also required a high level of community effort. We had a strong team of volunteers, but more were always needed when we started in a new area. Digging, and connections had started at the Quernmore end of the loop, and Arkholme was at the other end of Phase 1, so we thought they would be a good one to get going to make the loop resilient, and they were really keen. The problem was that a 4.5km dig was required to get from the fibre at the Geo (a dark fibre wholesaler) breakout point at the top of the parish down to Arkholme village hall, where the cabinet would be located for the village. None of the farmers had diggers or wanted to do it. So, a few of them got together, bought extra shares, and hired the diggers. They completed the dig in eight working days at a cost of £4400, and the shares paid for it. They got three free connections for that amount of shares, which they donated to the school, church and village hall. We will come back to Arkholme later on in this book.

The plan was then to get across the River Lune to Melling, and then via Wennington to get to Wray and up Roeburndale to join Quernmore and complete the resilient loop, but the railway people would not let us run the fibre along the bridge over the Lune, so the join up had to wait.

And that is when the cats became harder to herd. Gressingham, Whittington, Borwick and Priest Hutton sprouted new buds on the Arkholme branch, and Dolphinholme (Ellel) joined onto the Quernmore branch. Four phases were basically digging at once. Barry had warned us about herding cats in a community-led project, but nobody could foresee that they would be so feral. The trunk was not even grown yet. There was no earthly reason why parishes in later phases should not get digging, but where was the money to come from to buy more supplies?

The business model hinged on raising money for new phases while a previous phase was being completed. In reality, current projects were paying for phases not due to start yet, ie later phases, which meant that rather than raising money for yet-to-be-started projects, we were raising money to pay for already started projects. This complicated our best laid plan, and we had to adapt. First we tried to source some funding from the Lottery and other groups—with no success. Government would not help. Banks would not loan money until we had been trading for three years.

We had to get our hands on more duct, chambers and enclosures, not to mention all the bits that went with them, and the network equipment. Monica applied to the Prince's Trust, and Tommy was awarded a Land Rover Freelander, and that really helped, as it could be used as a standalone vehicle for fusing fibre and could tow the trailers.

Monica came up with a loan scheme at 6.5% interest and opened it to the community. They could do one-, three-, five-, or ten-year loans. The loans were paid back, with interest at the end of the terms, apart from the 10-year loans, which were amortised. This eased the situation, but we needed more, as so many groups were building.

The farmers and some contractors would work for shares, which meant we were not paying for labour, but in some areas we had to use contractors, and they needed paying. In addition, road and river crossings cost a great deal of money. During this time Emtelle, (a fibre equipment company), had given us 90 days credit, unheard of in the industry, and they were very supportive. Simon Wade from Emtelle even arranged training days in our local area for other telecom providers, and that meant we could get our fibre blown in the days before we could actually afford a blower ourselves. Simon also arranged 'showtell' days, (info is in later chapters). We had a 'sponsor a metre' of duct scheme, and many people from all over the world paid a fiver (£5) for a metre of duct with their name on.



Our first delivery of duct and fibre.

Monica applied to the Esme Fairburn Foundation, and they generously lent us £300,000. All of a sudden we could buy supplies, and off we went, with our cats.

We wanted to get the network live that year to show sceptics they were wrong. TV stations did features about us, newspapers covered our progress, and our name spread. The first thing Barry did with our windfall of funding was buy more duct, chambers,



Our first delivery of chambers.



Our new little office at the auction mart.



Members of the B4RN management team. Kristina Fournier, Carl Hunter, Monica Lee, John Hamlett, Chris Carr, Tom Rigg, Tommy Hartley, Iain Roberston, Mary Jackson, Martyn Dews, Ian Threlfall and Barry Forde.



The first cabinet, at Quernmore.

and cabinets for the first main routes. We stored them at a local farm.

Monica found us an office space at the Lancaster Auction Mart, and we moved in. Mary sorted out insurance for all the volunteers.

The management team grew, bringing in new skills.

There was a lot of paperwork involved, which Barry needed help with, and Mary gave up her back bedroom to store all of our documents and also helped with the office admin. Mary initially worked with the shares, until Monica took over as Company Secretary in 2015 and dealt with the shares and Membership of B4RN, later to be joined by Kristina as one of our very early employees. This freed Barry up a bit to continue doing all the network mapping, ordering, design, and oversight.

Once we got the office space and a phone, we needed someone to answer it, so Judy and Sheena volunteered. It was obvious that we were going to need a lot more staff, but we still had to use all the money for materials, so everyone working for B4RN in those days was a volunteer.

Thanks to Emtelle, we got the first fibre in, and Tom Rigg who was a volunteer at the time (and who would later become B4RN Chief Operating Officer and then CEO) and Simon Littlefield (a contractor) fused it. We lit the fibre at Quernmore at the end of summer in 2012, four months after the first sod was turned.

Our first 15 customers in Quernmore came live in October. A free service was provided for The Rec (the local village hall), which also hosted our first cabinet.

We had done it. Our network, our 'tree' had its first blossoms.

Roeburndale

Extreme Digging

Two of the challenges of building a fibre-optic network in our area were the terrain and the distances we had to cover. Another heroic farmer, Richard Johnson from Roeburndale, with help from Robert Taylor and with a big digger, dug over the mountain where he lived in 2012. There was nothing to join to at either end but he dug an enormous stretch because "he could." He had to dam the trenches to keep digging, and Richard dug a large proportion of the route between Quernmore, where the first dig had started, and the next village, Wray, passing right by his farm in the process. Robert helped, as he had done a lot of the dig towards Abbeystead, so he knew what to do and they were Just Farmers Doing It—they dug the route down to the valley.

After the finished route was backfilled, the scar was gone within a year.



A trench damned to run off the water.



Finished trench healing up.



The dig seen from a distance.



The extreme dig down through Roeburndale to Wray.

Beyond the book:

The Xtreme Video

The route to join Quermore to Wray was beset with problems, the main one being a landowner with a large amount of moorland. He would not give permission no matter who approached him. Eventually one of the villagers who knew him well offered to chat to him. Miraculously, this worked, and digging commenced again. This was a lesson well learned, and passed on to other villages: "Make sure the right person approaches landowners in the first place!"

Eventually the digging from Quernmore reached Richard, and then Wray joined up to Richard's Roeburndale link, and Wray became a "live super-hub." Reaching Wray, which was our largest village with the most customers (229 properties) was crucial to our plans.

Back to the present though. By this time, all the people who had bought shares in all the other villages started asking when they were going to get their internet, and we constantly had to remind them that they needed to do the digging. Literally, they had to lay the groundwork themselves.



Collecting duct through snow drifts

The winter was harsh, but digging continued. We delivered duct to the areas who needed it -often having to dig through snow drifts. Some villages waited until the core got closer to them, but others grabbed the chance and just got started.

Abbeystead was the first parish to dig in earnest. They had to get their feed from Quernmore, and the farmers did most of the digging with Robert Taylor contracting for some of them, and they bought shares to pay him. Once the dig reached Abbeystead, the estate workers did a lot of it.



Robert Taylor approaching Abbeystead village.

We dug in all sorts of conditions—in rain, in snow, through rock-filled fields, muddy marshland, and thick clay, avoiding drains, utilities and septic tanks.

Drains on farm land are at least a metre deep, so theoretically this depth meant we would not damage the drains. Sometimes they are not deep enough due to land erosion over time, but if we broke any of them, we fixed them, often going under them.



Going under septic tank drains.

Water pipes vary, with some farmers digging them very deep and others digging them very shallow. Electric cables sit much deeper underground, but we would find them before a dig started.

We had to bring in the gas people if we had to go over gas mains, and they would locate them and monitor the dig. Telephone lines were always a nuisance because they are usually just under the sod.

Each new leg of a route was a bit of an adventure.

Blowing Fibre



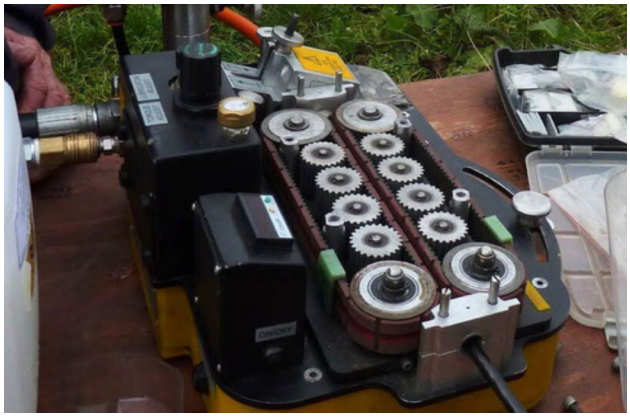
A reel of fibre.



The blowing trailer.



A mole plough.



The blowing machine.

Tommy kitted out an old trailer to hold the compressor and all the gear we needed for blowing, including petrol cans and shelves for smaller items. The trailer was usually pulled by Bruce's old Volvo, with someone else bringing the reeling trailer. The fibre comes on big reels, sometimes 6 kilometres and are from 1 metre to 1.5 meters in diameter.

Core duct is 16mm high-density polyethylene (HDPE), and the inside of it measures 12mm. Fibre runs through this duct underground and so is protected. The duct is buried in the ground to a depth of 60cm. It is either dug in by hand or machine, or mole ploughed.

To get the fibre into the ducting, it is "blown" into the empty duct using compressed air from a special machine. The wheels on the machine feed it through on the air.

Firstly the duct is coupled up to air and this is blown through to the other end of the blow, and someone with a radio confirms they have 'air'- and the right duct. Once the message is received that air is coming through, the first sponge is loaded and blown through, It confirms the duct is clear when they catch the sponges. When we started, we used empty pop bottles to catch the sponges at the other end of the duct. We started building up our 'essential tool kit': used pop bottles were in demand because the sponges had to be re-used, every penny counted. When ducts have been left uncapped, this often results in the catcher getting showered in cold water or the pop bottle flying off into a tree, so we later changed the kit to using onion sacks, which let the water and air out but caught the valuable sponges.

Then the duct has the magic combo of sponge/ lubricant/sponge blown through. (We used a recycled hairdressing bottle). Then another sponge, then turn on the blower and hope the sponges reach the other end.

In the early days, we stored the fibre reels outside, so we also needed volunteers cleaning the fibre cable with old towels before it entered the duct. (Once we had facilities to store the reels inside this became unnecessary).



Alistair, putting the lubricant into the duct.



Putting the sponge into the duct.



Feeding the fibre into the machine using cleaning cloths.



Essential kit, sponges caught in pop bottle.

The fibre is now ready to blow.

The blowers thread the fibre from the reel into the machine, and the machine pushes the fibre through the lubricated duct with air to 'float' it.

Every 500 metres or so, there is a chamber – a box dug into the ground that houses spare fibre and/or a "bullet" or several bullets, which are watertight containers where fibres that meet one another underground are fused together to extend the connection.





Round chamber with bullet, oblong chamber with 20 metres of fibre in it.

In each chamber we leave 20 metres of fibre still attached to the core, so that if in the future there is a break between two chambers, we have spare fibre to pull back to do a repair. The other reason for chambers is that if the fibre gets stuck during the blowing process and can not go any further through the duct, we can fleet it out - meaning you blow the fibre onto a sheet on the ground and wrap it in a figure of eight - and then you turn it over (sometimes a few kilometres). The blowing machine is brought to the fleet. Then the blow resumes.

Fleeting means we do not need to do a join – fusing several fibres together to make the connection longer. A good fuse will not impede the signal, but any fuse is an opportunity for something to go wrong. The fewer joins, the better.

A smaller fibre tends to blow further than a big one of course, and the circumference of the fibre gets smaller as manufacturers find new ways of production.



Bruce getting the duct ready for the next blow.



Fibre fleeted onto a tarpaulin to keep it clean.



Fleeting fibre on the way from Wray to Thrushgill and Lowgill.



The blow under way.



First fleet on a long blow.



Second fleet on a long blow.



Final fleet, and turning the fleet before starting the blow again.



A multiple big fleet.

The length of the blows varies from a few hundred metres to six kilometres. It all depends on the number of properties on that route. As properties are passed, enough fibres are left in chambers ready for them, so the fibre count (and the cost) reduces.

A blow can start with a massive 288 fibres, (288f), then split a few chambers down into a 192f and a 144f and a 48f as different cores join on. Spare fibre is left in chambers every 500 metres, and this is generally where the fibre is fleeted on long blows where the machine cannot push it any further.

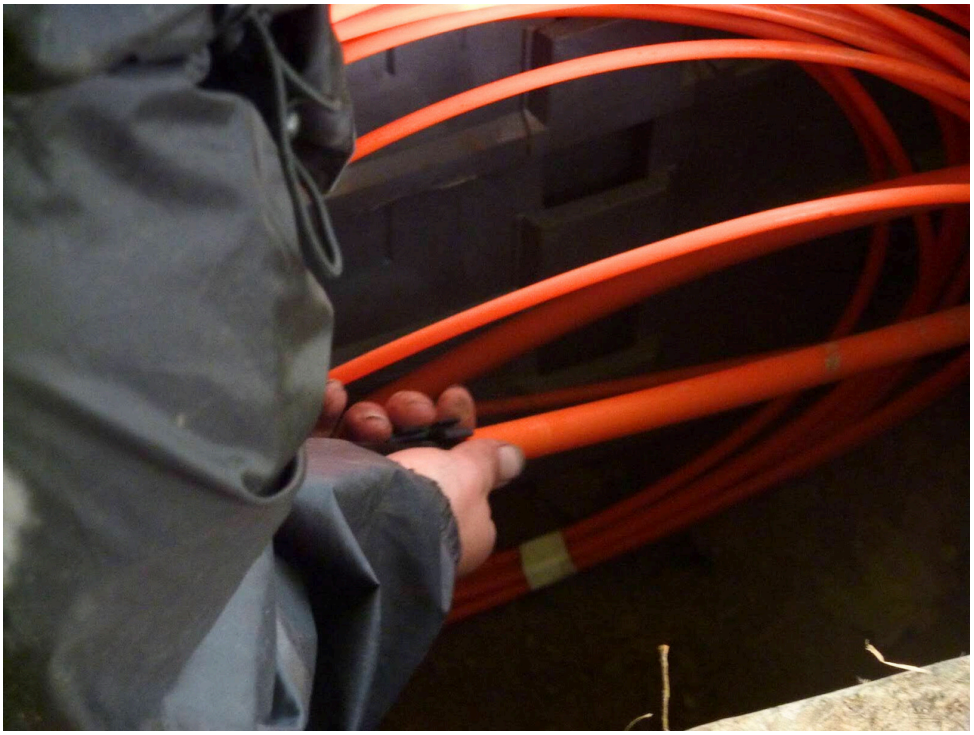
Iain designed a fleeting table to make the process easier for the volunteers to form the figure of eight. This is a skill in itself, and we used to call it "infinity" – to the future and back!

We used drain pipes and tree branches to extend the table 'arms' on big fleets.

We did not go wrong very often, but once a volunteer got a phone call and a steam train passed at the same time, and she got distracted so a couple of hundred metres ended up as spaghetti on the field. We do not have photos of this, as everyone was too busy trying to unravel it.



Using bits of duct to extend the drainpipe arms of the fleeting table.



Putting a gas block on the end of a duct in a chamber.

Once the fibre is blown into the ducts, the duct is then sealed to stop gas or water ingress with a special little stopper that clips round the fibre. This means that the fibre can still be moved if needed in a clean duct. It is also a block against radon gas which can degrade the fibre. Everything is then rolled up back inside the chamber to await the fusers.

The fleets got smaller as the blows progressed over the Littledale Fells, where the extreme diggers had laid the duct for many miles.

We bought our ducting and fibre from Emtelle, who also trained us how to blow the fibre through the tubes in the ground. Tommy became our first core blower, and Bruce did the house blows, and also trained Chris Hall to blow. Throughout the whole project Emtelle has been very supportive, we are very grateful to them and their representative at the time, Simon Wade.

Fibre comes bundled in tubes, with 12 fibres in each tube. At the start of the project the highest fibre count was usually 96 fibres. A 96-count has 8 tubes of fibre. We used 48 fibres in smaller routes with fewer properties. Twenty-four fibres are allocated to the cabinets they connect to on core routes, and each customer gets two fibres each coming into their home. Just one fibre the width of a human hair can carry a fully symmetrical gigabit connection, but we always installed two per property for resilience and to enable a connection to be split or who knows what the future holds. Barry always plans ahead to achieve even faster speeds in the future.



To infinity and beyond, Paul and Frank turning a fleet on an epic blow between Barbon and Dent.

Where more than 96 fibres were needed on a route, we used multicore ducts and two or more lots of 96f. So the first cabinet had seven 16mm ducts going out on the routes to the different places. We then found 144f was pretty affordable, and that meant we could use less ducting. Nowadays a lot of routes start with 288f, but because our fibre is housed underground in ducts, we can put any amount of fibre in them that will fit. It was all designed to be future-proof.

Tom Hartley

Tom, or Tommy as most call him, one of our first Activists from WenNet, became our logistics person for B4RN and our first blowing expert. He sourced some cable reelers, which were needed for reeling off duct and fibre and also delivering reels to different sites. The farmers then used tractors to get it where they needed it.

Tommy, with Monica's help, was awarded the use of Land Rover Freelander for a year from the Prince's Countryside Fund, and the Prince's Trust made a film with him.

As an agricultural engineer, Tommy also had the gear to mole under walls and little roads and farm tracks. He used the ground radar to mark drains and utilities before the dig to Abbeystead village hall. He bought his own mole plough and helped many other villages get on board, including Hornby, his own village. He also helped many other villages with lane crossings with his directional mole machinery.

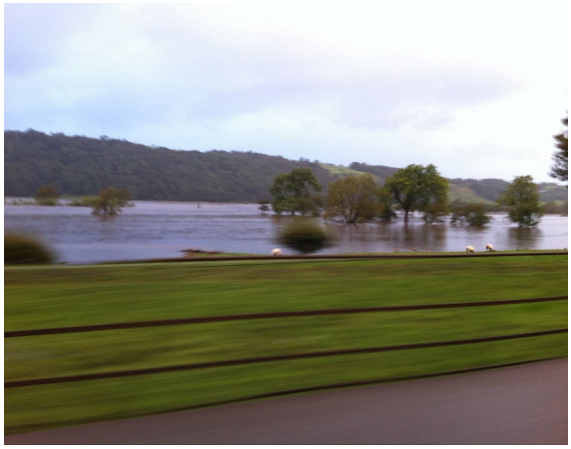
We were doing great until May, when it started to rain, and rain, and rain... 2012 was the wettest year on record, with the floodplain that is Lune Valley under water.



Tom Hartley on our first customer blow at Quernmore.



Tommy with the new reeler delivering fibre.



2012, and the Lune Valley became a lake.



Farmers getting supplies to where they were needed with the trailer.

We could not use the mole plough, and we had to dig instead. Many farmers, hit by the bad weather, did not have the enthusiasm to dig, which in some areas was virtually impossible anyway.

One dedicated farmer bought enough shares to pay one of the big "bad weather" diggers, which can work on wet land without wrecking it, and connected their parish and their school. (More later in the Arkholme chapter)

Tommy even taught Prince Charles - now King Charles III - how to blow fibre. (We also showed him how to fuse, and he fused our 1000th customer's fibre.)



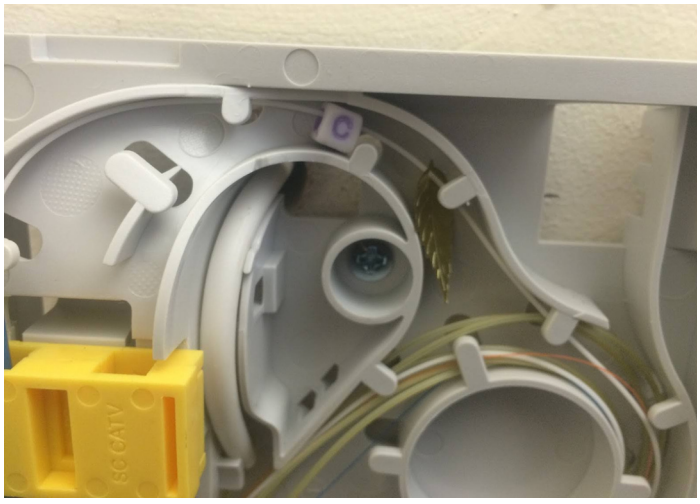
Tom showing Prince Charles how the blower works.



Preparing for Prince Charles to do a fuse for the 1000th customer.

We threaded a little gold leaf and a C on the pigtail to commemorate the event.
Tom also went on training courses and learned to prepare bullets for fibre and also to fuse.

A man with many talents and a great asset to the project as he went on to teach others to do all the jobs too.



Prince Charles's royal fuse: a letter C and a gold leaf, in the FTU at Newton Business centre.



Tom prepping a bullet at Arkholme.

Beyond the book:

Freelander film



Tom using the ground radar to locate underground services at Abbeystead village hall.



Taking supplies to various digs.



Tom with Chris and the Arkholme volunteers getting duct under a wall and farm track.



Volunteers Keith and John in Wray helping Tom get his mole through track and a hedge.



Tom blowing fibre in Abbeystead.



Tom catching the mole from under the road.



Sponsored duct carrying the fibre to the cabinet in Abbeystead

Bruce Alexander

Bruce Alexander was another one of the champion volunteers we found at the end of a rainbow. A pot of pure gold.



Sponsored duct, £5 per metre.



Roeburndale chamber.

Bruce had run the Quernmore village Post Office until it closed, and then worked at Bowerham Post Office. He kept busy with DIY jobs for family and was clerk to two local parish councils. He was active in the Recreation Club and generally helpful and involved in the community. He was one of the early Quernmore Activists and joined the management team when it formed. He had been an engineer and was very practical, so it made sense to him to join the project. On the day the first house boxes arrived, he and Barry worked out how to install them. Once the build got underway he was so interested in how it all worked he ended up learning about blowing and fusing too. He ultimately installed all the houses in his village and dug through their gardens to the main core that the contractor had dug in and separated out the customer ducts. Then Emtelle, our duct suppliers, showed us how to blow our own fibre. The blowing trailer held the big compressor for core duct but was also set up to blow house fibre.

Bruce used the house blower to blow fibre to the houses, and the fusers came and joined them up. After hiring contractors to fuse in the first year, we soon learned how to do it ourselves.



House fibre being blown from the pan.



Bruce blowing house fibres.



The first delivery of routers and their back boxes (FTU) and Bruce and Barry figure out how they all work. Then Bruce gets going and makes it all work, fixing up a house install, suitably bribed with tea and cake.



Bruce and Tommy put their heads together and decided which core blower to purchase.

Bruce blew all the early home fibre, and learned how important it is to keep the ducts dry and clean. The contractor had left many ducts in the chambers without end caps on, and they wound up full of water and muck. Sponges had to be blown through each one to clean them before the fibre was blown. It made each job a marathon, but Bruce persevered and got the houses all done in his village, and Tommy did the core.

However, Tommy had to return to his day job, so Bruce continued to help every other village with Chris Hall. Bruce would bring the blowing trailer and Chris would bring the reel trailer, and these three did all the overland core blows between the villages. The blowing trailer held the big compressor needed for core work and was all set up to blow the small 2f to each property. Hiring contractors was too expensive and inflexible. Bruce, Chris, and Tommy realised that the expensive and complicated equipment was really a job for those who knew how to use it, and a small team of B4RN volunteers was set up to take it on. None of the three could be paid what they were worth, but they knew what they were doing was worth more than gold to the community.

Meanwhile the community was working hard to buy and then lay the empty duct ready for the fibre, and the Team were regarded as "the Cavalry" when they turned up to get the fibre in and start the process of getting the services live. Each day was a challenge, but Bruce cannot remember being defeated, even if it took several attempts!

Getting the first customers live in Quernmore proved that the B4RN project would work. We had a product (rather than a dream) to sell and the pace started to ramp up. As it became clearer that it was all going to work, Bruce had a great sense of achievement–he felt proud of the project and justified in his faith in it from the beginning. He was firmly committed to making Barry's vision work. As soon as it was financially possible, Bruce was taken on as staff part-time, and then he gave up his other part time jobs



Bruce training Rob to blow, the blowing trailer, and the blowing machine.



The blowing trailer, which often got stuck in muddy places.


Bruce fixing the outside installation.

and became full-time. He also trained the new young staff to use the blowing machines. Over time, Bruce got the trailer to some pretty remote places, but he could not always get it out. He often had to ring a local farmer to rescue him, but nothing stopped him getting where he had to be. He had more power once he had the use of the Freelander, and he always got home (eventually).


Bruce, Chris and Alistair blowing fibre over Littledale.


Bruce fusing customer fibres into a bullet.

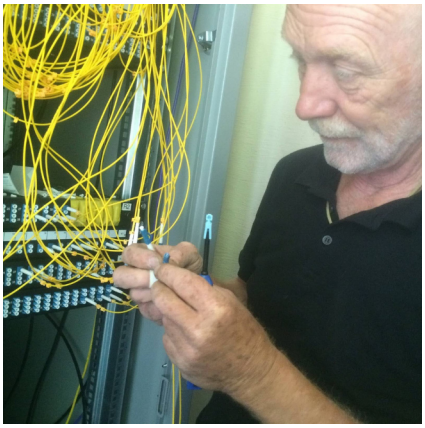

All weathers: Bruce getting customer ducts out of the chamber ready to blow fibre in.

Bruce worked in all weathers and against all odds. He organised a great deal of the early record keeping and documentation for B4RN before we had staff. For the first five years, we used Bruce's spreadsheets for customer records and for router MACs. (MACs are the unique numbers on appliances that are used to record where they are being used.) He also did spreadsheets for the fibre reels for stock control. He was also involved in writing the customer contracts and the first edition of the B4RN "bible" for the communities. He wrote most of the wayleave document, which is still in use today. Bruce was a problem solver and came up with some innovative solutions, notably the "pencil sharpener" to reduce the diameter of the surface duct so we could join it to the buried duct, as well as "Bruce's Blowing Box," which we used to get fibre out of the duct! When he wrecked his ankle and had to wear a cast for ten weeks, it did not stop him. Luckily, it was his left leg, so he just got a car with automatic transmission and continued to work; the staff allocated him a parking space next to the front door.

He learned how to put the bullets onto the duct and blow the fibre into them. Eventually he "bit the bullet" (pun intended) and learned how to fuse them, too. He masterminded the spreadsheets we used to keep track of which fibres to fuse, and he learned how to patch customers in the cabinets. He had become a one-stop shop.



Bruce at work on a bullet.



Bruce cleaning the patch leads to connect new customers in the cabinet.



Bruce explaining to Jonny Morton how the bullets work.

Bruce did a lot of hard graft for B4RN, but he always had time to talk to the community and let them know what was going on, advise them, or ask their advice about things. He says the difference between what he did at B4RN and all his previous jobs was that B4RN was never a proper job: it was fun, got him out in the fresh air (in all weathers) in some beautiful if remote parts of the countryside, and he was able to meet the local groups who were all desperate for and committed to getting the best broadband for their communities. There was also a lot of coffee, cake and laughs! He says he knew it was a brilliant project—it just needed people who had the time to give to make it work. He certainly gave it his best shot. JFDI.



Bruce and John Calnan, the Yealand champion, deciding on the order of blows to get the customers' fibre blown.



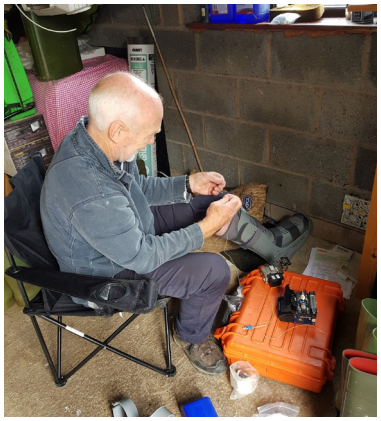
James Taylor putting up a reserved parking sign next to the door when Bruce hurt his foot.



Bruce's sign, on the window of B4RN HQ.



Bruce's sign, close up.



Bruce with his busted foot but still working. He had to fuse sitting down for a while.

(A fan tells her (unedited) story)

Appreciation for Bruce

The guy that had an affinity with the blowing machine was Bruce Alexander from Quernmore. He took to it like a duck to water and had the patience and perseverance to cajole the machine and maintain and manhandle all the extraneous kit needed to make it function. Bruce began by loading everything into his old Volvo and trundling it across the landscape to places an old Volvo should not have to go. Tractors often were called out to drag him out of places he certainly should not have gone.

When all the ducting is buried along smooth bottomed trenches with no difficult right angles or vicious ups and downs it is time to call Bruce, the man with the hi-tech blowing machine who can waft fibre beneath the landscape with astonishing speed. Bruce's job is an interesting mix of mega scientific, precision work and a lot of mud and clart. The blowing kit consists of a compressor, a curious thing that looks like a cross between a very small church organ and a miniature version of bash the rat, and a yellow box full of cogs and drive belts. All this kit has to be working seamlessly to effect a trouble free blow.



Once everything is set up on a venerable old trestle table the first job is to blast some air through the duct so that someone standing at the other end gets their hair ruffled to prove the duct is clear. The next thing is to blow some tiny sponges through to make sure there are no obstructive kinks or grotty bits of debris that could impede the fibre. With luck (and the following wind) the sponges shoot out of the far end and land somewhere across the field and it is most satisfying. A recent time and sponge saving method involves pushing the end of the ducting into a net onion sack, so that any water can spray out but the sponges are caught and no one has to go chasing across the field. However, if the sponges fail to appear then the fun starts.

By some mystic means Bruce is able to fathom roughly how far the sponges have travelled before they got stuck and here endeth the hi-tech phase. Bruce dons his wellies and waterproof trousers, in the knowledge that the next bit will probably mean he has to kneel in a bog and dig up the duct. Sometimes the duct can just be straightened and re-settled. On other occasions the glitch is more problematic and the duct has to be cut. If this happens, the blowing kit has to be moved to the problem site and the fibre blown on from there. It then has to be spliced together by the splicing team and covered with a breakout chamber. All in all it makes what could be a straightforward job very time consuming and really rather irksome.



On a good day, a straightforward blow can deliver fibre over a few kilometres. Progress is swift, problem free and very satisfying. This is how it should be and a good no hitch blow is the gold standard.

When things go wrong, occasionally they go very wrong and everyone involved gets that sinking feeling – metaphorically and often literally. Thankfully, Bruce is a cool, pragmatic and patient soul who stays calm in the face of adversity and perseveres when lesser mortals might well have kicked over the compressor and gone home.

He is a terrific asset to the project and were it possible to clone people a couple more Bruces would be top of the list.

Heavily involved with community matters, Bruce and his wife Jan have lived in Quernmore since 1986. He ran the village Post Office until it closed 2008 and was Clerk to both Quernmore and Caton-with-Littledale Parish Councils. When the magic of B4RN was first mooted Bruce had no problems seeing its huge potential and realised that a proper Internet connection would be absolutely essential to rural living, if we were not all going to dwell in the dark ages or be forced to move into towns and cities.



Abbeystead

Eileen Wallbank was a farmer's wife in the parish of Abbeystead. Much of the land is part of a large estate, and there are many tenant farmers. She was also the bursar at the local school. The school had a CLEO microwave connection via one of the local farms that could "see" a mast and could also see the school. It supplied them with 30Mbps on a good day, but that was not really enough, and there were plenty of not good days. At that time, 30Mbps was the best speed the network could ever do. On top of that, there was no mobile signal at all in the village, and the old copper phone lines were always dropping out so the dial-up did not work well either. Eileen was on dial-up at the farm, and it was driving her nuts. She heard about B4RN as the Quernmore project was getting underway, and she thought it was a brilliant idea, so she went to a meeting in Quernmore and met Bruce. That was all it took– Abbeystead got its champion, its first A ("Activist")! Barry gave a presentation at the Abbeystead village hall. Eileen went to the Day of the Spades, met and chatted to all sorts of people, and realised someone had to JFDI if high-speed internet was ever going to come to the village.



Cawthornes Endowed School, Abbeystead, the first one to get a free B4RN connection.



Barry at the Abbeystead meeting.

Eileen was determined to get it to her farm, and to the school. She went round all the local farmers and tenants and explained it all to them, and she managed to get many Adopters on board. Three local farming families then decided to dig for shares; in those days that is what people did, which kept the costs down and meant all the money raised could go into supplies to build the network.



Robert Taylor, one of the extreme diggers, working in Abbeystead.

William, Mark and Joshua (grandfather, son and grandson), John Metcalfe, and Richard Rhodes picked up the Quernmore dig and brought it to where Eileen's land started. Her husband and son, Alan and David, dug it almost to the school. Working with the farmers, Eileen helped plan the routes through this barren landscape to avoid obstacles. As they passed a farm, Bruce would install the house kits on the property, ready for fibre. The last bit of the dig was through a field, and she paid Robert Taylor to do that with his big digger, and to take it to the village hall where the cabinet was to be sited.

Another family, the Longtons, dug their own trench to their farm. Keith was a very good digger, and he dug a lot for the estate.



The road to a friend's house is never long. Keith Longton's dig healed up very quickly. Each farm in Abbeystead was reached.



Digging to the farms in Abbeystead.



Prior to Tom getting the reel trailer the farmers found other ways of reeling off duct and fibre.



Andrew and Robert Taylor in Abbeystead.



Robert and Tommy also did the road crossings on estate land.



A rocky dig between Quernmore and Abbeystead.

Once all the digging was done, it was time for the blowing.

Tommy was the main blower at the time, and was training Bruce and Chris Hall to blow too.

Bruce had already mastered house blowing, and on the first big Abbeystead blow, he was in at the deep end.

Half the route had been blown, reaching Hare Appletree and Monica in the summer, and the reel of fibre waited there until the dig to Abbeystead joined up.



Joining the route from Quernmore to Abbeystead. Zoom in to see how shallow the BT phone lines are buried, we have to go under them.



Frank Balassa and Chas Lee join Bruce and Tom blowing fibre from Quernmore to Abbeystead.



Chas Lee and Bruce on the last fleet before this Quernmore fibre joins the Abbeystead line.

The fibre left on the reel was fleeted out onto the ground, and the blow over the fell started. The next chamber was not accessible by car, so Bruce and Chas Lee set off on foot up the hill to catch the fibre and fleet it. The farmer brought the compressor and blowing machine up with the quad bike later.

Once the fibre was all fleeted out, it was blown to the next chamber, and the Abbeystead line to Eileen was underway.

Bruce fixed most of the house kits, as he had done in Quernmore and he arrived to blow the fibre to them. Once the house fibre was blown, it was fused inside the house and the router connected to it. It could not come live until the bullets had been done, and there were many to do on the route.

By the time the digs reached Eileen, Bruce was blowing the core fibres too. Eileen let him know when routes were ready, so he came with Alistair and blew the fibre.

The families helped with the blowing and kept everyone topped up with tea.



Carrying the fleeting gear up the fell, this blow will bring connection to Abbeystead.



A fleet on the way to Abbeystead.



A fleet being done at the top of the fell on the way to Abbeystead.



Walter holding a small bullet (an FST) which was fused in the house due to the high winds and dust outside.



Rhodes tea and rosy cheeks.



Walter in the windbreak.

We actually fused a bullet inside one house out of the wind and then rolled it back up in its chamber outside. Then Iain designed a windbreak that was easy to carry, so bullets further into fields could be done in shelter from the wind. There was an awful lot of rain that year. There was also a lot of wind, and they ended up carrying sandbags to weigh down the canopy, or stones, or empty reels. Though on nice days, just a windbreak could enable fusing to continue.

Meanwhile, the diggers were approaching the Abbeystead Community Hall, and preparations were underway to get an electricity supply to the cabinet in the car park and to get a duct into the hall. There was no mobile signal there, so a connection there meant they could install a VoIP phone, so people could call for taxis after an event and use online services in the building.



Alistair Adams Huset joins the blowing team in Abbeystead.



Peter Arnold and Tom loading supplies to deliver to digs.

Tommy organised deliveries of fibre and chambers to where they were needed. Then the fusers came to fuse the bullet at Eileen's farm. Alistair was a volunteer blower back then, helping Bruce.



Eileen brings tea and cake…

Alistair had started by labouring for Robert Taylor, soft filling the trenches before the digger backfilled them.

The weather was so bad the fusing of Eileen's bullet was done with the wooden bullet holder jammed in the car window to keep it out of the horizontal rain. It worked well, as a perfect fuse to the farm was made. Then poor Iain had to wind it all back up tidy and put it back in the chamber and he was full of cold. Eileen's chamber was accessible by car, but further down the line the fields were too wet to drive on, and a scaffolding tent was used to speed up the core fusing in bad weather. And Eileen kept the fusers well-fuelled with tea and cake.



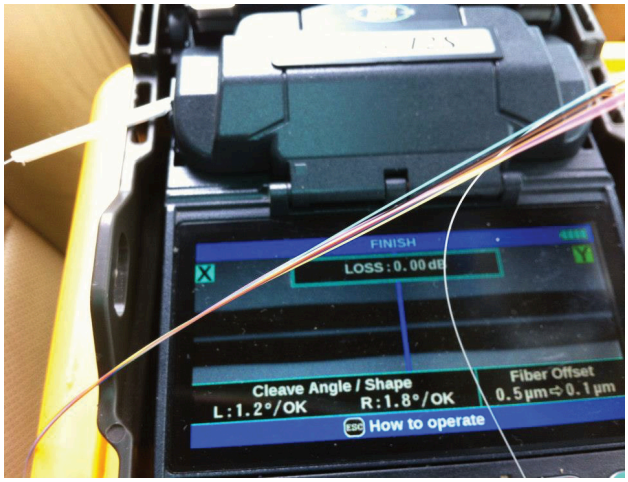
Alistair and Bruce blowing core fibre at Eileen's farm in Abbeystead. 17th May 2013.



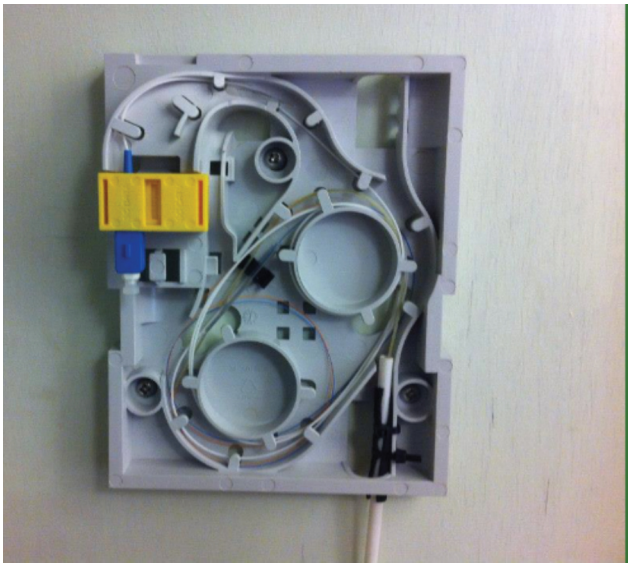
Iain doing the bullet to connect Eileen at Abbeystead.



Fusing Eileen's bullet with the FRBU holder jammed in the car window to keep dry.



Eileen got a spot-on fuse.



The house fibre blown and fused to a pigtail inside the FTU at Eileen's.



The router in position on the FTU.



Empty reels and sandbags holding the tent down in the high winds of Abbeystead.



The wind won. In Abbeystead.



David, Tom and Chris unloading fibre from Tom's van.



Doing Jackie's bullet in Abbeystead, with home-made scaffolding tent.



A sunny fusing day fusing the fibre where the Quernmore and Abbeystead routes join below Jubilee Tower.



Cat testing for utilities at Abbeystead.

Tommy masterminded it all and brought in Mark Bell with a digger. Iain Robertson came too. The cabinet was already in place next to the recycle bin in the car park. They first of all scanned for metal pipes with the CAT scanner, and then used ground radar to detect a suspected duct and for water pipes. Tommy had marked the line he had to follow, and the gravel went to one side and the spoil to the other.

We made a film about it all, and when it was done, there was tea. All this work was done even while other communities were still sceptical that it was all going to work.

Eileen was still one of the early ones—a real Activist who brought other local farmers on board.

Once the village hall was installed, the estate got interested, and the estate manager Neil Kilgour, joined by Harry Balderson, who led the estate workforce, asked to meet Eileen. They were keen to get all their properties signed up, but they needed someone to talk to all the tenants, so Eileen got to work. She printed leaflets and went 'round to all of them and got them to sign up.

There were one or two elderly tenants who were not interested at first, but they all seemed to come 'round in the end as word spread. Again, Eileen chatted to farmers and organised routes to them all and got wayleaves.



Iain Robertson fusing in the snow.



Cobble mining to get the connection to old estate houses.



The routes extend to the remote properties at Lower Lee.



Cobble mining.



Tommy, Phil Durrow and Chris Hall blowing fibre to Lower Lee



One of the Lower Lee families helping out.



Alistair and Frank (with a mosquito net) finishing the Lower Lee bullet.



Happy customers at Lower Lee.

The estate owned most of the land, but the tenants needed to be up for it too. The local landowner bought shares for all his farms and properties, and his estate workers dug the network into the whole parish of Abbeystead at the southern end of Phase 1. They even did cobble mining.

Harry supervised the estate workers, who dug the routes to all the properties, and nobody was missed out, even the farms farthest away.



Laying the trench to the village hall at Abbeystead.



Abbeystead Hall install.



Mark Bell, digging the trench at Abbeystead



Trench filled in, and Tom whacking it down level.



Everything stopped for tea. At Abbeystead.



All done and dusted.

On the short film produced by the One Show, the manager of BT Openreach had said farms like that would be impossible to reach, but we got there. Harry and Eileen proved him wrong.

BBC Look North also came to film, as did a Russian News company, and Eileen had her first TV appearance. She still thinks about it as it was "a real thrill and something I had never done before," she said. And they also interviewed Dr Nicholas Race from the Wray project that had started it all.



BBC One Show interviews Brendan Dick, head of Openreach, where he states that 'with the best will in the world, BT can not deliver fibre to this remote area'.

Then came all the digs and blows from the cabinet to all the different farms and properties on the estate. Some were extremely difficult ones, and much fleeting was done. We found out later that the estate diggers had been given the wrong (or not enough) training, and the trenches were not as smooth as they should have been.

Nevertheless, the team would not be beaten, and they dug down to each blockage, fleeted, blew again and got it through.

Then we had tea.

Beyond the book:

B4RN FTTH Abbeystead Video

BBC North West features B4RN

BBC OneShow features B4RN



FTU installed at Abbeystead village hall.

We were learning as we went along. Word spread about the problems with the trenches, and the standard of digging improved. The rest of the routes continued to be dug by the estate workers, the farmers, and contractors.



Refreshments at Monica and Chas's house after the blows.

The weather continued to be horrendous all through that year. You could more or less guarantee that if there was to be a blockage it would be in the worst place possible – but Bruce could always find it and fix it.

The canopy that Iain had designed allowed the fusers to work under it if the wind was not too strong and if the Prince's Freelander could get us there. There were some lovely views from the office.

All the blowers and fusers were volunteers throughout the early years, but they got where they had to be, and all the routes were done, dug, blown, enclosures fitted and fused.

Frank Balassa took charge of the cabinets doing both the electrics and the fusing of them with his team at this time. He built a bespoke trailer to work from. (More in later chapters).

Shortly after, Frank, Bruce, Alistair, and Iain were able to be reimbursed with shares (as we still could not afford to pay anyone because all our money had to go into materials). Demand was growing.

Deliveries kept coming as people bought shares, and if you did not keep an eye on it, then the volunteers from one village would nab the duct that was intended for another village.

We could not afford more duct until more money came in, and it was all a case of managing our herd of cats as best we could. Because word kept spreading about the amazing speeds these communities were getting, it actually prompted more to think: if they can do it, why can't we? All it needed was someone to step up and recruit their own team. And the tribe kept growing. Once they decided to JFDI, it was full steam ahead.

Whilst the Abbeystead project was underway, people from Dolphinholme in Ellel got in touch with Eileen, and she met them to discuss how they could join. Dolphinholme was not really in our plan for Phase 1, but the trenches were very near to them, and they were very persistent. On top of that, Eileen had land and a bungalow in Dolphinholme, and once she got a taste of B4RN speed, she she wanted it there as well.

Eileen paid Robert Taylor to dig her Dolphinholme land, and she persuaded the other farmers to let the duct run through their properties, too. She met Dolphinholme's Allen Norris a few times, and she encouraged him to get the village on board. He had a great team of people and carried on to have a successful project. More about Dolphinholme later.

Eileen used to buy her computers from a local company in Lancaster, which also did upgrades and repairs. The company, Black Box, has since closed down, but she remembers going in once, and Mark, the owner, asked her who her internet provider was. She said B4RN and told him that she had a gigabit connection. His jaw dropped when he heard how fast it was, and he said he was jealous. He lived in Caton. A few years later, when she went in again, he delightedly told her he was also on B4RN. "I've got it!" he exclaimed. And she was tickled to think she had got it up to her hilltop farm before a big village in the valley got it. That was the model: we did the hardest bits first.

These days, Eileen says the connection has been brilliant—at home as well as for all the farm work and at the

school, where she works as a bursar. It's also been great for the children and teachers. The world now comes to them.

She was one of the first farmer's wives to be trained for digital VAT returns, and she says the connection has made her life so much easier. During the Covid pandemic, they had Zoom meetings, and all the lessons from school worked because all the children had B4RN at home, too.

Other schools in the area have contacted her, and she has encouraged them all to take up the B4RN service, which is provided free for small primary schools.

The motto upon the old stone, "Vel doce vel disce vel discede" ("Either teach or learn or depart") may well be taken as the motto of the School.



Photo credit to *Lancaster Guardian.*



INSCRIPTION : ABBEYSTEAD- SCHOOL.



Photo credit to *Lancaster Guardian.*

Wray



Some of the Wray volunteers.

Of course, when herding cats, some will go their own way. Around the time that Abbeystead and Dolphinholme were well underway, and Arkholme at the other end of the network, we also found at this point that a marooned village started to install all the houses with no sign of a core duct anywhere near them.

This was the village that had been Lancaster University's Living Lab, the project that started it all, and the villagers certainly knew how useful the internet could be.

Wray had contributed a lot of money in shares to the project by this point, and they were itching to get going. As mentioned earlier, it would be the biggest village in Phase 1—229 properties—so it was the closest we would get to a "city." Some villages in the project consisted of only 6 properties!

Wray would bring in a lot of connections in one hit. We had to get there to start making money and paying some staff instead of relying totally on volunteers.

The villagers launched a campaign to raise awareness of the benefits of joining B4RN, and the majority got on board. Local activists went door to door to explain things to people who had not heard about it.

The village decided that, even though the digging had not reached them from Arkholme, and the Quernmore dig had not reached them yet either, they would get going and get all the village ducted up, so they were ready for when it did.



Wray volunteers spreading the word. Iain Robertson, Shirley Worrall, Judy Robertson and Jan Cookson.

John Yellowly was one of theWray champions, and his job was handling the complicated spreadsheet and maps, and checking the location of utilities. He mapped the routes around the village and planned how each house would get its duct, marking the field for the contractor. Wray used a lot of multicore duct, and John kept detailed records and photos of which duct went where. Sometimes, several cores would go through a wall in one go to reach several properties. In future years, John could mark out where the routes went when any work was done on the field. The community team collected wayleaves and organised the diggers.

The volunteers ran multicore (24*7mm +1*14mm core) round to the back of everyone's house and the householders dug it to the property, with help from the volunteers if needed. The volunteers also worked with the digger men and backfilled the trenches to cover the duct with soft fill before the digger completed the job and put the sod back on. They split out the multicore at each property and marked it all down on John's spreadsheet for the blowers. Each duct had a number stamped on it so you could tell which went where when you looked in the chamber.

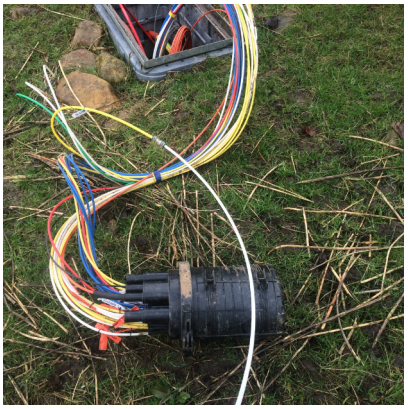
John : "Tony Bateson (locally known as 'Baco') used his Fergie tractor to help us lay out the duct. He was also instrumental in getting the ducting from behind Home Farm Close and into the lower end of Main Street, where it continued at high level across the terrace of houses, across a driveway and into his own property".



Several multicore ducts going under a fence.



Multicore ducts being moleploughed under a road by Tom, and Robert Brian and Phil helping John get it through.



Multicore customer duct in a bullet, each one numbered.



Splitting ducts off from the multicore into houses.



House ducts going under hedge.



Field markings showing where the duct is.



Backfilling the trench with soft fill.



The road crossing into the school field.



Phil Wring and Keith Wilson digging the chapel car park for the cabinet.



Rob Staveley's first chamber for the chapel in Wray.

Across the north side of the village they laid a 7x16, 4x16 and a 24x7 in the same trench. They used Tommy's impact mole to go under farm tracks and hedges.

Brian Kirkby was the digger man, and Phil, Keith, John Y, John D and Bob brought the duct and laid it out. Keith Wilson, despite a bad hip, spent whole days backfilling trenches as the others put the duct in. They also did a lot of hand-digging, especially in places where the digger could not go (like people's gardens). Barry then had to find enough money for the Wray cabinet and equipment, and he sited it at the Methodist chapel. Phil and Keith hand-dug the electricity and duct to the cabinet.

The Staveley family, who farmed in the village—mother, father, and son, Rob, had dug round the back of the village to the chapel. Duct was taken right round the school field to reach a lot of properties.

The B4RN team organised a road crossing from the school field to the bottom half of the village and the route to Lowgill and beyond.

The villagers kept asking when the main core would reach them, but it had stalled about three miles from the village where it started to come down from the fell. There were only a couple of farms on the route, and they did not show much interest initially. The villagers motivated them, and they also raised more money to pay Keith Sykes and Malcolm Woodhouse as contractors to dig in the core over to the connection coming from Quernmore. The dig was also progressing in Quernmore to join the Extreme diggers of Roeburndale thanks to Robert managing to get wayleaves. Keith the postman started that dig.



Keith starts the dig out of Wray, to Lowgill and the Bobbin Mill.

At long last Barry got enough money to do the road crossing out of Wray to connect the Eastern branch of the core. It was a real milestone in the project as we finally had enough customers to cross the break-even boundary. At last we were able to pay all our operating costs.



The long awaited road crossing out of Wray and onwards to Lowgill and Yorkshire.



Bobbiners levelling the trench.



Malcolm Woodhouse digging up from Wray.



Malcolm Woodhouse and the volunteers digging up from Wray.

The bobbin mill gang took over the trench work, as this route would pass their group of houses on the way. The bobbin mill had been an industrial factory in the nineteenth century but was now housing. Robert Partington, (aka Bob) one of the Bobbiners, had been pivotal in getting wayleaves over the fells to get the connection to Wray. Malcolm Woodhouse took it up the field to the first farm. Then he branched off and took

it to the woods above the bobbin mill. The Bobbiners bought a special duct to take the B4RN duct through the woodland and protect it from squirrels, and they got it to their houses. They then had a manic weekend when Andy borrowed Keith's digger and, armed with spades, they dug to almost every house round the mill. Two more houses were done a bit later, but the majority were done in that one weekend. Robert had been helping in the main village, so he had learned all the tricks to make the operation as slick as it could be. Digging (and many tea breaks) continued. It was backbreaking work in all weathers.



Even Bobbiners stop for tea.

Once they got past the bobbin mill, the main village dig was done, and all the volunteers concentrated on getting gardens dug and house kits fitted.

The dig went through Botton, and different farmers all dug their own land on this section, as they knew it better than anyone, and there were some very tricky bits to get through, including an alluvial plain. Some of the terrain was bog, some peat and some heavy clay.



Bobbiners laying duct in the trench.

Our job as volunteers was to make sure that whatever the land was like we got the bottom of the trenches flat, and the duct covered with something soft before backfilling. The diggers dug, and the volunteers made sure there were no stones in the trench and the duct was safe. As the weather improved, it meant that in some areas we could use a mole plough, and we could cover long distances with very little impact on the land. Preparation is key to using a mole. The landowners need to let you know where drains and utilities are. Usually drains are three feet deep, so the mole does not bother them. Little gullies, fences and hedges have to be dug out by hand or with a digger before ploughing, otherwise more joiners need to be used on the duct, and joiners often cause issues. Unless the tractor has its own reeler, it is best if all the duct is rolled out first. If there are any utilities on the land (phone, water or electric), we use a CAT scanner (Cable Avoidance Tool) and ground radar to locate them. Then they are dug down by hand before the mole comes near. Often our duct is threaded underneath them, as they tend to be close to the surface. Wray's job, as well as the village dig, was to join on to where the Extreme Diggers had dug over the fell the year before. They had to raise the money to pay for all the supplies and to pay the contractors and help them do it. This route continued to Lowgill via Thrushgill, but yet another route was underway to get to Quernmore.



A tractor mole plough in action.





John Day, Phil Wring, John Marshall and John Yellowly working on the Roeburndale dig to join to the Extreme Diggers and to Quernmore.

Many branches were growing from the trunk. Another route left the village and went up the other side of the Hyndburn valley and Yorkshire, and yet another went to Wennington and again on to Yorkshire and also Cumbria. The village had a lot of work to do!

And even with all that digging, the lynchpin was a route over the fell that would ultimately bring Wray and all the areas west of the Lune live. The route up the fells would be a challenge, as the peaty land was still waterlogged, and it was a dirty job.

John Marshall, John Day and Phil Wring joined John Yellowly for most of that dig, and they got very muddy together helping the contractors. They took duct to all the farms on the way, and the farmers and residents came out to help them, but the bulk of the work was done by the few.

Halfway down Salter Valley a chap at the other side of the valley dug his own duct to the chamber where the above photos were taken, and joined his farmhouse on. George Gordon already knew how to dig the duct as he had been volunteering at Quernmore the year before. His story comes later,



Dave Bissel digging the multicore out of Quernmore to Littledale.

The start of the route to Wray was in Quernmore, Tony Swidenbank had moled it from the hub at the Rec before the weather turned bad in 2012, but now it was so wet it had to be dug. Dave Bissel dug the first bit to Littledale that would join other routes. The duct he used had 7 separate cores in it. Two of these ducts were on their way to Wray,

Once the duct was to the chambers, Chris Hall, Bruce, and Alistair blew the fibre from Quernmore to Wray, over the Littledale fells. The sponge proved the duct was blowable and all the joints were intact. Then the blowers would start the blow and the sponge catcher would catch 20 metres of fibre and roll it up into the chamber to wait for the fusers to come. Once the fell blow was done, the blowers moved into the village to blow the routes from the cabinet around the village and off to other villages, too.

Iain, Chris and Alistair were the only fusers at this time, and by this time, they were using the "spray tan tent," which Iain had bought at a fraction of the price of a proper tent. Our proper tent had been destroyed in bad weather at Arkholme. This new one eventually followed the fate of the previous tents, and many chambers were fused in the shelter of cattle trailers loaned by farmers on this route.

Once it was blown the Quernmore route was terminated at Wray cabinet. At the same time, the dig from Wray progressed up the other side of the fell to Thrushgill, and the weather got a bit parky, but the blows went on. This was the route that would connect Iain and Judy, and then swing around, picking up additional farms on its way. Walter came up to visit and helped with all these blows. Lowgill was the next stop on this line, this was their second route in, and the Keasden cohort started making noises.

We were approaching Yorkshire from three different routes now, and starting to knock on Cumbria's door. Malcolm and Keith were digging to take the core to Lowgill, Thrushgill and east to Yorkshire. Meanwhile, another route out of Wray headed to Wennington and northwards, with TP Metcalfe digging, with another going to Millhouses, mainly dug by Brian.

Wray had turned into a super-hub, growing many branches, From the back of Wray, the route coming in from Quernmore branched off to Brookhouse and Hornby,



The Thrushgill blow.



Mike Winstanley helping with the fibre blow from Wray to Quernmore. This was his practice run for when the duct reached Millhouses.



John catching sponges on the fell blow to Quernmore.

The idea for B4RN was sparked at Wray, and it now became the critical part of the network that would enable it to scale dramatically. Meanwhile the intrepid diggers had set off back up the hillside to reach the next village in Phase 1: Lowgill. There would be two routes going there, the first one from the road crossing and the second one over Mealbank to Millhouses.

Their own chapters follow.

Wray dug over 34 kilometres of trench to connect its properties.

Once the fibre was blown over the fell and Wray came live, we finally passed the 300 customer mark, which meant we were cash-positive. Over the next few months we hit the 600 mark, which meant we could take on staff at last. Our first staff member was Alistair.

Alistair Adams-Huset



Alistair blowing fibre.



Alistair blowing the fibre over Littledale.



Alistair in the spray tan tent.

Alistair had started volunteering when digging was going on in his parish of Abbeystead. He followed the digger and backfilled the trench as it came closer to where he lived. He had just finished university but could not apply online for jobs and wanted the internet very badly. He was spotted by Bruce and Iain, so he got his start on the blowing team first. We then showed him how to fuse, and it turned out that was where he excelled. He was soon fusing faster and better than any of us, so we sent him off to Lucid, a fibre optic training company, for further training. He learned a lot more technical stuff than we knew and came back and taught us about Optical Time Domain



Alistair's first fusing experience.

Reflectors. (OTDR). OTDR machines meant we could measure the length and quality of a fibre route with just one simple machine. It was revolutionary. A beam of light pulses down the fibre and a computer programme measures it accurately so you know where every join is and where a break occurs.

A slight speck of dust can ruin a fuse, which is when two tiny fibres are joined together. We used various methods in those days to protect ourselves and our fusing machines from the elements. Iain was the master of invention. At first we had fused out of his boot. Then he designed a table which was the right height to save our backs, and a portable windbreak so we could fuse in a bit of a breeze. For wet days we tried tents, but they did not last long. Sheena's old Land Rover got us to places where our other cars could not.



Iain and Alistair working out of the back of Sheena's Land Rover.



The volunteers bring umbrellas for Alistair.



Working out of the back of a cattle trailer with a view.



The late blow to Quernmore from Wray.

Often a volunteer would be handy with an umbrella. Alistair did not like rain at all. We mainly fused in the back of cattle trailers, and despite the different makeshift conditions, we could not complain about the view from the office. Eventually after trying many shelters, Iain designed the bespoke trailer, so that we could fuse in warmth, light and comfort.

It also doubled as the canteen. Having survived self- catering at Uni, Alistair often brought home- cooked stuff instead of sandwiches. (As a matter of interest, he bakes exceedingly good cakes when it is someone's birthday too. A man of many talents.) Alistair now leads the entire core team of fusing staff, and he has trained many local youngsters. Lucid has also certified them, so many of them now have great jobs with B4RN.



Working in the bespoke new trailer.



Alistair's canteen in the new trailer.

George Gordon

George Gordon, who had helped with the digging at Quernmore, saw the duct coming down the opposite hillside to Wray, and so he got digging himself. His farm was within sight of one of the West Roeburndale routes. He lived in East Roeburndale. Between them was a big valley with a river at the bottom. To get to the other side, he had to drive all the way down to Wray and back up the other side of the valley.

This was a real challenge for fibre. The choice was either to take the (very) long route, or cross a river. George, often referred to in the village as "the other Jeremy Clarkson" because he looks, talks and acts a bit like him, was undeterred and set about the task.

To cross the river he built two stands to hold towers that spanned the river with a catenary wire to hold his duct. He protected it with alkathene pipe. He had to cart concrete up and down the valley for a few days, but the crossing got built. He then had to dig up both sides of the valley, lay his duct, and backfill it all. He did not complete the backfill until after the fibre was blown in case it had a blockage and had to be dug up. He got the duct to his house - actually two, in case of future needs and to save doing it again.



Dave takes his photo to take back to the office.



Discussing the problems…

Dave Rames from Emtelle came to help and advise on this blow. Because of the zig-zag over the river, it was over a kilometre long. We had never blown house fibre that far over such difficult terrain, and he was interested to see it, too. He could not believe his eyes when he arrived at George's house, and he took a photo to take back to the Emtelle office. He had brought a bigger and stronger blowing machine than we had, but Bruce and Chris really wanted to test ours to the limit. Plus, the danger of a stronger machine was that the fibre could be damaged. After some discussion, it was decided to use our own blower. Meanwhile, another discussion was held about the madness of it all, and we waited until Bruce got to the other side of the valley with the walkie talkie to confirm he had "air." The sponges were blown through, more coffee from George's cappuccino machine was drunk, and the fibre blow started.

Bruce came back because it was going to take a long time, and we suspected there would be some digging to do...

... sure enough, the blow stopped and George and Bruce went off to dig for the blockage. Chris stayed at the helm and set the fibre off again when they cleared it.



Waiting for Bruce to ring to say the fibre has got there.



Chris hearing from Bruce that the fibre has at last arrived at the chamber.

Eventually the fibre blowing through the machine had been measured to roughly the right distance, and Bruce set off again to the other end and confirmed it had indeed arrived at the chamber into its blowing tail. There were great celebrations and more coffee. The house fusing was done and a router supplied. The following day the fusers arrived at the chamber. George came live on 30th January 2014.

Once it became known that Wray was mobilising and there was progress over the mountain, the Lowgill and Wennington teams started their core routes. A new group, B4YS had started up (Borwick, Yealands and Silverdale from the Arkholme cabinet). Dolphinholme had started from the Quernmore/Abbeystead lines. B4SW (Broadband for South Westmorland) also kicked off. It was a manic few years to be sure. So far everything which had been done had been organised and planned by Barry, and built by the management team and volunteers.

When we reached Wray we got our customer base high enough to pay backhaul costs, and the more customers we added, the closer we got to hiring admin staff to ease the load on Barry.



George did not backfill his trench totally until the blow was complete in case they had to dig down to a bend or a blockage.



The following day Iain and Alistair, the fusers, arrived at the chamber. George came live on 30th January 2014.

Dolphinholme



Dolphinholme was at the Abbeystead end of the parish, and again not in B4RN Phase 1, but that did not stop them in the slightest. Whatever it took, this group was determined to get a gig. Allen and his cohorts armed with mattocks and pickaxes took up the challenge.



John Klotz, Graeme Chapman, Donald Hantom and Allen Norris

The Dolphinholme story

by Allen Norris

In February 2012 Andy Collinson alerted Suzette Heald that someone in Quernmore was touting a project to bring high speed broadband to rural villages. Suzette and others in Dolphinholme had been talking about setting up a Residents Association following earlier discussions about establishing a Neighbourhood Forum for Dolphinholme. The fact that Dolphinholme is split between two parish councils and two local authorities means that we lacked (and still lack) a single voice for the whole village. Suzette sent an email to Barry Forde who agreed to come and talk about his ideas. At the meeting Barry explained that Dolphinholme had originally been placed in Phase 2 of the proposed B4RN project. This was in part because it was thought that broadband speeds in Dolphinholme were similar to Galgate (i.e. 2-30 Mbps). We were able to show that, on the contrary, 'broadband' speeds were non-existent and we were lucky to achieve the 56 kbps dial-up speed!

Barry explained that we might join in Phase 1, if we got enough people interested and committed investment. The gauntlet had been thrown down!

Under the auspices of the yet-to-be-fully-constituted Residents Association we called a public meeting. After receiving enough expressions of interest, we set up the Dolphinholme B4RN Action Group (DB4RNAG) led by Allen Norris, Suzette Heald, Andy and Liz Collinson. We were quickly joined by Sam Ud-din, Graham and AnnaGerd Chapman and Graeme Chapman.

We realised that we had two initial tasks. First, we had to raise awareness of the project and convince enough people to both register their interest and indeed purchase shares, since we needed to raise around £75,000. This was no easy task for a village with only some 120 homes. Second, we needed to map out a possible route for the ducting and then obtain wayleaves to access the land. Dolphinholme had some advantages in this case, since much of the village is surrounded by the Duchy of Lancaster on one side and the Abbeystead Estate on the other. This meant that there were relatively few landowners to convince.

To raise awareness we issued our first communication flyers in May 2012, Broadband in Dolphinholme. At the time Dolphinholme had two main means of communication. There was the long established village monthly magazine, The Grapevine, and as chance would have it, the nascent Residents Association (DRA) had recently set up a closed email newsletter, The DRA Newsletter, courtesy of Tim Hucklin, who ran Ictis (a technical software company) and lived in the village at the time. These two channels together with a new closed email newsletter, DB4RNAG Newsletter, were to prove invaluable in raising support for the project.

We produced a whole series of flyers which were distributed at various village meetings both in the Village Hall and the Chapel Rooms as well as the Fleece (the local pub) and the Church. In addition to our own public meetings we also set out our stall at other village events, such as the Easter and Christmas markets.

Gradually we began to attract a number of people who were prepared to take the risk and actually purchase shares, bearing in mind that, at this stage, there was nothing really on the ground as security. An advantage we did have is that there were many people in the village who could see the potential benefit of high speed broadband, not just as a nice to have but as becoming a necessity. We were also aided by a considerable groundswell of feeling that we had been misled by BT for far too long about the prospect of getting true, affordable broadband connectivity, and if we really wanted to get anywhere we were going to have to do the job ourselves.

From the discussions we had with Barry Forde, Chris Conder and others, we understood that the declared objective was to get the core duct to the boundary of every property in the village. As a matter of principle the offer was to be made to everyone who wanted it, although not necessarily at the same time.

Dolphinholme is a village in three parts with considerable areas of farmland between the three parts, Dolphinholme, Four Lane Ends and Lower Dolphinholme. (Now, the Bowland View estate adds a potential fourth part, which is a matter of some concern, and something B4RN may help with.)

Fortunately most of the village properties back onto farmland or are very close to farmland, all of which made access to homes more straightforward.

With this in mind the action group started walking the fields and boundaries to try and map out potential duct routes. We knew that there would need to be a cabinet and that the cabinet would need electrical power, so the logical place to put it was the village hall. We obtained the consent of the Village Hall committee and identified a piece of land which bordered open farmland right next to the carpark.

Dolphinholme is surrounded on three sides by the Duchy of Lancaster. At the start, obtaining wayleaves from the Duchy was problematic, mainly because we were dealing with land agents who really had little idea what we were talking about. Fortunately Barry, Chris and the other 'founders' had been talking to the Prince's Trust about possible support and were getting encouraging responses. Once the Duchy agents realised that, things became much smoother and eventually we received a wayleave that basically allowed us to go anywhere provided the incumbent tenant agreed.

A similar situation existed in Abbeystead where the Duke of Westminster wanted B4RN and similarly gave access. The remaining farmers surrounding the village were, with one exception, keen to have the service, so wayleaves were given. One farming family however simply refused wayleave permission because they thought we were hiding something. This meant we had to change our planned route to one part of the village. This delayed service to other properties on that route for a number of years. The B4RN management decided to exclude this farm from the roll-out, a situation that still persists.

One other issue was whether householders should provide a wayleave for their own connection. It was clear that where ducts to another house were crossing the land, a wayleave was needed, but some thought that this was not necessary for individual households crossing their own land. The Dolphinholme team felt this might be unwise and have continued to seek wayleaves from every household . We felt it helped people feel more involved and helped with mapping and record keeping.

In all cases actual detailed access was agreed with the landowner. Typically we tried to route ducting around the edge of fields some two metres from the fence line, the idea being the duct was unlikely to be disturbed by fence posts or supporting posts. In gardens we normally went along the fence lines, but this sometimes became quite complex when we had to avoid garden features. In theory of course the householder was responsible for putting this duct in, but we found that by offering to help as part of a work team, things went much more smoothly.We also tried to keep our own copies of wayleaves, the late Graham Chapman acting as 'wayleaves officer' something that has proved helpful several times since.
All the route details were lodged with the B4RN office and plotted on Google Earth. This system proved rather limited during actual construction, so we plotted out our own 'duct maps' showing the location of each house duct and the links between them. This could be printed out and handed to the team actually digging as a reference, and any deviations could be noted and amendments made. In the early days this proved invaluable.

A further consideration in route planning was the presence of existing underground services. As a team

we were lucky that one of our members, Jane Entwistle, is a fully qualified civil engineer. Her assistance in locating plans of existing services proved invaluable. We were trying to route through open countryside as much as possible to avoid existing infrastructure; but where we had to get into more developed areas, this was more difficult. The main exception to this was the gas pipeline that runs next to the village. Fortunately the farmers are well-versed in the protocols to be followed near the pipeline. We were also given the contact number to call to avoid any confrontation which can occur if the daily helicopter spots activity near the pipeline of which they have not been informed.

As mentioned the presence of existing underground services needed to be managed. Although we had access to plans, one can never be absolutely certain of their accuracy. Where main electric cables were concerned these had to be at a depth well below that at which we were working. Nevertheless we initially borrowed CAT (cable avoidance tool) scanning equipment from builders in the village (ideally with an operator) since we had no training in interpreting the readings. B4RN later acquired its own CAT equipment, which we borrowed by arrangement. In addition, when we were digging in the area of Common Bank, we borrowed a ground radar kit. It turned out that we had someone in the village who was familiar with this equipment and had used it to help the Home Office scan for bodies. (Ah, the advantage of living near a university!) Despite such kit, we still proceeded with great caution. When we were digging in the vicinity of power or gas services, no power tools were used; it was hand-digging only, on the assumption we would locate the services before causing any damage. Furthermore we did not use pick-axes but only a flat-bladed mattock to reduce the chance of inadvertently penetrating the services. For drains we lifted the nearest manhole covers to assess the invert levels and used this to guide our digging.



Dolphinholme Bridge crossing.

As we were all volunteers, there was a considerable variation in the familiarity of using tools etc. Those with more experience gave safety briefings to others. In effect we were conducting risk assessments at each stage of the dig, guided by the duct and route plans, the service plans and any additional information. We also tried to match more experienced 'tool operatives' with those less experienced, and also tried to match jobs to capabilities. As you might imagine, this was, on occasion, an exercise in herding cats as well as managing the bloody-minded.

Our initial plan showed that we would need three road crossings in the village, one over Wagon Road, one in front of Corless Cottages, and one across Starbank Lane. Now to cross the public highway required permission from Lancashire County Council and the use of a certified highways engineer. The latter was not too much of a problem since one of our supporters owned a construction company who employed such a team and agreed they would help. Getting permission proved more of an obstacle. One

would have thought we were trying to cross the M6! There was talk of road closure orders, traffic diversions and miles of red tape. It took months but we managed to persuade the Highways Department to send an engineer to actually talk to us and see what we actually wanted to do. When he eventually came and saw this team of fairly ancient, shovel-toting enthusiasts, I think he was a little taken aback. But we clearly impressed him because he finally agreed we could control the traffic with Stop/Go signs, and talk of closure and diversion ceased.

Permit granted, we set to work one Saturday morning at 7:00 and by 10:00 all three crossings were in and resurfaced. In all that time we saw one car and a horse, and the horse simply stepped over the trench! Dolphinholme Bridge presented a greater challenge. Our first thought was to suspend the duct's hangers over the side of the bridge, the hangers having previously been used to carry the old mill gas pipe. This did not work, so the only alternative was a bridge crossing. It took considerable research to establish what was already in the road over the bridge. This time we had to use the full works of road closure orders etc. By this time however we had some working infrastructure in the village so the powers that be were putting up much less resistance.

One of our first exercises was to go over to Gressingham to meet John Hammett and see how the team over there was working. B4RN's Chris Conder introduced Liz Collinson and Allen Norris to John. John showed us how they had laid out their trenches around the buildings and then rolled the ducting out into the trenches. He then showed us the 'riddling' technique to remove large stones from the immediate fill. This lessened the chance that the weight of fill would kink the duct, which would have prevented the fibre being blown. Another thing we learned was to cover the ends of the duct to stop water getting in. Now ideally one uses little caps to seal the ends, but in these early days such items were in short supply. So we learned another technique to seal the ends with the infamous black duct tape. Done correctly it can be very effective. Seeing the duct in the flesh, so to speak, also brought home the need to label each duct, since they all look the same in the ground, and it is easy to lose track. At this stage we were also trying to put indicator tape over the initial fill to act as a warning to anyone digging after us. Getting indicator tape that said Optical Fibre was difficult, so in most cases we used electrical warning tape. We were forever running out of tape and so often used it only where we felt a later digging was more likely. Other issues we discussed with the Gressingham team were how to get under hedges, and the 'little matter' of dry stone walls. In the latter case, putting a trench either side of the wall and knocking an old piece of scaffold tube under the wall often worked. Later we obtained a six-foot crowbar which was useful as a drill to lead the pole. A further refinement we added later was to put steel wool into the end of the pipes after the duct was through; this blocked the end and hopefully makes it less attractive as a home for a rat.


Iris Rogers RIP.

One outstanding memory is of our first 'official' days digging. I arrived at the field behind the church at 7:30 on a Saturday morning. It was pouring with rain and there I found Iris Rogers in wellies already digging with a spade. True Grit!



Backfilling the trench by hand, Wendy and Donald Hantom

Our initial method of working was indeed with spades, hand-digging a trench some 200 mm wide and 600 mm deep and removing projecting stones from the bottom of the trench. Once a suitable length of trench had been dug, we manhandled the duct into the trench. We then worked our way along the trench backfilling by sieving fine material over the duct to a depth of some 200mm.

The idea was to protect the duct from sharp kinks or stones. Once the initial soft-fill was in, we back-filled the trench with the coarser material to just above ground level and allowed it to settle. We knew farmers would not welcome any large stones being left on the surface to catch machine blades, so we removed them to the side of the field. We quickly realised that this was a very slow process, so we got the okay from the B4RN office to hire James and his mini digger.

As we were still backfilling by hand, James quickly obtained a very narrow bucket for the digger. This reduced the width of the trench and therefore the amount of back-filling required.

We also found that a Bulldog trenching spade is a great asset. Not only did this dig a narrower trench, which reduced the amount of backfilling, but with a stout blade and long handle it exerted very considerable leverage, excellent for moving the many stones we encountered. Later our trenching spade suffered the misfortune of contact with a tractor. I took it to the manufacturers in Wigan for repair. Not only did Bulldog re-handle it for me, but they also donated a second trenching spade to the cause.

The steering group had decided that the first building to go live should be the Village Hall. We felt this would provide good publicity because anyone in the village would have access to hyper speed broadband should they wish, and also hopefully tell their friends and family, spreading the message.

We decided to have a formal opening to which the village, the press including local radio etc. were invited. We set up a whole series of demonstrations to illustrate the benefits of hyperfast broadband. These included streaming a film and linking that to a digital projector, transferring large files to the cloud, email and even working in the cloud. The event was scheduled to start at 7:00 pm. At around 5:30 pm everything was tested and working fine. At around 6.00 pm we had no internet. A rapid check of the cabinet and the router showed both appeared to be working fine. A series of phone calls were rapidly made to B4RN and to Barry and Alistair who acted as the technical team. They quickly established that there appeared to be a cut in the fibre near Abbeystead. Investigation revealed that North West Electricity was working on a substation near Abbeystead. They had dug a trench to expose their cable and in doing so had cut our fibre. Worse, they had left the site with an exposed electrical cable with no indication whether or not it was live. This prevented us getting in the trench to repair the fibre! We now had a real problem. It was too late to cancel the launch, so what could we do? The group decided to go ahead with the opening, and explain what had happened. We then went through all the demonstrations

we had planned, explaining in detail what people would have seen had the internet been available!

Well, the reaction was amazing. Not only was the audience behind us but local radio featured us and we even featured on the NW Tonight television broadcast. Far more people signed up for the service than we could have hoped, giving us a real triumph over adversity. The service was back up the next day, and in the following weeks we converted a lot of prospective customers who had heard what had happened into new customers, and connected them. You could not make it up!



AnnaGerd and Allen showing the routes the trenches took.



Andy showing other routes the trenches took.



Lots of discussions about routes the trenches took.

Just as we had benefited from visiting Gressingham so see how they were working, so we were happy to show others what we were doing. There were a number of show and tell days where visitors (some bused in by the duct suppliers Emtelle) came to see what we were doing. These included people from other parts of the country interested in trying this for themselves, coming even from as far away as California.



Allen Norris, Graham Chapman, Gary Troughton, Iris Rogers, Sam Ud-din laying the cabinet base.

When the Emtelle show and tell day visited Dolphinholme, Allen and the volunteers told the visitors what they were doing and showed them the route the fibre took.

We also hosted a number of 'bring your own IT equipment' days in the village hall for people to see for themselves what B4RN could offer them under real live conditions. Back at the build-out, it was clear that the cabinet base needed to be of a standard design. The only problem was that, at the time, the design was little more than a back of an envelope sketch. We selected the location for the base to be opposite the point at which the electrical supply cable entered the village hall, and which backed onto open farmland. Having got the dimensions from Bruce Alexander at Quernmore, we dug out the

foundations for the base, constructed a wooden former, and then fitted the necessary access pipes in place, ready to lay a concrete base. This was a Saturday morning job with the team assembling on what, (for once!) was a fine day. We borrowed a mini mixer, several garden barrows, and lots of shovels and set to. None of us were really builders but many were keen DIY 'ers. It turned out to be a very satisfactory day's work; at the end of it we actually had something concrete to show for it (pun intended).



Sam putting the ducts in the trenches.



AnnaGerd putting the ducts in the trenches.



Volunteers sorting and taping ducts ready to go in the trenches.

There then followed some time awaiting the delivery of the cabinet (with fingers crossed that it was going to fit). Locating the cabinet in its new home was a potential challenge, but fortunately, with the aid of an excavator used as a crane, we managed with far less difficulty than anticipated. All that remained was to drill out anchor points, epoxy in stainless steel studs and bolt the whole thing down. Job done.





Next, we had to complete all the trenches leading to the cabinet and locate the ends of the access pipes. This meant more hand-digging with a trowel on hands and knees and beneath a fence. Amazing what one can do when one has to. Later, we had to repeat the hand-digging exercise when Barry announced that we needed to put another fibre duct in the cabinet. That exercise was not helped by the presence of curious cattle in the field– just one more factor of rural life.

The first priority for our dig was to get from Abbeystead to the chamber at the village hall. The teams from Quernmore and Abbeystead together with the farmers and the estate got the main duct as far as Greenbank. The farmer who has the land from Damas Ghyll to Dolphinholme decided to dig for shares and bring the duct to the edge of the village using a contractor. Our job was therefore to get the duct from the edge of the village to the village hall.

Our route lay across the field behind the school, from a chamber adjacent to the road crossing at Wagon Road, to the corner of the field by Livestock. For this section we used James and his mini digger, which was by now equipped with

a small bucket. To fund this, we agreed with Barry that if an investor in Dolphinholme bought shares, then we could keep a log of digging, and in effect allocate that expenditure to those shares, thus modelling the way landowners could dig for shares. In these early days, with money being very tight, this was all by direct agreement, and we had to get permission before we went ahead.
Digging went as planned until, about halfway across the field, we began to find enormous stones. This required a few changes to the route. In one case the stone was so large it nearly turned the digger over. We later established that although the field appears almost flat today, that is not its original landform. There was once a deep gully leading right up to the edge of the road, but at some point this was filled with rocks and then levelled. Next to the road we also found a big culvert that simply disappears into the ground and is clearly directing the water down into this gully.

After the excitement of that one large stone, we were working at the other end of the route next to Brookside Drive and needed to connect the duct leading to Damas Ghyll left by the contractor. We dug a trench to the agreed location for the chamber and started to dig out the chamber. Needless to say, Dave Stirling and Allen hit rock just below the surface and spent hours chipping out stones. Having just about exhausted ourselves, we fitted the preformed chamber sides, only to find we were not quite deep enough at one point. We tried to chip out a few more stones but to no avail. It turned out to be a single massive boulder.

At the time we had no machinery, so after a bit of head scratching we thought, 'Well men moved Stonehenge with no machinery and if they could do that, then we could do it now'. We proceeded to excavate around the boulder to give ourselves some room, and then applied a six-foot crowbar to the end. Raising the boulder a few centimetres, we repacked it with sand and stones and repeated the process. Eventually, moving a few centimetres at a time, we managed to move the boulder enough to sink the chamber to the correct depth. One more job done.

To get the duct from the chamber to the side of Abbeystead Road we had to dig along the edge of a garden, under tree roots and along the bank of the stream. We got there, but then had to cross the road. Our solution was to lay an alkathene water pipe looped up along the roof of the concrete culvert that carries the stream and then to bury either end, locking it in place and ensuring it could not restrict the flow in the culvert. We then fed the duct through the alkathene pipe.


Graeme and Allen.

On the far side of the road we had to dig around two field boundaries and cross an old hedge. Again, alkathene pipe laid under the hedge protected the duct.

At this point we had another little challenge. To move large rolls of duct we had been borrowing Liz and Andy Collinson's faithful old Nissan Shogun, but, typically, at the time we needed it, it was out of action, and none of the farmers was available to move the duct.
Graeme Chapman came to the rescue. He has an Audi A4

convertible. Did you know that with the roof down and someone in the back holding things clear, one can move a hundred metres of coiled 16mm duct? Well, you can.

As the operation progressed so did knowledge of what we were doing. Our local MP, Cat Smith, became aware of our project and asked to come and see it for herself. All credit to her, she came complete with wellies and joined in.

The area in front of Common Bank was our first taste of digging through a concreted area. The properties at Common Bank surround a private road (it was originally a farmyard) but the area is surfaced partly in concrete and partly in asphalt.

We worked out a route that essentially followed the edge of the concrete and used as many existing channels as possible. We planned to approach the houses by widening the nearest existing crack or joint. We scanned and marked out the area. We planned to use a disc grinder to make two parallel cuts about 50-60 mm apart, lever out the concrete, and then use crowbars to dig out the narrow trench deep enough to sink the duct below the concrete base. We would then insert the duct, cover it with soft-fill, and then top-up with mortar to level the surface.

As was our practice, we convened a working party one Saturday morning. We only had one nine-inch angle grinder with concrete cutting discs. The tool was mains-powered so we had to rig extension cables. Now this is a pretty dangerous tool and cutting concrete produces vast amounts of dust. As it uses electrical power, we could not flood the cut with water to keep the dust down. The operator was wearing a suitable dust mask, ear defenders and goggles, but even so, we had to keep everyone else clear, and to work in small stages. The method worked, but also showed us we had to go slowly. Later in the day one operator took over and allowed his enthusiasm to run away with him. He cut the concrete but also burned out the angle grinder motor! At times slow and steady wins the race.



Mike Rudd and Graham Chapman.

We also learned that using a diamond cutting saw is a much better option than concrete cutting discs. Another useful tool was a small electric jack hammer, which made loosening the ground beneath the concrete much easier, a technique we later used to great effect in Greenbank. For final finishing we used mortar and cold roll asphalt as the need arose.

Once the ducting was in, we turned to digging out the chamber. As so often in Dolphinholme, the first half metre was fine, then we hit rock. It took longer to dig the chamber out than to dig the duct in.

Getting duct down to Lower Dolphinholme was a challenge. The obvious route would have been to take the duct down the side of Livestock path, but that was surfaced and may have had some less well-documented services in it. The alternative was to come across the field behind the school and then drop

down the bank to where the cinder track joins Wagon Road. The only problem was this was too steep to walk down let alone get the mini digger in. Never daunted, a couple of our group are pretty experienced mountaineers. Their solution? Rope up, belay, and then descend on ropes, dig out a trench by hand as you go, lay the duct and fix it at several points, and then backfill. You would struggle to find a contractor to do that! We used this technique a couple more times to bring the duct to the other side of Wagon Road and later to bring the duct down behind the church. One learns as one goes.

To the south of the river lies Dolphinholme House Farm. The farmer, John Gorst, decided to dig for shares and elected to try a mole plough. Now we had heard about mole ploughing and it appeared a very useful technique in that a very narrow trench is ploughed and the duct inserted in the base of the trench from a reel carried on the plough as it proceeds. The trench itself closes behind the plough blade, removing the need to backfill. Potentially this is a huge time and effort saver. The plough they proposed to use was towed behind a massive tractor with four wheel drive and huge tyres. As it turned out, this was its downfall. We started in soft ground at the lowest point of the route, just next to the old mill chimney in Dolphinholme. Within a few metres the tractor had effectively buried itself rather than the duct! Not a very encouraging start. The driver then decided to try ploughing from the other end, so went to the top of the hill to come back down to the original start point. This was a bit more successful until the ground got really soft again, which brought things to a halt. The remaining part of the trench had to be finished using an excavator. Concluding that the field was just too wet, we took the rig to the top end of the field and put in another section up to where we had to cross a road. Then we took the rig over the road and ploughed two more trenches on the far side of Wagon Road, both leading to a track crossing which we were to tunnel using a mole.

We made both crossings using a tunnelling mole. This meant excavating a trench at the appropriate depth on both sides of the road. Each trench has to be long enough to fit the full length of the tunnelling mole. The mole is a slim pipe with a cone on one end and on the other, an air line connected to a compressor. The compressed air projects the mole forward into the ground and the unit gradually drives itself forward. Provided the ground is suitable, i.e. no very large stones, and the mole is correctly lined up, it should emerge into the trench on the other side of the road. We lined up the mole in the bottom of the trench, crossed our fingers, and set it to work. Perhaps rather to the amazement of the team, the mole did in fact emerge in the right place, allowing us to feed a duct through the tunnel under the road. This moleing technique is limited to areas where it is known there are no underground services and few large rocks. Rocks may stop the mole or make it swerve. When this happens, the mole will miss the receiving trench and lead to much digging to find it again. Our first experience with this method was somewhat mixed. The tunnelling was fine, but the ploughing hit difficulties that proved rather more serious than we first thought. When the fibre team came to blow the fibre, they found they were blocked on a number of occasions. This meant we had to dig a trench across the line of the ploughed section (bearing in mind this was no longer visible) to find the duct. Then we had to dig out the duct and try to clear the blockage. This was eventually achieved after very considerable effort by the fibre team, so the Dolphinholme team decided mole ploughing was a non-starter.
There is an interesting postscript to this story. A few years later, when we were engaged on another part of the route at the west end of Starbank Lane, a contractor was using a mole plough to bring a duct from

Quernmore. Given our earlier experience, we were somewhat sceptical, but the contractor was adamant. This was, however, a very different kind of mole plough. The unit was self-propelled on caterpillar tracks. The duct reel was suspended on the machine, and the duct fed to the base of the plough blade through a tube on the blade. The biggest difference lay in the mode of operation. Rather than simply being pulled through the ground, the blade vibrated and effectively drove itself along. The difference was remarkable, and the unit moved along at a steady walking pace, with the trench vanishing behind it.



James Gardner (Bondy) Allen Norris, Mike Rudd, Jane Stringfellow and AnnaGerd Chapman with Whisky the mascot dog RIP working at Trough Road.

The next section at the end of the field entailed going around the end of a stone quarry. We had already brought a trench up to the other side of the quarry using the mini digger and knew that the stone was virtually at the surface. The mole plough contractor seemed quite unperturbed by this, and with justification– the unit just carried on regardless. It is fair to say that, from this point on, the Dolphinholme team was converted. Where money was available, this was the preferred option from then on.



Laying out the duct for the dig.

To the south-west of the river lies Wyreside Hall. The same person owns the hall and the land around it, and was converting the property into an hotel. The owner also had an engineering business on a farm further along our proposed route. The landowner was keen to have B4RN connectivity, and agreed to dig for shares.

The company had acquired an old Case trenching machine which it proposed to use. The machine looked like a track-mounted chainsaw where the blade could be lowered into the ground. To us, this was another unknown. In operation it cut a narrow trench about four inches wide. As it cut, it piled the spoil up on either side of the trench. The cutting action broke up the spoil, making it much easier to handle, provided large stones were removed. Having laid out the appropriate length of duct under tension (we had learned that lesson by now!), we adopted the technique of following behind the machine with the duct, and lifting the duct into the trench. We then covered the duct with a layer of fine spoil from the side heaps to ensure that the duct was appropriately protected. The trench was just wide enough to enable us to shuffle along it, bedding down the spoil and duct. At the end of the dig, the trenching machine lifted its blade, drove back to the start, and, using a small dozer blade on the front, back-filled the trench with

the remaining spoil. All we had to do then was to remove any large stones that could later catch a plough blade. At the time this was a great improvement over our previous practice of mini-digging. It was not foolproof–one had to be careful to maintain the depth of the trench–but it certainly sped up the whole operation. James Pickering and his team did a great job for us when we needed it.

Once the basic route to Dolphinholme was in, we were asked to continue in two directions. One was to bring the duct from Lower Catshaw near Abbeystead back to the village. Apart from the significant distance, this route contained a couple of obstacles.First was the 'minor matter' of crossing the big gully at Hall Gill, which lies at the bottom of a very steep-sided wooded valley, and the other was the exposed nature of the land across Lower Swainshead.

There is a small footbridge below Catshaw Hall; the farmer was able to get the duct down the bank and across the gill next to the footbridge (thanks to scaffolding pipe) but we were not sure how we were going to get up the opposite bank. The neighbouring but one farmer had a mini digger. One morning he decided he could get it down the bank to the foot bridge. This he did, and brought the trench and the duct right up the bank and into the field. Quite how he achieved this, we do not know, but he did! At this point we had another bit of good luck; the owner of Wyreside Hall agreed to use the trenching machine to dig this section, once again digging for shares. An incentive for him was that this part of the route provided a link to some of his other properties.

This part of the route provided one of those epic events that characterise this project. In the foulest weather imaginable, AnnaGerd Chapman and Allen back-filled almost two miles of trench by hand and on hands and knees. It became so ridiculous that we somehow just kept going, and another seemingly impossible task got done.

While on the subject of the land around Wyreside Hall, the owner wanted to link security cameras from various properties. It was agreed that he could use some of the dark fibre in the B4RN route at that point, and the fibre team rigged the system for him.
In the same area we initially had a problem with the number of available fibres. The team at B4RN, by that time at Melling, used some novel technology to in effect increase the number of available fibres. As far as we know, this was the first time this technique was used. I believe that subsequent routes have increased the available fibre and this has been reversed but at the time it was significant. (CWDM is a prism which uses wavelengths so each connection gets a full gigabit. It is useful until more routes are completed and then it can be replaced)

The basic B4RN philosophy is that the householder is responsible for their house installation. This means they are responsible for digging through their gardens and drilling through their own house walls to get the fibre into their homes.

The action group thought about this and decided that while this is great in theory, we could see it being a major barrier to the uptake of B4RN. There were two problems in our view. First, some people were not physically able to dig their own gardens, but secondly, some lacked the confidence to actually do it.

In addition there was the matter of having the right tools to do the job, bearing in mind that some of the old farmhouse walls are two feet thick! Farmers might think nothing of whacking a hole in a two foot barn wall, but many lack the finesse to do it in the farmhouse! We therefore decided that we would offer to 'assist' where required, provided certain matters were agreed. As volunteers, we would not take responsibility for any damage done; it was purely the householder's responsibility–we were simply assisting. Secondly, we expected the householder to help where they could (even if this was limited to providing tea and cake!) Thirdly, it was up to the volunteer team to assess whether they felt what was being asked of them was reasonable, and of course we also assessed the safety of what was being done. Despite all this and just in case, B4RN insured volunteers against injury to person or property. In practice this tended to mean that most of the team were happy to help in the digging 'bit' but the need for specialist tools such as drills of appropriate length and power to drill and fit wall boxes, for example, limited who actually did these jobs. As we were all volunteers we did not charge for this service, but we encouraged donations to charity or taking shares in B4RN, but neither were compulsory.

In doing this work we identified a couple of really useful techniques, which we record here. Before undertaking an installation we encouraged the householder to think carefully about where they actually





Ewan, Andy and Jane trenching a garden. Ewan is our youngest recruit.

needed the router to go. At this stage routers were wall-mounted directly onto the inner wall plate termination box. Since moving a fibre installation is not straightforward, we stressed it was better to give the router a permanent home rather than put it where it was easiest to fit, and then regret it later. This meant that in some cases we had to fit the router at some distance from the point where the fibre entered the house. This required a length of white, more flexible duct to be fitted between the entry point and the router, through which the fibre could later be blown. In some cases this was quite a distance, and involved going through the loft or even under the floor. Sometimes, as volunteers, we had to say no, and advise the owner to get a contractor in. For example, in one case, the whole floor had to be lifted.

We also made some interesting discoveries. When we drilled through the floor in what appears to be a single-storey 18th century house, we found a second floor some 500 mm below it. Subsequent investigation in the cellars revealed that the building was not a single house but several that had been subsequently joined together. We also found when the road outside had been raised, new floors had been fitted, and the whole outside of the house had been remodelled to take account of the new elevation. We also found several farmhouses whose lofts had been extensively remodelled, which was not surprising, given their age. Several houses in Dolphinholme are listed buildings. This limited what we could fit and where. For example, on stone buildings, wherever possible, we drilled through a mortar

joint so that we did not damage the stonework. It is much easier to repair plaster than it is to repair damaged stone. We could often see the handwork that had gone into shaping the stone, and we had no wish to damage that.We were also very conscious that we could not assume that the electric cables in these old buildings followed modern routing standards. We found cables set in walls running at 45 degrees to the horizontal, cables tucked behind panelling and skirting boards and in many other curious places. We learned we could not rely on cable detectors, and it was standard practice to have all the power to the house turned off when drilling, no matter how certain the householder was that there were no cables!

Fortunately gas is a relative newcomer to most of the village so these installations were much more obvious. This is ironic really, since Dolphinholme is home to the world's oldest surviving gasworks.
Generally water was also easy to track for the most part, at least inside the building. There were several times when we had to ask the local plumber what lay outside. When trenching of course both the farmer and the plumber could sometimes be wrong, which was why James Gardner always carried some repair fittings.
With the basic route in, the team turned its attention to reaching the Fleece Inn. The initial task was to get another duct under Greaves Lane in the existing duct channel. This task was not helped by the presence of cattle in the field. Now sheep are not too bad, they tend to keep out of the way and provided one does not leave anything lying about, there are few problems. Cattle are something else. They are intensely curious and immediately wander over to see what is up, trampling everything as they come. One can shoo them away but they will still come back. They knock in the side of trenches and the area soon becomes a midden. We had to use half the team to keep the cattle away while the other half did the digging. Once we got going we decided to try to use the trenching machine to dig through the fields, and the mini digger to dig the chambers and bed in the tube used to cross the stream.


Liz and AnnaGerd rolling duct out to the Fleece.

Now our research had shown that there was a water pipe running down through these fields and we were anxious to avoid it. The problem was that no one was quite sure where it went. We consulted all who might know but were still unsure. James Pickering then turned up with a couple of divining rods (bent welding rod to you and me). He proceeded to walk down the field and to everyone's amazement the rods moved. He put down a marker and proceeded. Again the rods moved. In a short time we had a line of markers running down the field. Now as a scientist I could not but be sceptical about this. James told me to try it. Well, I took the rods up to the top of the field, well away from the markers, and proceeded to walk along the hedge line. I felt the rods move, and when I stopped and looked around, it did seem to be in line with those markers further down the field. Following the markers, we successfully put the trench

in without hitting the water pipe, and then proceeded to do the hedge crossing. I took the time to have a good root around in the base of the trench, and lo and behold, in the line marked, there was a buried water company marker.

I am no longer a sceptic of water-divining.

Corless Cottages is a twin row of late 18th Century, listed terraced cottages in Dolphinholme. The two rows are separated by a row of single-story terraced 'sheds'. Access to the back row of cottages was feasible via gardens and across a narrow lane surfaced with large flagstones. Access to the front row was more of a challenge. It was not practical to access the front row from the front since it is surfaced and also already contains all the services. Access to the rear required crossing a narrow cobbled lane. We decided that the most practical solution was to take a 16mm duct from the chamber in the field alongside the cottages opposite the village hall, around the rear of the cottages to a small chamber situated in the drying ground (a small grassed area adjacent to the sheds). We considered branching the 7mm ducts from this point, but 27 ducts is a large bundle to bury. Instead we took some seven ducts out from the small chamber and led them across the lane via existing cracks and under flagstones to fan out to the first seven houses. In some cases we had to run the 7mm duct along the walls at first floor level. The remaining houses were fed from two wall-mounted chambers fitted to the inside walls of two small ginnels that run across the lines of the sheds. (Wayleaves were interesting since the sheds are not necessarily in line with the houses that own them!) We were indebted to Bruce Alexander for pointing us to the advantages of wall-mounted chambers.





To feed the chambers we needed to get a 16mm duct along the lane. To achieve this we devised 'cobble mining'. Basically we lifted a line of cobbles about one metre long and excavated out a channel using a trowel. We put the duct in the trench and then replaced the cobbles. We had already cut the ducts to length and labelled and coiled them. That way we could ensure there was never a long length of open 'trench' and could move progressively along.

On reaching the first ginnel we took the duct up the inside wall and into the chamber. From the chamber we continued 16mm by the same method to the second gunnel. Next, we took 7mm ducts from the wall-mounted chambers and either across the lane using the cobble mining method or in some cases where we needed to avoid concrete, along the front wall of the shed up beneath the guttering . At the end we managed to reach the outside rear wall of each cottage and leave a coil of black 7mm duct ready for house connections with all the intervening ducting hidden from view.

I should make a special mention of one member of the team who was on paternity leave with his baby daughter. She sat happily in her pram whilst dad 'cobble mined' next to her. Job done. The back row was somewhat easier since we found the lane to be largely surfaced with flagstones that were simply laid on sand. We were thus able to lift flags and hide the duct bundles beneath. One final point, in this location and elsewhere where we had bundles of 7mm ducts to lay, we added a couple of spares, just in case.

One of our first concerns was how to communicate quickly within the group, bearing in mind that this is before the days of WhatsApp and its ilk. The Dolphinholme Residents Association had, with the aid of Tim Hucklin, set up a closed email newsletter. We decided that we might do the same thing and set up the DB4RNAG Newsletter system. The basic idea is that we ask people to sign up to the group which then allows all members to send or receive emails within the group without revealing everyone's email addresses. Obviously whoever sends the message needs to sign it or no-one knows who to reply to, but the system worked extremely well. We used it to plan working parties, ask for assistance and even to seek materials.

The sad fact is that at least 10 per cent of building materials purchased never gets used on the job for which it is bought. We realised that we could actually make use of much of this material, and the email became our way of seeking it out. The system also allowed us to keep track of what was happening. Sometimes we had several working groups active on different parts of the route, and when they reported back we were able to keep track of progress. An excellent example was when we were putting duct into the school. We had to take the duct along a narrow trench over part of the asphalt-covered front playground. We put out an appeal for anyone who just might have some asphalt work being done hoping, we might scrounge a little material to finish off the trench, and a gang turned up and did it for us in their spare time.

As a community project B4RN brought and continues to bring a lot of side benefits to Dolphinholme. Perhaps one of the more significant has been the engagement of men 'of a certain age' who previously were much less likely to socialise than women.

We were fortunate that the project arose just as a number of able-bodied people in the village were retiring or approaching retirement. This gave us access to a workforce not just at weekends but one with some availability during the week as well. It also allowed us to access a whole range of skill sets. In our experience women seem to find it much easier to socialise and to get involved in village projects, but it somehow seems more difficult for men. B4RN was a project where men and women could both get involved, and because of its novelty and the technological aspects, it seemed to attract people. The range of tasks we faced meant that almost anyone had relevant experience they could bring to the party, and no matter what that was, we welcomed it. On the one hand we had those who simply wanted to dig (with or without tea and



Allen and Sam awarded their Lindsey spades.

cake), those who were record keepers, those with marketing skills, and of course those with IT skills. While most of the IT element came 'centrally', once we had customers connected, the number of IT queries increased dramatically, and it is a measure of the community nature of the project that, at least to a first level, we were able to respond within the village, something that continues to this day.



One can still see the little yellow spades proudly displayed around the village (thanks, Lindsey Annison!) and they prompt questions from school children who of course cannot conceive of a world without the internet.

The community nature of the project was something we emphasised right from the start and continue to do so. B4RN has a regular feature in the village newsletter, The Grapevine, and the Village Hall, Chapel Room and the school showcase the B4RN connection. Of course in the wider B4RN world, the Computer Club, website and technical support feature widely, but here in Dolphinholme many queries still come to the team and we are happy to help. We keep a couple of spare routers here in the village to help with the occasional emergency. However, we cannot guarantee to beat this response record: once, when the tech team phoned to say the router in the school had failed, Allen was parked outside the school and happened to have a new router in the car. The failed unit was replaced in about five minutes! By far the greatest number of issues that arise are WiFi-related. The plaintive call 'my internet has gone down' is often followed by the realisation that the call is being made over that same internet connection, and the problem in fact relates to WiFi. If there is one technology where the industry has over-egged the pudding it has to be WiFi.

There were a couple of gaps to be filled in bringing the duct through from Abbeystead. The first was to bring the duct through the woods near Gallows Clough. There was no way to get a mini digger into the wood so we had to dig the trench by hand. Of course we immediately hit enormous tree roots. We decided to have a working party and to dig under each tree root and then thread the duct under the root. This was slow and laborious work, but with a full working party we turned it into a lot of fun. Of course there will always be the possibility that if one of those ancient trees comes down it may drag the duct out but after 10 years they are still all standing so



Nigel Gillian, Allen Norris, Eleni Troughton, Harris Troughton, Garry Troughton, Mike Rudd, digging in Lower Dolphinholme and Livestock.

we believe no harm was done to the trees and the duct remains hidden.

In the same area we also had a little challenge to cross an access track that had been surfaced. The obvious solution was to cut out a slot in the concrete as we had done elsewhere, but we had mains-powered tools and no mains power. We appealed for someone to lend us a suitable generator, but none of the farms had one available. We were eventually successful in borrowing a small portable one from the army. That overcame the problem of the track, and then it was back to digging through the woods.

With quite a lot of the first route to Dolphinholme in place, we were still awaiting the connection from Abbeystead and Greenbank to reach Damas Ghyll. It became clear that the team at Greenbank needed some help, which was not really surprising as it is a very small place. We decided that the best option was to join forces and to work together.

The first challenge was to get the duct through behind the main properties at Greenbank. This was fairly straightforward, but then we faced the problem of getting down the steep bank to Damas Ghyll. At the foot of the incline we were able to direct the alkathene pipe onto the bank, ready to lead into a trench in the small field leading to the crossing for Damas Ghyll. But the field was too wet to use the mini digger. Not wishing to waste time we managed to insert the duct through the alkathene successfully. We then made a basic error. Believing that, once the field dried out, we could dig the trench and roll the duct in, we laid out the duct on the surface to ensure we had enough to reach the crossing. Of course we did not think this through. If you pull out a long length of 16mm ducting and do not keep it under tension, once you let go, it coils itself into a bird's nest! It took two of us a day to sort that out. Lesson learned the hard way.

Along the way we found a few useful techniques that greatly eased the job.

For house installations a heavy-duty battery-powered SDS drill was a godsend as were a selection of SDS bits from 4.5, 6, 10 mm plus 10mm 1 metre long SDS bits and 20mm bits. And we learned never to drill a house wall until the electrics have been isolated–you only get one chance.

A one metre length of welding rod proved invaluable to push through the wall into the drilled 10mm hole to prevent it collapsing from insulation falling in. We could also fit 6/7mm duct to the end of the rod and pull it back through the hole.

A long slender Pozidrive 1 and 2 screwdriver was helpful to get into the wall-mounting kits where a normal blade was too tight.

A selection of stainless steel screws was helpful, as half those supplied with the house kits were rubbish, as were some of the wall plugs.

Flat walls are a rarity in Dolphinholme, so a length of black 7mm duct that can be cut to produce spacers was helpful, as was a small spirit level, for the same reason. Good quality black duct tape was essential.

Laying duct – some tips

- A length of surplus 7mm duct with a round-headed screw inserted into the end is ideal to thread though alkathene water pipe.Once through, rope can be attached to the 7mm duct and then pulled through, followed by the 16mm duct we wish to insert. Just pushing the 16mm duct through, even when lubricated with Fairy liquid soap, proved difficult.
- Scraps of 16mm duct can be used beneath hedges to protect a 7mm duct, and for larger duct sizes, black alkathene water pipe is an alternative, as are old scaffold poles.
- Similar scrap can be used to line holes drilled in walls.
- Duct can be labelled with plastic garden labels secured with zip ties.
- Scaffold poles or, even better, stainless steel tubes can be used to cross streams, but must be high enough to prevent obstruction.
- Mattocks and trenching spades are useful to dig narrow trenches and are safer than a pickaxe. A curved crowbar can be used to scrape the bottom of a trench, and a trowel has a myriad of uses. A six-foot crowbar is a handy tool but is very heavy.
- Concrete saw discs are better than concrete grinding discs to slot concrete. Ideally, cut wet to minimise dust, but of course not with a mains-powered tool. Dust masks and ear defenders are essential when cutting concrete.
- Always check for services using a CAT scanner and diagrams, if available.

This whole project has been a tribute to all members of the team. I have mentioned some by name and will try to list the others.

If I have missed someone, I apologise in advance and put it down to a failing memory.

Suzette Heald and Andy Collinson got things started. Liz Collinson and Allen Norris set up the teams aided by AnnaGerd and Graham Chapman, Sam Ud-din, Dave Stirling, Donald Hanton, John Klotz, Graeme and Ruth Chapman, Gary Troughton, Mike Rudd, Iris Rogers, John and Jane Entwistle, John Gorst, Mike Coogan, Andrew Birchall, Simon Tate, Martin and Jane Stringfellow and Whisky - the mascot dog..

Special thanks to contractors James Gardner and James Pickering. From B4RN Chris Conder, Bruce Alexander, Tom Hartley, Barry Forde, Alistair Adams-Huset, Frank Brown, Iain Robertson and later Flick Greenwood

And all the local landowners and others who contributed along the way.

Allen Norris, 2024



The first reel of duct being picked up by Andy Collinson.



Liz delivering duct.

Whenever they needed a crowbar, they called Liz who kept it in the boot of her car. Her husband Andy did not need the car as he was usually out with Allen, digging. She also carted duct to where it was needed, and was a regular visitor at the farm to pick up supplies. They soon had the duct dug up to their village hall, and contractors were bringing it over to them from the north. They dug all round the village, levelling the trenches and laying the duct.

After particularly hard digs up the banks of the old mill race, AnnaGerd was always on hand with tea.

They sited their cabinet at the village hall, and soon Bruce came to blow the fibre for them. Frank came with his caravan trailer and fused up the cabinet, and Allen and his team got all the houses ready for blowing. The team came to blow fibre, then Alistair and Iain started working to the bullets to bring the







Liz and Suzette picking up more duct from the farm.



Allen was known to deliver pizza too.

school live. Allen called Bruce in whenever he had a batch ready, and Dave Stirling, who had been busy digging, ended up catching sponges and got a red Lindsey spade for his work.

Once the cabinet was live the fusers had all the joining bullets to do as well as all the customer joins. They also worked in the fields around the village, fusing the enclosures in the chambers while Frank fused the cabinet.

Sam Ud-din wished he had a bike as stuff had to be carried right round Corless cottages to where the teams were working.



The cabinet in the village hall car park.



Frank's trailer at the cabinet car park.



Sam doing his 'sherpa' routine carrying bullets up behind the cottages.



Dave Stirling helping with the blows and earning a spade award.



Alistair and Iain working behind the school on a bullet.



The volunteers all helped Bruce with the blows.







The photos show Alistair and Iain round the back of the school and Corless cottages where Allen and the team had been cobble mining.



Liz Collinson.



Alistair and Iain fusing the bullet that will bring the school live.

Liz got her Simon's silver spade - These were a new addition to our awards programme, Simon Wade from Emtelle donated them to B4RN to reward ladies of Grit.

Suzette Heald from Dolphinholme sponsored James Uren to make a film about the project to be entered in the Cannes film festival. It was shortlisted but did not win, but it is there as a memorial to the communities' grit and determination.

They dug 25 kilometres of trench.
They came live in May 2014.

Beyond the book:

BBC News article about Dolphinholme

Suzette's Cannes Festival Film

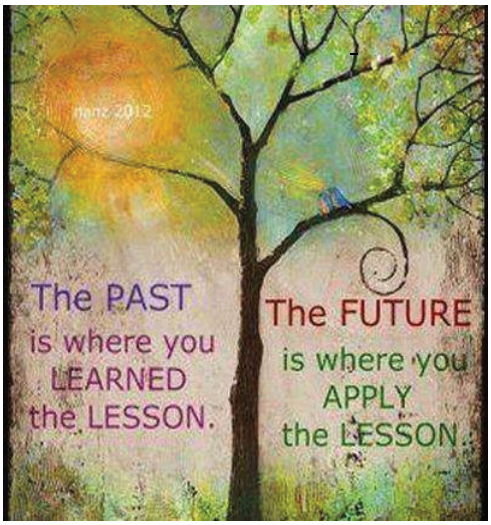


AnnaGerd with tea and cake, and her Lindsey spade.





Allen being interviewed for Suzette's film.



Beyond the book:

View all the photos from this chapter in the B4RN Book Gallery

Watch videos from this Chapter in the B4RN Book Playlist

Chapter 2

Arkholme | Melling | Hornby | Farleton |Claughton | Caton Green

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Arkholme

Arkholme is a community at the far end of the network to Quernmore. They were a long way from a telephone exchange, and their internet service was not very good. A lot of professional people live there, and they knew they had to do something.

Their first meeting with Barry was in September 2011, before B4RN was formally launched. Members of the management team and the WenNet group had already started to raise awareness in the local parishes, and many were keen to know more.

The parish got on board, and their turn to dig came in 2012. It was one of the wettest years on record. Moleploughs could not be used for most of the summer, and the diggers had to use wider buckets to stop the trenches capsizing.

At the first B4RN AGM in their village hall that year, they asked why no digging was going on in Arkholme, but Abbeystead was 'digging like mad'. The response was that Abbeystead were highly motivated and dug to meet the breakout point in Quernmore, and they were told Arkholme could do the same, as that is what it took to make it happen. Their first job was to dig to the GEO breakout point at the top of Locka Lane.

They understood, and the Activists raised some more money in digging shares, hired two big diggers, and started digging at the bottom of the village. The biggest digger was driven by Rusty (Ian Mason), the same person who had done the first rural fibre dig for the WenNet folk in the previous chapter, and his mate Adam. Adam did all the backfilling and Rusty dug.

People in the village saw the big diggers, came to find out what was going on, and came back in wellies and carrying spades.They laid 4.5 kilometres of duct, through bogs and rocks in 8 working days.



The Parish meeting at Arkholme.



The first AGM at Arkholme.



Rusty and Adam with the two big diggers.



The first dig day, and the volunteers pulled out the duct.



The first dig day, showing the duct pulled down towards the village.



The first dig day, David Smith and Michael Blacow in the trench.



Steve Duxbury levelling the mud trench.

They had to pull the duct along a route prior to the diggers coming, which also helped the diggers know where to dig.

Often there were families in the trenches, but it was mainly grannies and grandads. They laid the duct for the digger and soft filled the trenches.

Word spread, and other villages started thinking about their projects and watching Arkholme progress. Some people from other villages turned up to help and learn what was involved.

Brian was one of the three Activists who kickstarted the Arkholme dig. His house at the top of Locka is where the breakout chamber is, and he was in the trenches most days on that epic dig from the village. Once the trench is dug the bottom is levelled if need be and stones removed. The duct is lowered in and then backfilled by hand to cover it, making sure it is snug in the bottom of the trench, and then the digger backfills it. When the ground is very stony and rough the farmer often will often sacrifice the sod to go on top of the duct to keep it safe. Usually the sod goes back on top of the trench so it heals up faster.



Nicky Abraham pulling the duct through a chamber.



Brian Acott levelling a very wet trench.

While the big dig was going on across the road, Barry was planning how to get it to the village hall. Tom was on hand to assist with the ground radar to make sure there were no hidden utilities in the banking or the road. Barry had ordered a cabinet and Tom undertook to get the duct to it once the road crossing was done. He painstakingly dug under all the tree roots so the tree was not damaged.

The big dig continued and more villagers took turns to help. It was a village full of the most willing Adopters.

Sue levelled out the trenches under the hedges and fences and featured on BBC Breakfast.

Utilities were carefully found and avoided, electricity being the main concern, as land erosion means they are not always as deep as they should be. If the digger went through a drain (despite our best efforts with the scanner), we repaired it and put our duct under it. Eric became an expert. We all now know how to mend a drain.



Tom scans for utilities before the road crossing with Pat and David.



Harry and Sue Ball levelling out the bottom of the trench under the hedge



Chris Hall and Eric Lange going under drains following the digger.



Trench through bogland with added drain.



Duct going under a drain.

Tommy delivered more duct to them, and the diggers kept digging. A core team established itself, and the volunteers learned all the tricks, including proper joins and end caps on the ducts.



Mains electric found and carefully excavated around it.



Quite a narrow trench when it was a drier day.



Eric got lots of experience and hired the big diggers for the village.



Iain helping in a tricky area, using alkathene pipe for extra protection.

During the big 4.5km dig in Arkholme people used our trenches to bury water pipe and even lay drains while the digger was there. Thinking outside of the box. One day that stands out in Arkholme is when we dug through six septic tank feeds. We mended them all but our hands were a bit smelly. Then this lovely lady appeared with home made scones and jam... We ate the scones. Washing our hands in those days didn't seem to make much difference. (Our health and safety officer would not have let us eat the scones these days). Tommy actually gave us the solution,- keep some rubber gloves handy to put on after the work so you can eat. Working together in this way the rest of the villagers learnt what was going on, and so they hired the big diggers themselves after the 'big dig' to dig right round the rest of Arkholme village and get everyone on.



Lovely lady with scones, Pat and Barry.



The big dig was 8 days in October 2012 Multitasking. where everyone mucked in and learnt all the tricks - learning on the job.

Tommy organised more duct delivery, chamber installs, and did some lane crossings with his directional mole.

The villagers organised the routes round the rest of the village, got permission from landowners and got going once the big dig was done. This also saved the return haulage costs of the diggers.

The main road crossing was done with contractors and the cabinet installed at the village hall.

There was one property that stopped the connection getting to the village school, the householder had a very



The big digger almost at the top of Locka.



Volunteers laying drains, utility ducts and B4RN duct in the trench.



Tommy kept supplies coming.



Chris Hall and Eric Lange making a join in customer duct on a long dig.



Pat Close, Charles Waddington and Rusty at a lane crossing.



The lane crossing done so Rusty could keep digging.



The road crossing at the village hall. To the cabinet.



The dig down from the road to the cabinet.

long garden and refused wayleave. With no more ado the PTA swung into action and dug through the village school field to the cabinet to connect the school. They did a really good job, and when they finished you could hardly see a mark.

As we learned more, we shared the knowledge, and we held impromptu meetings to do training. Bruce and Tommy from the B4RN management team spent a lot of time organising as well as doing the job themselves.



Chris May from the B4RN management team and the volunteers get stuck in.



The dig down the school field.



A local digger dug down the school field.



Backfilling the trench.



Putting soft fill on the duct.



David, Chris and the other volunteers laying the duct.



Finished dig through the hall garden and to the school.

After the digging, another new learning curve for the volunteers started - blowing the fibre into the ducts they had laid.

The management team were learning too, and Emtelle sent Mark Graham and Dave Rames, to show us how to blow the fibre. They also arranged training days for companies like Virgin, and they came to see how it was done in rural areas, which meant we got a lot of blows done.

We knew we would have to buy our own blowing kit, and Tommy set to and started sourcing it. He also bought a little trailer to hold all the gear in, including



Tommy holds a management meeting.



Bruce holds a management meeting with Brian, Eric and Chris.

the large compressor that would be needed. Iain fitted the trailer out so that it could also be used to blow house fibre, too.

Volunteers started doing garden digs and installing the house kits.



Eric and Andy working on garden digs.



Sue and Andrew doing the first Arkholme fleet at Locka.



The fleet turned over and Mark ready to blow it again.



Lee Norris, a fusion splicer of grit. He volunteered for us.

The management team focussed on getting the fibre in and the cabinet live.

The very first fleet was at Arkholme, our improvised version of a fleet before Iain made us the fleeting aid. We borrowed Andrew's plant pots to do it. Fleeting is described in depth in chapter 1 of the book, but basically it is blowing the fibre as far as it will go, wrapping all the extra fibre needed on a route on to the ground in a figure of 8, turning it over and restarting the blow again. We had to learn fast - Emtelle started the early blows at Quernmore, but we had to be able to do it ourselves.

With Mark and Dave's help we got the fibre blown all the way from the breakout chamber to the village hall.

Our next problem was doing to be learning how to join all the fibres together. In the meantime, we enlisted the help of Lee Norris, a fusing contractor, who volunteered to get the cabinet live for us by just fusing the main fibres of the feeder tube, which was the one being used to bring the live feed in from the breakout point. We watched and learned! We knew we still had to join all the other fibres together. Tommy figured out how to install the enclosures (the bullets) and so they were ready for when we could fuse them.

We worked hard in all weathers, wrecked our tent and resorted to using scaffolding to protect us.

We hired Lee for another day and got the main fibre line and hence the feed, into the cabinet.



The damaged duct caused by rodents.

In December disaster struck. The best laid plans Of Mice and Men! The connection in Arkholme went down just as we were going to announce it was live. Rats or mice had chewed our fibre in some subduct next to some stables. We had to lay new armour-plated fibre for 100 metres, it took a great deal of time, trouble and expense, but we did it.

We still were not trained to fuse in those days, so John Colton found us a volunteer he had trained, Paul McHugh, from the East coast, and locals put him up in their house, and he joined the fibres for us.



The very big garden dig.

Each setback turned into an opportunity, and we had to learn faster. Any time anything else went wrong, we just fixed it and made a help pack for each new community, so the lessons did not have to be relearned.

Villagers dug into each other's houses and connected the boxes, with 90% take up. There was a mammoth hand dig in February, where the grass had to be left perfect for a marquee wedding in April!



Pat kept turning up every day with brews for the volunteers.



BBC Breakfast filming a blow in Chris Collingwood's garage.

Pat from the next village (Docker) turned up every day with tea for the diggers wherever they were working.

The village came live, thanks to a timely visit by Craig Brass from another altnet (LonsdaleNet), who fused the village hall. BBC breakfast came, and we had an open day where people could see it was all happening. So both ends of our core network duct were now 'live', both fed from the Geo dark fibre directly into Manchester, and the job

Beyond the book:

BBC breakfast film

Of Mice and Men



The big diggers last dig.



Mark Jameson from Heversham, volunteer fuser.



Tom and Iain prep a bullet.



Arkholme railway bridge.

was to connect them both together via the farms and villages in the phase 1 plan... this would make our resilient 'loop', meaning if one part of the network was cut, then the other end could keep the customers online.

The two big diggers hired by the villagers had reached the River Lune, and the plan was to use the railway bridge to reach Melling and then on to Wray and Wennington. This would have been half an hour's work, but Network Rail said no. We got our local MP, Eric Ollerenshaw, on the job, but they still said no. There was a defunct gas pipe attached to the bridge, so we asked if we could fix our duct to it, or thread it through.They said no. At this point we did not have enough money for a directional dig under the river, so our primary route was on hold. We had to dig over the mountain from Quernmore to Wray instead, but the duct was there at the river for when we got some money.

We also had to connect customers, and that meant learning to fuse, buying our own equipment and teaching more volunteers how to blow fibre.

So into 2013 we blithely sailed. Chris Hall was trained to blow fibre and he worked tirelessly.

Up-skilling; To join the customers on to the network we needed to up our skill set. Up to now we had relied on fusers who had 'day jobs' and spared us the time as volunteers to help us, but we could not carry on relying on them.



Outer sheath of the fibre removed.



Iain's bullet holder.



Tube sheath of the fibre removed.

We sent Iain and Tommy off to John Colton at Lucid to learn how to fuse the fibre and assemble trays in the cabinets and bullets in the chambers. Tommy and Iain were stars, and they quickly learned how to get the fibre into the enclosures.

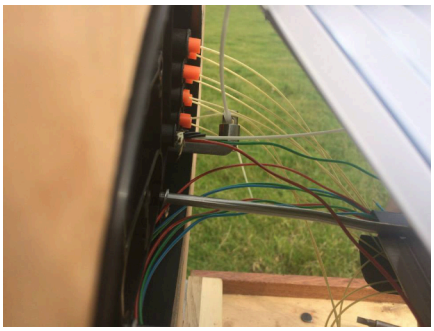
Iain made some wooden holders for the bullets, and designed a table to fit them to, or we used the bench in the back of his car. Our bullets are supplied by Hellerman Tyton, and they came to train us all how to fit them.



Lubricating the grommet that holds the fibres/duct.



Our colour code cheat sheet.



The ducts secured to enclosure with the fibre ready to fuse,.

Tommy and Iain installed all the bullets, different sizes for different uses. The large bullets for big joins and lots of customer ducts, and the smaller ones where a loopthrough method was used and only a single tube broken out for customers. Iain made holders for all the sizes of bullets.

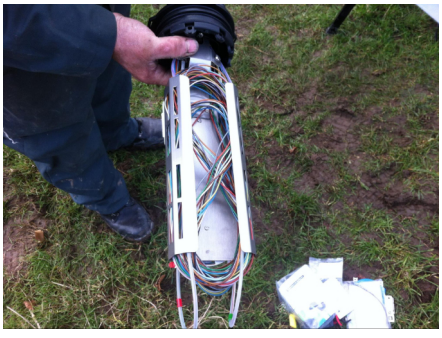
Fibre cables consist of colour -coded tubes, and we wrote the code on the holders until we memorised them. The outer core is stripped off the fibre tubes, and the inner carbon strength member and protective kevlar removed. It is then lubricated and passed through a locking device or a rubber grommet, and secured in the lid of the bullet. Once the fibre tubes are in the bullet, their coloured sheath is removed, and the fibres are passed through a clear transport tube, and attached to the correct tray in the bullet. The fibres are then cleaned and wrapped in the tray ready for fusing. The unused tubes 'the pass through tubes' are coiled up in the basket.



Clear tubes take the 12 fibres into the trays.



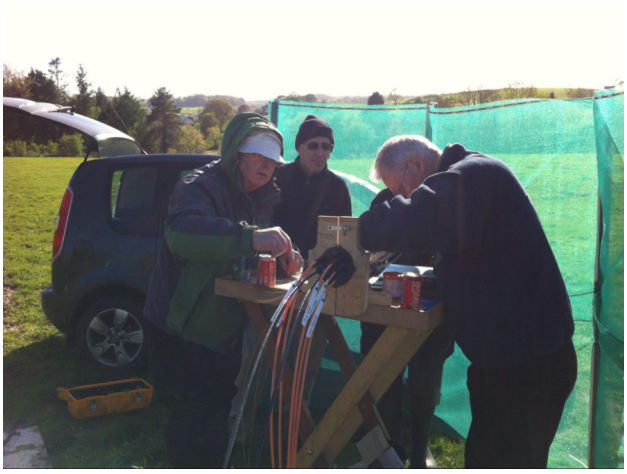
A tray with the 24 fibres ready to fuse.



The tubes not split are coiled below.



Fusing in the little red van.



Fusing in the shelter of the windbreak Iain made.

Customer fibres are then passed through and wrapped in the right numbered tray. Then the completed enclosure was put into the chamber.

As the core fibre got installed, the fusing had begun. Several volunteers were trained, and we improvised in the early days before Iain got his trailer. One way of fusing was to jam the enclosure in the window and fuse inside the car. Or put the table on the passenger side of a vehicle, and fuse from the driving seat. That depended on getting close enough to the chamber though, and some work still had to be done outside, because the fields were often too wet to drive a vehicle on to.

To do a successful fuse everything had to be kept clean and dust free, and wind free. We tried a tent, but it soon got wrecked in the wind. The windbreak Iain had made was great if it was not raining. When we could not get vehicles onto the fields, we had to carry everything to the chambers.



Iain building the scaffold tent.

So we improvised, and we used scaffolding poles to build a tent frame. The winds played havoc with that... but it meant we could fuse quite happily on wet days, there were nearly always rocks about, to weight it down.

On dark nights we double-skinned it with our fleeting tarpaulin for extra warmth and carried lights to where we were fusing.



Scaffolding tent, version 1.



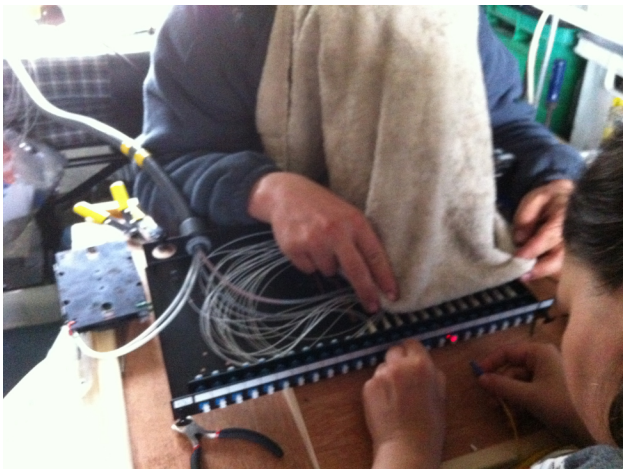
Version 2 with tarpaulins,



Version 3 - double skinned + lights.



Frank taking a tea break out of the gazebo and drinking bush tea.



Frank testing each fibre for light with his old towel over his head.



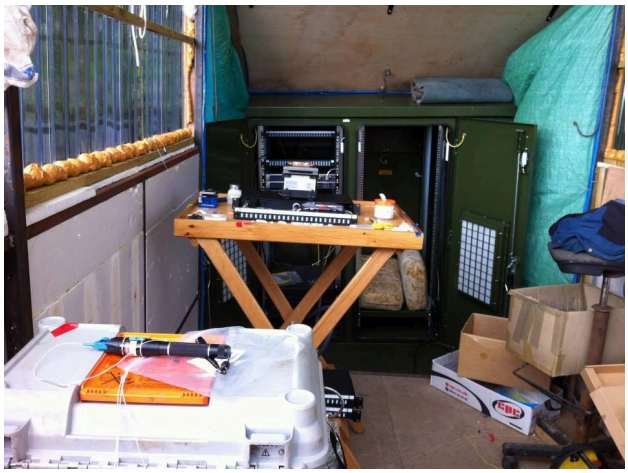
Tom working outside the tent on a sunny day.



Tom, the apprentice.



Alistair and Frank teaching apprentices in the caravan.



Inside the caravan Frank built for splicing cabinets.



The splicing caravan in all its glory.

We also at this time started a 'Sponsor a metre' of B4RN duct programme, where we would write names on the duct for a fiver (£5) a metre. This brought in more money for essential tools: Special knives to cut the duct, red-light pens to test the fibre etc.

People sponsored us from all over the world. Martyn Dews set us a Paypal account up and bought us the stuff we asked for.

Then we had another 'interesting' experience.

Beyond the book:
Sponsored Duct photo gallery



The foreman inspects.

The residents at a small, new estate in Arkholme had built their own homes and run ducting through it to each one. BT then came and put phone lines in for them. This served them well for many years, but when B4RN came they all threaded the B4RN ducts through the existing ducting and chambers to their homes. They believed that because they had built and paid for it that everything within their curtilage was theirs. The houses came live and everyone was happy. Until one day a few years later, a tractor parked on a driveway and cracked the lid of the chamber, and BT were called out to repair it. They then saw B4RN duct in 'their' chamber. B4RN were told to remove it all immediately or face a massive fine. The residents marshalled their forces, called in other volunteers and the villagers came out in force once again. They took out all the ducts and enclosures, built another chamber, and reassembled everything under the paving. A local farmer brought them more duct and they put it all in new trenches and reconnected all the houses. Even Walter from Surrey came to help. The cobble miners were minors on one stretch. Everyone helped.



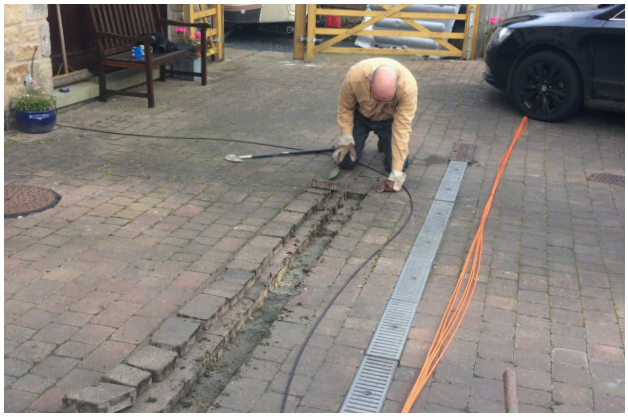
There was LOTS of tea and cake and warm scones and home made damson jam. They were all ready for it after all that digging.



Laying out the new ducts.



Digging out the trench.



Chris May cobble mining.



Digging the chamber.



Trenching.



The chamber finished.



Chamber and ducts in.



Child labourers.











Chris Hall gets his spade award.



David Smith gets his spade award.

Then once the duct was laid, it all had to be reinstated, and Michael Cryan, Chris Collingwood, Chris Hall, Chris May, and Pat Benson got all the cobbles back with lots of help from Walter. A good job, well done and in super quick time, too. Well done to all the Arkholme volunteers, and especially the 'charwallas' (photos above). The next day the B4RN team arrived to fuse it all up again in the new chamber, and they were live again.

Bring on the cats.

The third 'A' (see previous chapter) is when the Adopters inspire the Apathetics. The Adopters in Arkholme proved this theory. Lots of other villages suddenly came on board, but in the words of Eric Morecambe, "But not necessarily in the right order"... North and East the villages were digging to Arkholme. Chris and David were awarded their spades for all the work they did helping them all. A great section of the network was built before we got across the river to Melling, but as this was the route it 'should' have taken, eventually, a few years later, it happened. Read on.

Melling

The route from Arkholme was supposed to go to Melling from Arkholme. We were still trying to get across the River Lune but could not afford a directional drill to go under it, and so Melling was on hold. Other areas had started their digs, and Melling had not yet been motivated. Mary Jackson from Melling became a member of the management team at B4RN in 2012 and was company secretary. She had been involved with fibre networks when she worked at Sefton and had been to the launch at The Storey and wanted 'to be useful', which indeed she was. There was no equipment in the tiny B4RN office at Lancaster Auction Mart, so she printed the share certificates and wayleaves at home, working in a spare bedroom for three years.



Melling was slow in realising that B4RN could service their village, and many were convinced BT would bring them fibre. This was reinforced when FTTC was installed in the village, which gave them a much better service than they had before. Nevertheless, a few dedicated activists knew that FTTC was not future-proof, and they wanted real fibre for their community. The problem was that we could not get the fibre over the river. Time went on. By now it was 2015 and n the meantime B4RN had dug over the fells from Quernmore to get to Wray, with the intention of reaching Melling via Wennington.

The Parish Council at Melling knew they had to do something, and Stef Williams who was on the council at the time with John Marsh, who was chairman, asked her husband Paul if he could dig the duct in, as he had a digger. Her dad, Ged Kelbrick, was one of the volunteers, and he backed her up, and Paul agreed to dig; little did he know what he had let himself in for - Melling is an amazing story.

The dig from Wennington had been blocked by landowners, so Barry organised a dig under the River Lune for them, as by now we had the finances from shares, and paying customers.



Stef Williams.

We had John Hamlett from Gressingham on our management team by then, John had managed to get his village (Gressingham) joined on to Arkholme and had learned many skills. He came to the village hall and did a presentation and inspired many more Adopters to join the project. Once they had their 'Activists' in order, they swung into action. Their story is different from many other villages. John's own story is in the Gressingham chapter, but several people have contributed theirs to the Melling one.



John Marsh, chair of Melling Parish council.

David Nott's story and timeline.

Bringing B4RN to Melling

In early Spring 2015, I volunteered for a task which was to occupy me for part of several months: to organise and be part of a team of Melling residents who followed the (mole) plough with rake and spade, preparing the trenches into which the B4RN ducting for high-speed broadband would be laid, across fields (and sometimes through bogs and copses) to the boundary of every property in Melling.

What follows is the story of how I became involved in this task, its joys and frustrations, its helpers and its hindrances.

2011

I was a member of the Melling-with-Wrayton Parish Council from July 2011 to August 2023, serving as Chair from May 2016 to May 2022. In August 2011 I attended a County Council 'Rural broadband workshop' in Hornby, for community representatives on Superfast Broadband (SFBB) provision. It soon became clear that the 8 rural parishes in the Lune Valley would not be included in the County's £30M 2011-14 scheme for SFBB.

At this stage, much of the discussion about the B4RN project was carried forward by the Melling-with-Wrayton parish councillors; in advance of a Special Parish Meeting on 17 August 2011 (which I was unable to attend), I wrote on 11 August to my colleagues:

I have one specific question re the B4RN offer: would most of the capital costs be the same, however many or few households chose to be connected? If the answer is yes, it would seem to me highly desirable for us to pursue discussions with B4RN with a view to maximising connections and thus minimising the costs for each household.

I believe that we have to consider the present and future interests of the village as a whole, not just the interests of those who would make immediate use of superfast broadband [SFBB]. [...] In tomorrow's world, SFBB connection to every home will be seen as essential as mains water, electricity or the telephone.

I can only suggest that the councillors and residents attending the SPC meeting on the 17th attempt to thrash out what kind of SFBB provision would be in the best interests of the parish not just for today, but for tomorrow. We may also need to do some hard talking with B4RN, to see if coverage (within the parish) can be pushed towards 100%.

At this meeting, however, the Parish Clerk was asked to write to LALC, as follows:

'The Parish Council is being asked to support a commercial organisation concerned with the supply of broadband. This is a not for profit organisation but its customers will be asked to pay monthly subscriptions and also to purchase shares. The company is involved in a competitive bid and tender situation with two other organisations in the North West neither of whom has yet been approved.

'The Council is being asked to endorse one particular bidder through the provision of facilities for meetings, providing refreshments and endorsing their literature which has been produced to encourage Parishioners to sign up to an agreement with the Company.

'Our questions are:

Can we legitimately support a commercial organisation of any type against another.

The implications for prejudicial interest should all Councillors sign up.'

In response, the advice from LALC was as follows:

'I don't think this is a good idea for the council to be involved in. If you had the power of well-being, you would be able to consider this providing it brought benefit to the area, but there is no power to allow councils to promote commercial undertakings. There would be issues of impartiality if another company wanted the council's consideration for their project as well. If cllrs sign up they will have to declare personal and prejudicial interests in any discussion.'

I include these extracts from email exchanges as they illustrate how easily a brilliant idea (B4RN) can get off on the wrong foot and appear problematic in a forum such as a Parish Council aware of its duty to do everything 'by the board'. I must add that any resident attempting, in 2011/2012, to get a clear idea of what was involved in bringing SFBB (superfast broadband) to every property in the village would find it difficult!

Fortunately for B4RN and for Melling, matters did not stop there. On 5 September 2011 my wife and I attended a B4RN meeting in Arkholme. The presentation was by Barry Forde. For the first time, I was able to form a reasonably clear idea of what the B4RN project entailed. Two or three young men from small businesses in nearby Newton expressed immediate, even urgent interest ('When does it start? How do we do it?') and asked: 'Will there be long-term jobs?' (In 2024 the B4RN payroll was more than 70 FTEs...).

The message I took from this meeting was that B4RN was a community project, not only because it would serve the whole residential and business community, but because the project would be underwritten and undertaken in each village by investment and labour (digging).

2012-2014

At meetings in Melling in the years 2012-2014 several residents expressed their concerns about the B4RN project, how it would affect their home, their garden and their wallet, etc. Unfortunately, there was at least one meeting where some residents left feeling that their concerns had not been acknowledged, or were even dismissed, by the representative from B4RN. In two cases, residents previously interested in, and supportive of the B4RN project turned strongly against it, just at the stage where residents' support was most needed.

2014

Additional meetings were held in Melling in May and June, and in June-July a survey was carried out to find out which households in Melling would be interested in a B4RN broadband connection. For example, of the 14 households I visited in 'my' sector of the village, the responses were: YES 6, NO 4, 'DON'T KNOW' 2, 'TO FOLLOW UP' 2.

Sometimes the response to the B4RN scheme was not just indifference or apathy, but outright opposition:

* In one group of properties subject, I think, to a leasehold agreement, most homeowners wanted the B4RN connection, but could not have it, because of the veto by one owner who mainly lived in Manchester.

* Several householders were clearly unsettled by the prospect of 'digging up their garden' in order to bring B4RN to their property; in one case, a refusal for the ducting to pass along to end of the back garden meant that three other households could not be connected; in another, a householder wanted to be paid for allowing the B4RN connection to pass through their garden in order for their neighbour to be connected.

B4RN was presented as a community project that would only happen if sufficient numbers of residents invested. But by the time digging was scheduled to begin in Melling, only a small number [2-4?] of residents, including myself, had invested. So how was it that Melling found itself in this position? I admit that I did not fully understand at this stage whether a village had a minimum target for investments to demonstrate support, or whether a village could 'earmark' its investment to pay for digging. This issue came to a head a year or two later when there was discussion as to whether 3 'late' investments in shares by Melling residents could be counted towards paying for the digging: see below, January 2016. It would be interesting to know whether any other local communities encountered this, or similar difficulties or confusion regarding shares/loans or donations of time/effort etc.

Anyway, a meeting was held in Melling in October 2014, with the focus at last on how the scheme could get off the ground – or more precisely into the ground - in Melling: who would volunteer to do the ploughing and mole-ploughing? Paul Williams (was) volunteered to take it on. In addition, a team of residents would be needed, to 'follow the plough'; I volunteered to be this 'gangmaster' and it looked as if we would have enough volunteer diggers/helpers to make a start. So we were in business – or were we? For at no point did Melling appoint a Project Manager. I think Melling would have appointed one if B4RN had made clear, and insisted, that it was essential to appoint a Project Manager before proceeding.

The question has to be asked: did the B4RN management simply assume that, as B4RN Secretary (and Melling Parish Council member since November 2011), Mary Jackson was de facto Project Manager for Melling? If so, this was unfair to all concerned, not least to Mary, as she was in some sense reporting to herself. Certainly in 2014-2015, Mary was the channel for communication between B4RN and Melling about the broadband project (1) through the Parish Council, of which we were both members, and (2) directly with me and other volunteers.

Before B4RN could lay the ducting trenches, advance permission ('wayleave') would be needed from landowners; it was agreed that Paul would seek and secure permissions as and when required. Because Paul knew the landowners, this speeded up the process of getting started, in a situation where Melling was already way behind the field (no pun intended) in terms of getting the job done. However, a serious error was made in respect of the ownership of land between Lodge Farm and Melling village, with the result that a major link in the Melling network had to remain underground, unblown and unconnected. This would not have occurred if there had been in place a strict line of communication and feedback from B4RN HQ via a Melling Project Manager to the contractor, Paul.

2015

In February 2015, a very timely and successful meeting of 30-40 villagers was held, at which John Hamlett of Gressingham gave a masterly and lucid presentation of how the high-speed broadband worked and how

it could be brought into the home. His lecturer/demonstrator technique surpassed most of what I had experienced in decades of university life... Nevertheless, no one-man demonstration, however inspiring, can provide the targeted follow-up advice and intervention that would enable non-technically-minded residents to make B4RN a reality for them.

March 2015 – digging begins

This is the place to pay tribute to Paul Williams for his drive (and, most of the time, his driving) and dogged energy. What would we have achieved without him?

'Digging for Melling' began in mid-March 2015. As 'gangmaster' I organised the roster of helpers, including myself, normally 2-4 bodies for each morning or afternoon session of digging. I understand from other villages that the operation tended to depend on a 'core team' of volunteers, and Melling was no exception. My core team, in alphabetical order, was Colin Townley, David Smith, Ged Kelbrick, Gordon Park and John Marsh. Also seen with rake, spade or camera in hand, were Luke Smith, Judith & Roger Jones, Elspeth Edmondson, Ray Frost and Marie Baker.

Getting B4RN fibre to all Melling properties involved negotiating some tricky terrain, which I came to know intimately:

* Boggy ground behind the properties on the west side of the main road; this was where I momentarily lost a welly.

* Woodland undergrowth behind properties to the north of Lodge Lane and Gillison Close;

* The steep wooded gully to the south of Lodge Lane and up towards the west end of Moorside Close (on this site, there was no question of burying the orange ducting: I scrambled along the top edge of the gulley, attaching it as well as I could, in its black alkathene sleeves).

September 2015

- the network node (the B4RN cabinet) in Melling Institute (now Village Hall) goes live, just about the same time as the BT cabinets appear on Melling Green...

September/October 2015 - I have various conversations with Lodge Lane/Moorside residents about how to bring B4RN to their property

November 2015 - the first fibre in Melling was blown

2016

January 2016 – although 3 more Melling householders had invested to enable Paul to be fully paid and the remaining digging completed, there was a disappointing lack of clarity from B4RN as to whether these contributions could be used for this purpose. (ie 'ear-marked')

8 April 2016 - our own B4RN connection goes 'live'; we owe deep thanks to Paul Whatmough of Wennington for getting the trunking into our house, through the attic and into the router.
A 'feelgood story': a couple had just moved into the School House, by Moorside; I went to tell them about B4RN, and asked if they were interested. Were they? Of course! They were connected within 3 weeks.
The reader of this piece may be forgiven for thinking that its title should have been 'Bringing Melling to B4RN' (already in Victorian England Melling had a reputation for conservatism...).
Finally, I would like to pay tribute to the founders of B4RN and to all those who have contributed to the growth of the project. B4RN today is a shining example of enterprise, in a world of complacent corporations and rapacious fund managers.

David Nott Melling, February 2024

Ged Kelbrick's story

Ged had gone to the parish council meeting because he was sick of his awful phone line, but was appalled at how apathetic a lot of the villagers were. They all seemed convinced BT would arrive and give them new lines and broadband. A lot did not even know what broadband was or care. Barry Forde did a presentation, and it was clear to Ged that he knew what he was talking about. He said to Paul, "Let's do it, it is like the coming of mains water or gas, we have to make it happen".

Mary Jackson came forward to do all the paperwork, and they had meetings at her house to figure out what to do. Different people from around the village supported them - Harold White was great and got shares from the people on his estate behind Melling Hall, David Nott took over the top estate and motivated people to sign up, John Marsh who was quite technical explained it all to people.

David and John joined Ged in the trenches when they got going with the digging, and people often helped as they were digging past their houses. Stef also came out in the trenches too, together with the children, but mainly it was the 'old fogies' doing it.

Ged remembers that when they started the dig, it was quite a long way from the village, about a mile, and John could not walk that far, so Paul made a trailer to hold the duct and they put cushions in it so John did not have to walk. One day the cows in the field, who were always curious, got hold of a cushion and one was clearly determined to eat it. He didn't think the farmer would be impressed if a cow died, so they ran after it and grabbed it. They won the tug of war, but no photos were taken... and they all had a laugh. He soon stopped laughing when a cheeky heifer came up and pulled the hat off his head as he was bent over in the trench so he had to run and catch that one, too.

Despite the tribulations, they reached the village, but more near disasters were on the horizon. They were digging through a very boggy bit at the bottom of his garden, and they were in the trench levelling it out as best they could when David got stuck. He could not free his feet from the mud. They downed tools and eventually got hold of him under his arms and pulled him out. It does not do to lose a volunteer! Paul eventually dug the wellies

out of the trench ,and they continued.

Ged remembers that they had a very rough track to go up towards the institute, it was not very long, but was rock, and that took them a long time. Once that was done they could bring the village live.

Bruce came with the blower and blew the fibre over from Arkholme. Ged borrowed Paul's big drill and put the house boxes on with training from John Hamlett at Gressingham and Paul from Wennington, and helped the people who wanted it dig through their gardens.

They took the duct up to the end of the village, and Hornby took over the dig, as they too were cut off from Wray at that time due to landowner issues.

Ged and the team then dug round the top end of the village, and connected all those people too. It was quite a while into the project before Ged got connected, but he says it is absolutely brilliant to have been part of, and he loves his connection.

Paul Williams's story:

Paul Williams had been asked by Stef (his wife) to 'do some digging'.

The Parish Council wanted it done, but there was no organisation and nobody knew what to do. Bruce Alexander, who was a volunteer at the time was a great help and taught him many things. He went straight to Bruce when he wanted something or wanted advice. Barry gave him maps of where the duct was to be dug and how many ducts to put in a trench. Tube (duct) maps had not really been invented, and Bruce generally did them on the back of old envelopes. Bruce did some house kit fittings for them, and Paul Whatmough from Wennington came and helped them, too. Paul walked the routes Barry had given him and arranged access. One landowner took an awful long time to persuade, so Paul concentrated on the ones he could do, and on getting to the institute from Arkholme.



Bruce blowing the fibre at Melling.

B4RN had by this time reached Wennington, but that route to them was blocked by landowners, so Barry managed to raise the funds for a directional dig under the Lune. Tony Swidenbank had done this, and installed a chamber on the Melling side which was ready to connect to. In order to minimise the impact on the fields, Paul bought a mole plough for his tractor, and together with the digger and his 'old fogies', they got the whole route up to the track done in a couple of days. By the time they finished the track, you could not see where they had been in the fields.



Paul's dig behind the village.

Paul then dug round that side of the village as far as he could on Edward Towers's land and the houses got



Digging down the lane to the houses.



Ready for the road crossing.



He dig round the back of the village institute.



David Nott digging at the school.

connected. He left duct for the houses that didn't want it at their boundaries. He collected his own duct when he needed it.. From 'doing a bit of digging', he'd had to morph into a telecoms contractor and manager. He says the moleing was great and very efficient, but some of the digs were tedious if there were no volunteers to help. He would ring them in the morning and tell them where he would be working, and most days they turned up though. His mother-in-law kept them supplied with tea.

Then they had to go to the other side of the village. To do this, they had to do a road crossing, so that was booked, and the landowners consulted. It was a real help that they could see what had been done at the other side of the road and how little impact it had on the land, and he won them over. They chose their own routes through very rough patches of their land, but he got it all dug and the trench reached David Nott and Moorside. Once it got there, another road crossing was needed to reach the school and to get to Harold at Gillison close.

David Nott dug down the track by the school, and he and Paul's children helped get the connection under the wall and into the school. Gordon Park also came to help. The school at Melling had been fed from Wrayton with a microwave link from B4RN, and they were super happy to get their connection at last. They now get free service instead of paying the County Council (and hence BT) a fortune every year. Paul then got in the field and completed the route. Once he had a route completed and they had got the houses ready, he rang Bruce who came and blew the core and house fibres and organised the volunteer fusers to come and bring them live.

Paul Parsons from B4RN and John Marsh helped Bruce blow the house fibre. Paul Whatmough from Wennington also came to help with the blowing as he knew where the majority of house kits were and he manned the walkie talkie to let Bruce know the fibre had landed in the properties. The houses were fused



Paul Whatmough mans the walkie talkie to the blowers.



John Marsh and Paul Parsons blowing house fibre.



The customer tubes getting their fibre blown.



Paul Parsons fusing the fibres, with the FTTH husky mascot.

and the customers came live when Paul Parsons fused the bullets in the fields.

Paul Williams was paid as a contractor for the digging, both in money and in shares, but worked tirelessly as a volunteer, too. This is the only project where the digging and organising was done by the same person. Paul dug over 9 kilometres of trench around the village.

The cabinet was sited at the institute, and they, too, get a free service for hosting it, and the village church also get free service, thanks to the committed work of a few.

The last stage of the Melling project came when B4RN relocated their office depot to Melling in September 2015. Recycom was a location with plenty of storage and had hosted the link to the school. B4RN took over this site, and Paul was asked to bring the fibre from the school chamber, down the field and to the new depot. He decided to do this with his mole plough, and lucky for him Leonard (George's son from Gressingham), wanted to borrow his tractor at the same time. Paul's tractor was small enough to go into his farm building to stir the slurry tank. Leonard's tractor was much bigger, so he arranged a swap, and the big tractor did the job in a very short time. The mark on the field was never seen. The B4RN office had been fed from the microwave link the school did not need any more, but they were glad to get on the real fibre!

This was a different village approach, as mentioned before: there was not a committee, or a leader, and very little help from B4RN, apart from Bruce and other volunteers. A very small team completed all the work and the connections. B4RN itself was a bit disorganised as well at the time, having many different parishes digging, about to take on more staff, and also to move from the tiny office at the Auction Mart into the new premises at Melling. A lot of changes were happening. Melling succeeded despite all this. That is why it is amazing!

But then, another disaster was waiting in the wings. January 2016 brought the worst storm for years, and the river Lune burst over the flood plain that was the valley. Higher up, it took out a mile of water main for Whittington as the bed of the river changed, and one field was obliterated and appeared



The new offices at Melling.



Floating duct on the River Lune.



The broken duct beached.



John Wightman's house at Locka, where we sited the antenna that could see Melling Institute.

as gravel on the other side of the river as the flood subsided. As the flood waters receded, a local resident noticed something floating in the river, and as he had been involved in the trenching, he knew it was our duct. From the following photos you can see Melling in the distance, and their feed floating on the receding flood water. (As the network is owned by the people, they tend to keep an eye on things). He sent a photo in, (left) but the river was still too high to do anything. A tree then came down the river with tremendous force and broke it all, and the bullet floated away. It took out the chamber that Paul had connected to, and it all floated free. The duct and fibre ended up at the other side of the river having been pulled out of its underground sheath. Melling and the connection to Hornby went off. At this point there was no second route into either village, they were under construction, but the 'loop' was not finished.

The repair team sprang into action. Tommy was recruited to climb ladders and install equipment on the Melling Institute and a house they could see in Arkholme. We used the kit we had left over from the WenNet network and put another connection into Andrew Wightman's house at the top of Locka Lane in Arkholme, it had a clear view to Melling. Tom Rigg worked his technical magic, and both Melling and Hornby came live again. The signal was restored, albeit at a lower speed than the customers had got used to, because it was wireless not fibre, but it worked fine and a lot better than their old phone lines used to, so nobody complained.

The directional drill was booked again, and a new drilled route under the changed course of the river was done, plus a new chamber installed further up the field. Who knows if such a flood will happen again, but the timely response meant that normality was quickly returned, new fibre blown and fused, and the wifi links removed.



Alistair Adams Huset and James Clapham at the chamber.



James re-blowing new fibre.

In September 2020 fate had another trick up its sleeve for Melling.

September is notorious for fibre strikes, as farmers plough their fields.

Melling was hit with a plough cut, and because it was close to the depot it was fixed even quicker than usual. It happened at the end of the day (as usual), when the staff were going home, but as usual the core team led by Alistair were there to put things right. Jorj and Will had just got back from working in Heversham, and they helped too. The civils team with JamesTaylor and Ashley McClements came to dig new trench. The network was diverted, so most customers were not affected. Resilient links were becoming more common now.The duct had been severed in a few places, so they repaired the duct and pulled out the old fibre.Then James re-blew the fibre, and they terminated the ends again in the chambers.The whole process was completed in under 12 hours.



James, Jorj, Alistair and Will in the van fusing the bullet.



The benefit of having a van with workspace and everything to hand.

Hornby

Hornby was not part of our phase 1, and Tommy Hartley from the original WenNet project and the B4RN management team lived there. He became the local champion and tried to get the village going. He was really up against it here. The village itself had a telephone exchange, and most people were on short line lengths and had a working connection. By this time the County Council had given the funding to BT and they were rolling out FTTC in Hornby, Farleton and Claughton. This technology was slightly better than the ADSL, but still nowhere near as good as real fibre, and it confused many of the villagers. Farmers and people on long lines did not benefit from FTTC, and still would have very poor connectivity. However, there were enough of them supporting Tommy and B4RN to make a go of it. They had a tribe at last.

David Collins and the Hornby team rallied round him and took over the organisation of the village. They raised interest in it and got shares coming in. One local landowner, who really wanted to help the village, put up a large amount of money into the loan scheme as it was such good interest. Tommy bought his own small mole plough for their use and started getting the routes into Hornby and helping other villages too. Their initial feed into the village had come from Melling, once the Lune had been crossed, later another joined in from Wray. Getting to Farleton was not too difficult, and it was the route to Claughton too, which was planned to eventually join the Littledale/Caton route and help Brookhouse as well. He said at this time he felt he was juggling balls every day and it was an exhausting period of his life, but he really got satisfaction from doing it. These routes also helped a lot of rural homes and businesses on the way.

The village central had two main landowners who proved to be very difficult to convince, but they came round in the end and were very supportive, and the village got digging.

They also had one landowner who could not be convinced and so they avoided his land, at some expense but it was 'easier than arguing'. Some duct had been laid in his field, which the volunteers had assumed belonged to his father, who had given wayleaves on all his land. The son demanded that all the duct was removed, which was duly done but was very hard work. All the volunteers mentioned this, so it made a lasting impression on them.

Some amazing volunteers came forward ,and a lot of people were involved, including one 96 year old lady, Jayne Summers, who helped by Rachel Murton dug her own garden.

The volunteers did all the house installs and helped with garden digs. They had meetings at the village pub. Tommy remembers the massive amount of volunteers when they had to go over the river bridge and they had a winch to pull the B4RN duct through the existing duct in the pavement.



Jayne Summers and Rachel Murton.

David Collins remembers he had a passionate interest in getting the B4RN service for himself and his village, and he knew the best way was to pitch in and help. Tommy had got the duct to the village and so he did what he could to help and became hooked and led the project through the gardens, literally.



Tommy and Dave Connor winching the duct over the bridge.



James Wilkinson and Tommy.



The B4RN civils team come for the hard dig.



Volunteers organising the ducts.



Hard pavement dig done by the civils team.



Duct laid under the pavement in sub ducts.

David did a lot of the house installs himself, but says that Dave Conner and Brian Wilkinson helped, and James Wilkinson did most of his entire estate. Norman Silcock did a lot of work, too, and also mentored the Claughton champion, Graham, who sneaked into their meetings at the pub to learn how it was done. Norman trained them all on how to do the house installs.

Rachel Murton was a sterling digger and put a lot of work in, quietly enthusiastic and willing. Dave Conner was also a digger, and David said he would have dug to London given the chance. He was nicknamed the 'Ace of



Norman Silcock, Dave Connor and Brian Wilkinson doing house installs.



Rachel Murton digging under a wall.



Rachel getting under paving.



Dave the Ace of Spades.

Spades' by James. Speaking to Dave, he remembers doing a lot with Tommy, Big Bertha machine, and the digger, and digging right up to the castle and right round the estates with the other volunteers. They left a duct for every house. David organised them and kept records. Because they were digging through a lot of back gardens, they often had to move piles of junk, then put it all back afterwards. One or two gardens were much tidier for their efforts and he got a couple of bottles of wine for his trouble. At one point on a mole dig under a track, one side was



Dave working with the digger man.



Dave working with Tommy and Big Bertha.

higher than the other, and they angled the mole so it went upwards, but the mole decided to go straight and they had a mammoth dig at the other side to find it. Tommy also remembers using his vibrating mole to go under a greenhouse (because of the landowner who would not let them through his field), and the whole greenhouse was quivering. It was showtime, and everyone watched until the successful little mole popped out at the other side

and the duct was through. Dave's lowest point was in a garden in the corner of a small estate. The owner had specified that they could go through the flower bed but not the lawn, but he had forgotten and went through the lawn. It was a very tidy job, but the house owner was livid. He made them take it all out again. They'd had to dig right under a big wall to get into his garden, which had taken them a long time, and thread multiple ducts through for the other houses. They all had to be pulled back and re-routed right round the house and garden. It made him and Brian feel very bad. He got the duct to all the other houses, and that made them all feel better again.

Dave recalls getting it through to the Institute was a massive job because of concrete and walls and gardens, and getting it over the bridge, with a civils company cutting the pavement and leaving a subduct for them. They did some superb work and had very tidy chambers.

Another one of the volunteers said he had no idea at all what he was doing, but he just did as he was told and everything worked.

Bruce appeared to blow the fibre into the village church which got a free connection as a place of worship. So did the schools and the Catholic church across the road.



Bruce blows fibre to the church.

Walter from Surrey was also part of the Hornby team when fibre was blown down the main street. He was awarded his fibre spade on that day for the persistence he showed when we had a blockage.

Paul and Alex did the bullets in the chambers and the cabinet was sited in the village hall.



A very tidy chamber at the Castle.

Hornby dug over 15 kilometres of trench.



Dave Connor and his spade.



Walter Willcox and his spade.



John with his spade for house installs.



Dave Collins and the village spade.



Alex Colton and Paul Parsons fusing the bullets in the chambers.

Farleton



Graham Hayter and his village spade.



The village spade on the first Farleton house.

The route Tommy had dug continued down the valley to eventually connect up to the Caton/Littledale route. On the way, it went through Farleton, and the local champ there, Graham Hayter connected up the houses who were interested, including the local farmer who had let it through his land.

It was only a tiny hamlet, and BT had just installed an FTTC cabinet there, so many thought they were ok. Time has proved them wrong, but at the time only half took the service from B4RN. Graham got his spade anyway... and the local farmer was very happy.

Duct was left available for all the other properties and, as time has gone on, most of them have joined B4RN. It is relatively easy to connect properties when the project is in action. It is more difficult to do it years later ,unless the original volunteers are still there. They always know where they left the duct for one thing. They also know who to ask for permission to dig it up, as it is left at the property boundary, usually. Anyway, Graham and Tommy got the dig through to where Claughton took over, great job done.

Claughton



Graham McGee

Graham McGee had been attending the Hornby pub meetings to find out what it was all about. He talked to the local farmers, who were up for the job, and they borrowed Tommy's mole plough and cracked on.

The 3 principal landowners in Claughton gave their permission to install the ducting on their land, all of them being farmers: Ronnie and Isaac Bargh, Shirley and John Harvey, and Rachel and Mike Thomas.

Graham did the planning and the farmers dug where he said to. They owned all the land, so there were no tricky negotiations involved. Graham and his son Robbie had been to see every property owner and tell them about B4RN and many invested in shares but it was not enough. Graham and Robbie then went to see SWS, an industrial unit in the village. They had been quoted an exorbitant amount from BT to get a fibre to their offices. SWS invested the money in B4RN instead, and the project was a 'Go'.



Feeding the duct into the mole plough.



Straight after the mole plough had got the duct to the cabinet site.



A few days later and you can't tell it was done.



Bruce arrives to blow the fibre, with the safety barriers.

Once they had the funding, Graham planned the layout with Bruce Alexander. The construction was done by the aforementioned landowners, assisted by a number of local volunteers, not surprisingly including Graham.

Individual house owners also assisted, including the loan of a very welcome mini digger. John Harvey helped with the house digs. Isaac had some great digs with the mole, very tidy work. John and Isaac got it to SWS, and that was where the cabinet was to be sited. You can hardly see the plough trench in the photos.

Tommy was a huge help and produced the ground radar device. Mike Thomas did digging in the village, too, and they got round all the houses.

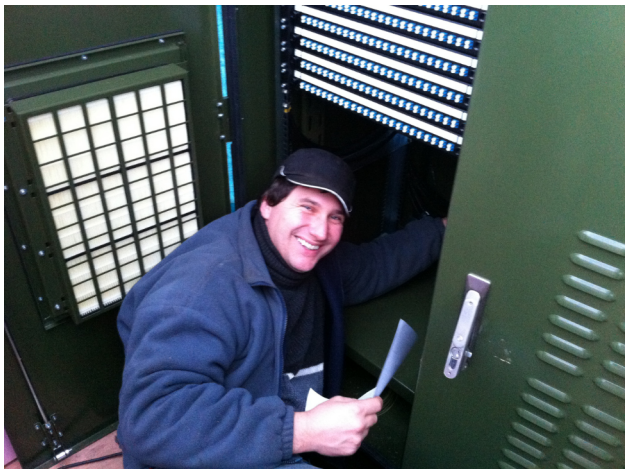
Bruce Alexander and Graham sorted all the ducts and properties out, Graham says Bruce was invaluable and kept the Claughton ship sailing.

They had very unique safety barriers. Pallets were used to keep the sheep away from the chamber. Bruce appeared to get the fibre in, and the fusers and cabinet appeared.

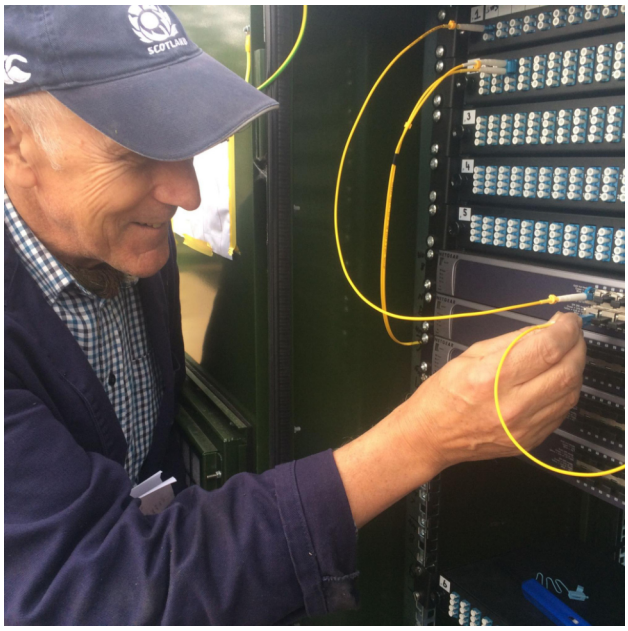
Norman Silcock from Hornby trained Graham to do the house installs, and helped out until he got the hang of it.

Once the ducting was in place, Fred Frobisher and Graham did the installation of the individual property kits. Graham's worst experience was drilling houses that had horsehair insulation. He says 'the drill goes in easy at first, then all of a sudden you get the feeling you are going to spin round with it, but the drill actually stops when you get '5 horses wrapped round'.

Graham says it was all a marvellous experience and a great thing to do. He notes: 'Most private properties in the east of the village took the system. Take up was patchy in some of the terraces. Not all businesses took the service, but some joined later. We built redundancy into the system to allow for future



Frank fitting out the cabinet.



Graham patching customers.



Graham making off with some waste duct to re-use.

connections. The Claughton scheme probably would be done differently now, but what fun it was in doing it ourselves'.

Frank Balassa and his team came to fit all the kit in the cabinet, and the excitement built up as the great day dawned when it was switched on, and the first customers took the service in September 2015.

Graham had the deep joy of patching the first live connection in his cabinet, hosted by SWS, who had helped make the project happen.

He says it has proved to be a robust and reliable network and he was awarded the village spade.

Graham is pictured stealing some left over 16mm to thread under his driveway to thread his 7mm house duct through for protection.

Claughton dug 13 kilometres of trenching,



Graham and the village spade..



The view from Caton Green down to Claughton.



Peter Hearne and Iain Robertson reeling out at Quernmore.

Caton Green

Above Graham's patch at Claughton is another cluster of homes, farms, and a nursing home, and they wanted it, too. There were some more businesses on the way, and Peter Hearne, who had been helping at Quernmore took up the baton. Or spade. Peter has close to 50 years' experience in the development and management of organisations, in both the commercial and charitable sectors. Peter had known Barry from his working life, and when he found out about B4RN and that Barry was involved, he knew it would be viable. He knew Barry was technically brilliant, so he called a meeting at his house, provided tea and biscuits and found out his community were brilliant too and they wanted the opportunity to join on. 'Word' about B4RN was spreading, and a lot knew a bit about it and wanted to help in different ways. The youngsters would help the older folk dig through the gardens. To finance it they all bought shares, and some bought extra to give free connections to those who could not afford it. They also found diggers who would work for digging shares. Digging shares were used a lot in those days for farmers who wanted to dig their own land, or for farmers who wanted to specify a trusted digger rather than a stranger. The digging shares were £1.50 a metre. David Platt dug all his own land and the rest of the 'bottom' route from his farm and business units up the hill to Caton Green. On Joe Townley's recommendation, Peter asked Bob Hutchinson and his son, John to do the digging on the 'top' route from Claughton to Mears Ghyll because of their known reliability.

Joe, a local farmer said, 'Aye well, it's a bit flinty', meaning there were some big rocks in his field, but the diggers did a great job. Mick had dug to where the routes split above Claughton, with one route going through Mears Ghyll and onwards to several homes and farms before joining the Littledale route, and Mike Cave took over that, and one route followed the road to David's farm and business units. It then went up the hill to Caton Green where Bob took over. The route stopped there because of an absentee landowner, and never did go into Brookhouse as planned. Maybe it will in the future, but in the meantime Brookhouse joined onto Littledale via Caton and got sorted.

Peter had already learned how to reel out the fibre from an expeditionary trip to see what was happening above Quernmore, and he'd been to Hornby to have lessons with Norman on fitting house kits. He fitted most of them, because he already had a drill. Some of the younger chaps borrowed his drill and did their own. though. Peter says their main problem in those days was the weather hampering the dig.



The photo above shows some of Peter's family and neighbours who helped on one of the digs. Trisha and Grant Griffiths turned out to help him, too, and the photo shows them in the centre, with David and Mary Platt and children, and Martin Knowles. He had a great tribe.



Peter Hearne with his JFDI spade.

Other volunteers appeared in different areas but hardly any photos are available. Graham Ransome from Mears Ghyll also helped dig the duct to older people's properties. Peter remained impressed by everyone's enthusiasm, and they got all the ducting done.

Then Bruce came and blew the fibre, the fusers came, and they were live on the Claughton cabinet.

Peter got his spade.

A while later he was invited to be a B4RN director, bringing in lots of experience from his working life.

There was no government funding for this project, so no dig grants. The communities kept their costs down by doing a lot of the work themselves. Volunteers cannot be paid, because, as is so often pointed out - 'volunteers are priceless'. B4RN however insures all the volunteers in case they hurt themselves or damage property.

The Arkholme branch continued onwards with other branches and stories as it opened up the routes to so many other villages.



Chris Hall helping with the mole plough from Arkholme to Newton.



Chris turned many fleets as he blew the fibre from Quernmore to Wray.



Chris wrapping a bullet with its fibres.



Chris puts the lid on after Iain has shown him how to do a bullet.

Chris Hall



One of the local chaps at Arkholme who had been volunteering a lot had become our second volunteer blower.

Chris was one of the first volunteers in the trenches, and when Tommy started the blows he took a keen interest. Chris was an ex BT engineer, and he was very interested in all the processes, so he learnt to blow the fibre.

Tommy and Chris Hall blew all the fibre in the first communities.

Tommy had a very busy day job and was happy to hand over to Chris, who was available most of the year except for lambing time.

Chris would collect duct and fibre with his pickup, and he knew all the farmers, who could get it where it needed to be with their tractors on the wet land of 2012. He also learned how to fuse and helped out with quite a lot of the bullets on nearby villages, as two pairs of hands are always better than one.

He features in a lot of stories so look out for him throughout the book!



Chris re-instating the cobbles after a dig in Arkholme.

Chapter 3

Gressingham/Aughton/Halton Eco/Halton Urban

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Phase 1 green, Phase 2 pink.

Gressingham and George.



George Metcalfe. A man of Grit.



George interviewed by Brian Thompson and team from BBC Click.



Our B4RN banners, designed by John Hamlett

The original B4RN banners by John Hamlett.

Gressingham, a very small village next to Arkholme saw how good B4RN was, and a farmer called George got together with video producer, John, and formed a formidable team in 2013 to try to get it into their area. This village was not in the original Phase 1 build, but Barry said they could start, as other routes had either wayleave issues or had not taken the baton yet.

John and George, the main Activists, found many enthusiastic Adopters/volunteers from their village, most residents contributed in one way or another, and they raised money in investments to pay for their duct. EIS was still available, which made shares very attractive with a 30% tax rebate for UK taxpayers.

Despite being unable to walk, George dug on his digger for as long as he could every day until his wife dragged him home. He even spent a whole day digging without realising he had broken his leg. He got fibre to his farm, and ultimately to the entire village.

BBC World Service and BBC Click did a programme featuring George, and there is a link at the bottom of the page if you want to listen to it.

John was the designer of our banners, sponsored by the Area of Natural Beauty (AONB), and if you look closely at the horizon you can pick out George on his quad bike, checking his stock.

Beyond the book:

BBC World Service



Peter Docton and John backfilling with sieved soil to get stones out.



A small piece of split gash duct on the fence so the farmer knows where not to knock a post in.



One of George's trenches between Arkholme and Gressingham.



Volunteers laying the duct and backfilling with soft fill.

John was the inventor of the 'bread tray sieve technique', which sifted the rocks out of the backfill. He invented it because he had a bad back and could not keep bending down into the trench to pick the stones out. He loaded the fill on the tray and wriggled the soft fill onto the duct, discarding the stones.

John, with his most stalwart volunteers Peter and Roy, also made sure the chambers were done well, and the duct could not kink going in and out of them.

He also came up with the idea of using gash (waste) duct on the fencing wire to mark the spot where the duct went through.

John's early routes had tape tracer which went on top of the soft fill under the sod .

From one village to another, a superb trench dug by George. The farmer of grit.

House digs were done by the volunteers and householders to a very high standard. The duct was protected with alkathene pipe when it went under hedges or walls. The following photos show a good example of a house dig. Sod was rolled and the lawns protected with plastic sheeting. We later realised that 'hinging' the sod on one side was much better, but all these things were learned eventually. A hinged dig is where one side of the sod is not cut and is folded back over to dig the trench, then folded back after backfilling.



John digging under a hedge and threading duct through alkathene pipe.



Garden sub-ducted in alkathene with metallic tracer tape.



The finished garden dig.



Iain Robertson and Jane Paxman labelling ducts.



Chris Hall blowing the fibre to Gressingham and David Smith fleeting.



A long neat garden dig, with spoil kept off the lawn surface.

The trench was dug, and again alkathene was used to protect it, and the entry point for this house went into the cellar and then up through the floor instead of having a box on the wall outside.

The duct was laid in the trench and backfilled with the tracer tape above it.

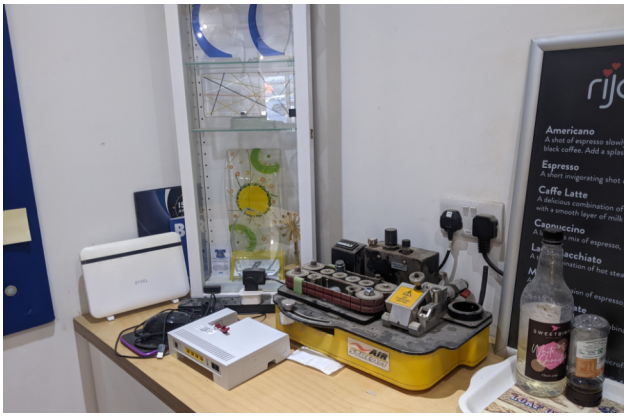
Volunteers helped with labelling ducts. Up to then we had been using cut up yoghurt pots and duct tape, but then Iain had the idea of using plant labels and cable ties, and each duct was labelled for every property.

Chris Hall blew the fibre to George's farm, helped by David Smith from Arkholme. When we were blowing the fibre to George's farm our trailer was hijacked, and the compressor and tools were stolen overnight. The insurance would not pay because it was not in a 'secure compound', it was actually stuck in mud in a field. Three volunteers from other parishes loaned B4RN the money to buy a new compressor and a blowing machine. The new blower was named after one of them, Anton, (and is in the hall of fame now it can not be repaired any more).

Then John was told that there was not enough money in the kitty yet to put the optics in the cabinet. John carried on installing villagers, and promptly found more investors to buy the necessary cabinet gear, and Gressingham and Eskrigge came live off the Arkholme cabinet. Those routes were dug by two local farmers, John Lumb and Martin Brookes, and



We made a sticker for Anton.



The Anton blower in the Hall of Fame at the office.



The new blower Anton bought.



Chris Hall blowing the house fibres.



Leonard brought his trailer every day.



John Hamlett fusing customer connections.

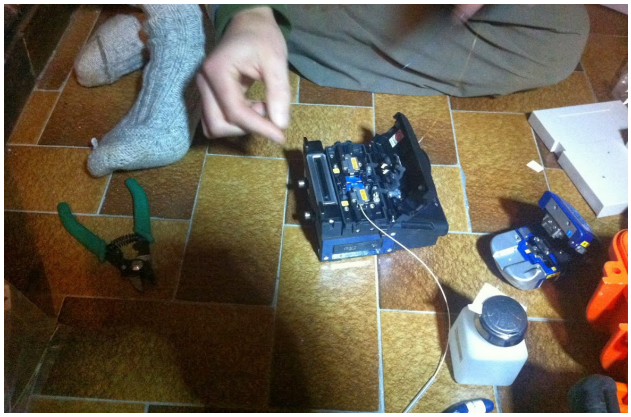
Martin did a lot of the village digs and house installs.

Chris Hall from Arkholme was the main core blower, and he blew the house fibres to each home, too. Then the fusers started their job.

George's son Leonard brought his trailer each day for us to fuse in.

John then learned how to fuse the fibres, and organised fusing for those he had not time to do as he was still busy digging.

John and his team got the duct from Arkholme to Gressingham and up through Eskrigge, he also taught the Aughton volunteers the tricks of the trade. He then made us a little film when we reached our 1000th customer (the one where Prince Charles fused a fibre), "This is B4RN - the community broadband network", and John was delighted he could now upload this video in seconds on his B4RN connection.



John Hamlett - first fusing lesson, on the floor.



Tim Higgs, a volunteer from down south helps John set a chamber.



George is happy with his home office connection.

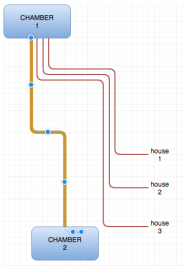


The dig nearing completion with Gressingham church in sight.

John also joined the management team for B4RN and went on helping other villages and did presentations for those who were interested in doing a B4RN project. He inspired many other communities to JFDI.

John also wrote our first comprehensive 'build guide', and HSE (Health and Safety) booklet to prepare communities to work safely.

John designed the first coherent method of duct mapping. Up to then we had used the back of an envelope that Bruce drew for us. It worked, but a proper duct map looked more professional, and that is what we were aiming for.



John stayed very active in B4RN until the management team was dissolved, his last work being a professional brand refresh including a new website, stationery and livery of the first B4RN vehicles.

George got his connection and was very happy.

John was able to upload his video productions and was also very happy.

George dug 8 kilometres of duct to enable Gressingham to join to Arkholme, then other villages benefitted from the start they had made.

Aughton started digging towards Gressingham even before they had finished, and Halton Eco Housing took an interest. John helped them all get started and then he finished all his own, and some of them came to help him and learn the ropes.

Beyond the book:

John's video



The Eskrigg and Gressingham signpost.

As you will have seen from the map at the start of this chapter, Gressingham and Eskrigg were not in the Phase 1 plan, but because of George and John they got their connections. This set a pattern for many other villages, 'If whey can do that, then why can't we?' Little, forgotten hamlets rose to the challenge, which in turn led to larger villages in the valley.

At this point in B4RN's story there was no government support, and everyone had to finance and actually dig all the duct in themselves. It is a testament to the tenacity of people and communities - showing what they can achieve if there is someone or something to enable them to do it. It is the foundation upon which B4RN has grown.



Chris and Hilary Carr.



The Aughton Lindsey spade.



The Aughton banner.



Tidy trench. John Mackay and Chris, 50 metres by hand to avoid utilities.

Aughton

In 2013 Hilary in the next village to Eskrigg (Aughton) heard about B4RN and was relentless in making sure her husband Chris mobilised too. Their internet connection at the time was 0.73mbps and unusable. She wanted a better service for her community. Everyone who knows Hilary knows that she never ever gives up when she decides something needs doing. Chris did not stand a chance. He went to help John and George at Gressingham and saw how ducts were laid and worked out how it could be done in Aughton. He then went to Whittington and Capernwray digs and learned blowing techniques. Once he was sure the project was a goer, the tribe started to build around the two activists.

Hilary invited Barry to the village hall, and many people attended and were interested. This village was also not included in Phase 1. Another load of cats to herd, but Chris was extremely well organised and played his cards very well.

They got B4RN banners up and spread information around the parish. The Aughton pudding festival had raised a few thousand pounds that year, and Chris persuaded the church and the village hall to 'loan' their share to B4RN to buy ducting and a cabinet, and the village hall agreed to host the cabinet. This was where Chris decided to start the dig, 2.5 miles away from any connection. Gressingham had not finished theirs, but he knew they would.

The sight of the diggers brought out volunteers and more interest in investment. Chris said: Traversing a nest of cables (electric and telecoms) and water pipes meant digging by hand, on the way to Ghyll Bank. If you want a neat trench then John Mackay is your man! Thanks also to Tim Williams for his muscles! The first big dig was through a field owned by another George, who had the ear of the other farmers'. They started their dig in February 2014.



John Hamlett helping Chris get organised on the first big dig.



Chris helping at the Whittington blow.



Hilary, Bruce, John and other volunteers at the Snab blow.



Rollo (the dog), Hilary and Chris blowing fibre to the top end of Aughton.

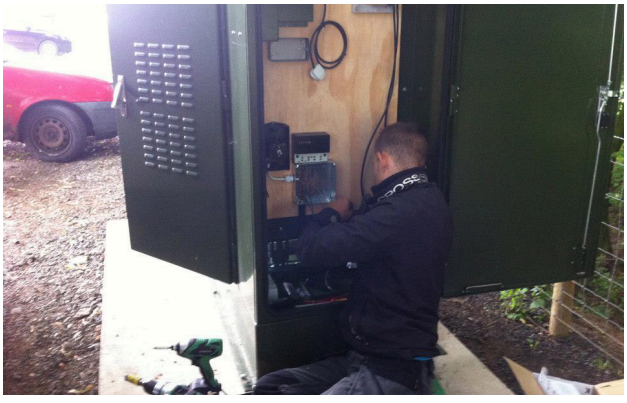
The dig down from the hall cabinet to the tiny centre of the village was in plain sight, and it was done very carefully with the sod placed to one side. Chris backfilled it all by hand, and Hilary replaced the sod and trampled it down, leaving hardly any trace of where the duct had gone. John Hamlett from Arkholme is pictured in that trench, setting them off the right way. The farmers were impressed.

Chris also undertook the management of the digging, route planning and wayleaves, working with the farmers and passing on the training he had got from George and John at Gressingham.

Chris had also joined blowing teams in other parishes to learn what the problems were and how to fix them before his blows started, and how to fleet.

The farmers all broke out their diggers and dug their own land to join the previous village after they had finished their chores. Bruce and his trusty Volvo, Chris Hall with his pickup truck and John from Gressingham blew the core fibre to the chambers. Fibre was also blown to a group of houses on the way to Halton. Every property in the parish got its fibre. Chris and his teams had dug to them all.

The cabinet was installed at the village hall, and Frank and Josh coupled up the electrics, and Alistair and Iain terminated all the core fibres. They were sheltered by Frank's amazing see-through caravan at the chamber and by whatever was available in the fields.



Josh coupling up the electric to Aughton cabinet.



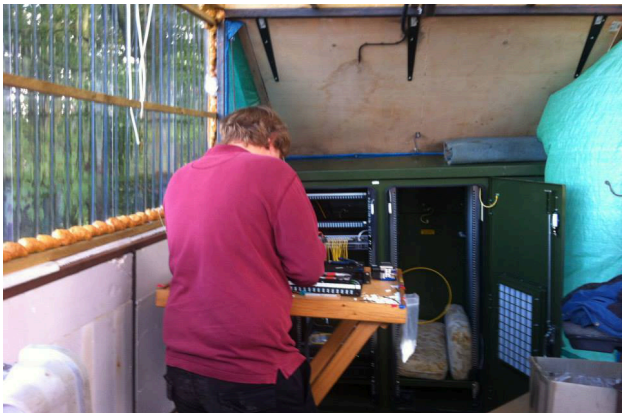
Hilary's pregnant daughter and Hilary watching Chris blow house fibre.



Frank Balassa the electrician and Hilary at Aughton cabinet tea break.



Alistair and Iain doing the bullets to bring the cabinet live.



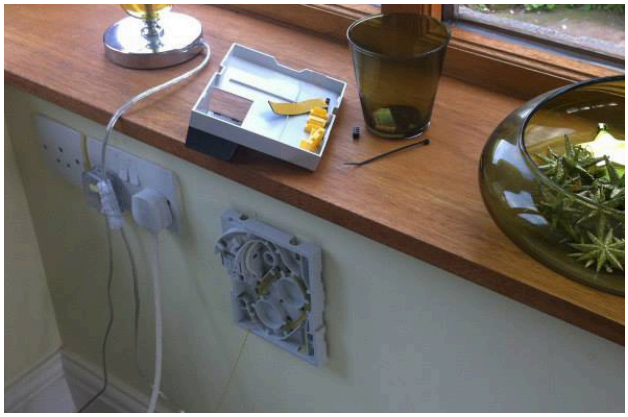
Alistair fusing in Frank's caravan at Aughton cabinet.



Hilary helping with the fusing at the cabinet.



Chris catching the fibre at a customer's house.



The fibre has arrived in the property.

All the joins and bullets were also being done on the routes into the village. Work continued at the cabinet, with more routes being blown into it as the digs were completed. Chris Hall came to blow the local customers house fibre, watched by Chris and Hilary's family and prospective grandchild. Hilary made sure plenty of refreshments were available, and everyone kept working hard. Chris went to each house blow to receive the fibre, and the fusers were there to terminate it. Chris could find any joins in the



Chris finding and fixing a blocked duct.



Chris getting the chamber ready for the blows.



Chris finishing a customer install.



The Eco housing volunteers (Jonny and family) digging the new route around a wayleave blocker.

duct where fibre blows got stuck, because he had done all the joins himself.

Bruce brought more core fibre to blow down to the bottom half of the village and onwards uphill to Halton. Then after they were connected in the cabinet, the bullets were done on all of those routes, too.

Some volunteers from the Eco - the Co Housing group in Halton joined Chris in the trenches to learn



Bruce brought more fibre for another core blow.

the ropes. Jonny Murton had been the first, but 69 different volunteers worked on the project, and considering there are only 68 properties in a 2km radius of the village hall, this is pretty amazing.

Tony, Derek and another farmer, Chris, dug through their fields to connect to the core where Gressingham had finished theirs.

Frank and Richard took over at the top end of the village to complete the core dig to where the Halton folk would start theirs.

One of the routes had to have changes made because of an absentee landowner. The tenant farmer was desperate for a connection, and Jonny Murton appeared to help get the fibre through an alternative route. This started the Eco housing project. He and his boys dug a lot of it by hand, and he negotiated new wayleaves. They dug under walls and sub-ducted the 7mm house ducts through extra protection.



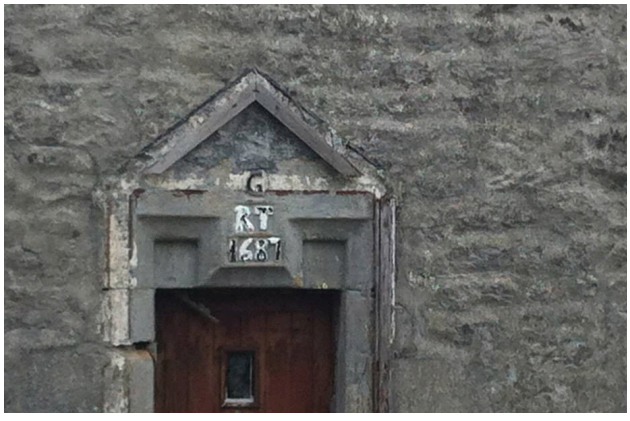
The alternative route completed by Jonny Murton and his team.



The alternative route under a wall.



The bespoke sponge catcher pop bottle in action.



Built in 1687, and now part of a truly #Digitalbritain.

Chris says that the project could not have been done without the goodwill and help from the farmers, who were splendid. Once the ducting was underway Chris had to ensure blowing the fibre was booked well in advance. The other groups were wanting theirs blown too, so Chris came up with a cunning plan to book a month before and get the date in Bruce's diary. He had assisted the Whittington and Wennington groups who were blowing fibre, so he knew what it entailed and how difficult it was to get a date from B4RN. He made sure everything was ready at his end, and it all went like clockwork. Chris caught the fibre as it popped through to the chambers. Quality control at its finest.

As well as learning how to plan a network, organise the diggers, install the house kit and blow fibre, Chris also found his dowsing skills were honed, as he found he was able to locate water pipes and drains with his bespoke dowsing kit.

He was out digging most days with different farmers and volunteers in 2014, but the main work in the village was always planned for Saturdays, when more people were available. Everyone who could help chipped in.

Chris installed the CPE (Client Premise Equipment) into every house, and with careful planning in advance, he managed to do them all. Hilary learned how to fuse the fibres and put the routers on.

There were many old properties in the area, so Chris needed his big drills in some cases, but he persevered, and they all got connected. He really enjoyed the excitement of seeing the fibre blow through into the house. One of the oldest houses Chris drilled through dated to 1687. One place he installed had neither mains water nor grid electricity, so the router had a windmill to power it up.

Hilary also assumed the task of communicating with everyone so they knew what was going on. She let everyone know of progress as it happened. She ran a



The branches that are making up this chapter of the project.


The showtell day at Aughton village hall.



Derek Burrows' Lindsey spade.


Chris Carr, Member of the B4RN Empire with his JFDI spade award.

Facebook group and used email a lot, so everyone could join in when they could.

Chris said friendships were made that have stood the test of time, and the mutual respect the project generated was great. He also says they had lots of fun doing it all.

There was almost 100% take up of the service in Aughton.

During the project the village hall hosted one of our showtell days, where visitors from all over the country came to see how we were doing it.

Scotland sent a film crew, some of this is in Gaelic but you can get the gist! (There is a link below to their film). Barry says how Scotland can do what we are doing, and Balquhidder took up the challenge and built its own network.

Derek Burrow, a local farmer who had done a lot of digging, also got a Lindsey spade.

Chris was awarded the MBE spade for all his hard work. He became a director and is now Chair of Directors at B4RN.

Aughton cabinet came live in August 2014, a year after the great pudding festival that loaned them some of the first funding they needed to get started.

Aughton dug 16,677 metres of duct. A mighty branch on the B4RN tree was growing fast.

Beyond the book:
BBCAlba News
Balquhidder Broadband



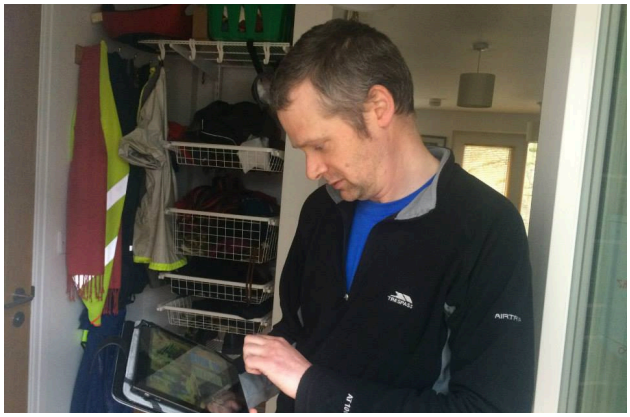
The Eco logo.



The hydro dam.



The Eco houses.



James Bellarby testing the service in his Eco House.

Halton Eco Housing

Aughton led on to Halton, which also was not in the original Phase 1 either, but if the community wanted B4RN, they found ways to make it happen.

Barry's phased building plan was shot. What seemed like a sensible plan of action was totally thwarted by these determined individuals who wanted to 'jump right in', and Barry's prediction at the launch event came true. It was like herding cats.

The Eco housing project in Halton was especially determined. They already had a hydroelectric plant on the river Lune for their electricity. As they were building their houses, James Bellarby had insisted they had fibre duct laid to each of them by the builders. Also he said they needed ethernet run through their houses. They were future-proofed - except for the fact they could not get a decent service for broadband. Then he heard about B4RN.

James never thought B4RN would get there, but he was determined to try. They started in 2014.

James was the Halton Eco activist, and he led the tribe. After working with Chris in Aughton, he decided to bring the core to the houses, connecting any farms up in between.

He was helped by a really great local family of landowners - the Bowring brothers, Thomas and Duncan, who owned the local estate. They were not particularly bothered about it themselves, but their tenants were desperate and there was talk of them moving out. James, Tommy and Johnny brought the core through from Aughton to their properties, with James doing most of the house installs. Thomas's house is dated 1683.

Duncan worked in a bank in London, so he wasn't over bothered about his country home's



Some very old properties - this one dated 1683, go into the digital age.


Previously laid ducts and chambers at the Eco Houses.


All the duct is in this pathway, and they dug down the bank to join it.


Bruce coupling up the spaghetti to blow fibre to the customers.

connectivity, but his wife did a lot of charity work and wanted it. (When Covid lockdown began in 2020, Duncan called James back in to network his house, as he had to work from home. His help and largesse at the start of the project could now be repaid).

The duct had been laid as the foundations to the Eco houses had gone in, and it was quite a struggle to find them and where they led to. Bruce from B4RN worked it all out, and two rows of terraced houses were blown in a day. Corinne had drilled all the houses and threaded duct through to the house install boxes she had put on, and Bruce blew it in. The connections team were on hand to fit routers and get contracts signed. James then had to re-terminate all the ethernet in the houses as it had been wired up for phone lines not data, but he did it all cheerfully to help his neighbours.

The main customer for this route was the Elephant Mill at the end of the co-housing property This was a community workspace hosting several small businesses. The hub (cabinet) for this entire group is hosted on site, powered by their own electricity from their own hydro plant . James then had to dig to more businesses just past the Eco housing as they wanted a connection too. Then he got a new job and the project was left to Halton central to continue, but everyone remains eternally grateful for his 'year out' doing the B4RN project.

All this sounds straightforward, but there had been a major obstacle on the route from the top of Aughton to the bottom of Halton. An absentee landlord. We had found up to now that landowners, especially the farmers and the large estates, were quite happy to let the duct through their land, and wanted connections. Absentees, or trustees were sometimes a different matter. At this point James was on the point of giving up. No matter what he did he could not get permission. The tenant farmer had agreed as he needed the connection for his farm and family, but the landlord had to sign the wayleave. Luckily



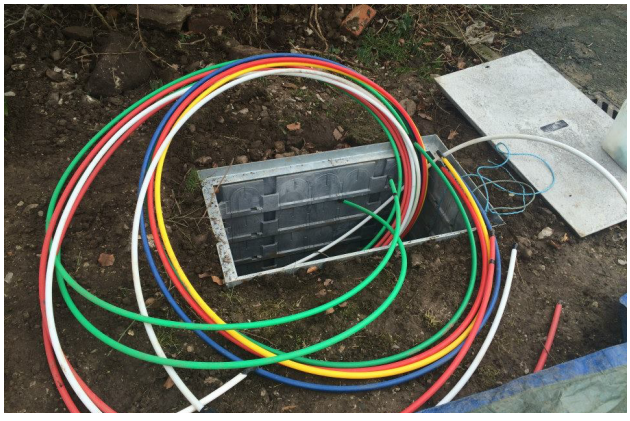
All the volunteers turned out to help Bruce.



Jonny's boys, child labour at its best.



Volunteers at the top end get the fibre through to the Eco houses.



Lots of multicore duct was laid to enable Halton to join on.

Johnathan Murton (Jonny) was a business user at the Elephant Mill and a professional surveyor, and he stepped up to help James sort it out. He worked out a way of taking the connection through half a dozen properties and a shared drive instead of using the blacklisted land. He also carried on helping to bring the route to the eco-housing project, meeting another obstacle as they reached their goal.

When Jonny had first heard of B4RN, like many he never thought it could happen. A year later, he heard it was happening. His sister Rachel in Hornby was proactive in her village, and Jonny got curious. He recalls that he was pretty slack at work, and it was the summer, so instead of taking the kids to play parks he hired a mini digger and got to work burying ducting to the Bowring estate and helped dig through the gridlocked land where the wayleaves had not been granted. His boys helped backfill the trenches. He just knew this was something he 'had to' do.

Another parcel of land that was scheduled for development was in the way, and the farmer was not easy to talk to as he lived miles away, ie not on the land in question. Simon Grant joined the tribe and managed to help the farmer see that having a B4RN connection handy to the new development would increase the value of the properties once they were built. Once the farmer saw the potential, Simon could route it so that it would not interfere with the development, and the core could join to the Eco land.

Once there it was relatively easy to join it up to the new hub. The Eco community were busy building their homes or out working. It was a relatively 'young' community, and the older members held keys for those who were out all day so that installations could go ahead. James had to sort contractors to help with the field digs and keep them supplied with ducting, which was usually in short supply. It was not an easy project in those early days,



Jonny's boys finding water.



Helping Bruce with the blowing.



Jonny gets his MBE spade award.



Like Technology's cabinet.

and it is amazing that it actually came to pass, but it did. And kudos to those who made it happen.

Jonny helped James organise mole ploughs to get down to Halton and worked with Simon to get it through to the hydro/eco housing in 2014.

Jonny recalls happy days when Thomas Bowring showed his boys how to find water with bits of wire coat hangers. One of them could do it, one could not, and Thomas said they had to have the 'aura' to do dowsing. Dawn Keyes from the eco-housing and Corinne (who also installed all the house boxes) also helped him with the ducting when he was digging, and the boys were a good help, too. He wanted to get them involved so they understood how the infrastructure of things worked and so they would not take for granted the effort involved to get it to places.

He was amazed at the help he received as he passed through the different areas on the routes by the age of the volunteers. Hardly any youngsters materialised, due to work and family commitments, but retired people came, he says it was sometimes a case of putting a Zimmer (walking frame) to one side and picking up a shovel, but they got the jobs done. The boys were still on hand when the fibre came and Bruce had willing helpers.

When the route had got near Halton, Jonny talked to the main village people, up the other side of the road to the eco-ousing and to the school. He gave talks, and started fundraising, but then he moved from the village and handed the baton to the main Halton group, who took it from there. Jonny got his MBE spade award for all his and his family's efforts.

The Halton Eco group had got the fibre into the village at the bottom end, and now it was up to the main village if it wanted to join on. One of the businesses, Like Technologies hosted the first cabinet.



Barry at the public meeting.



Halton made their own banners and put them everywhere.



Halton produced their own flyers and distributed them.



Social media was used to inform everyone of progress.

Homes and businesses on the routes into Halton all got connected too.

Halton Central

The urban dig

Apart from a few short digs in pavements, and some road crossings, most of the B4RN digs up to now had been in fields. The Halton project was the first one to be done mainly in 'hard dig'. It turned into a massive learning curve, but it paid off.

Specialist contractors were taken on to do this job, and the role of the volunteers changed. Instead of having to get muddy every day, their job was to engage their neighbours and fix house kits. In 2016 Jonny Murton had asked Barry to come and there was a presentation at the community centre and there were many volunteers who wanted to help. They printed and distributed leaflets to their community.

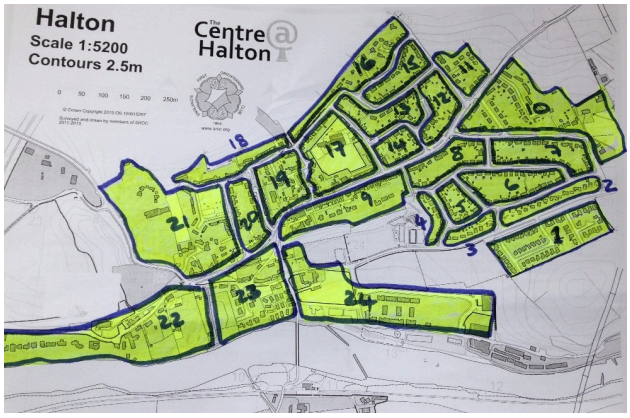
At this time the EIS scheme gave taxpayers 30% tax back on shares. They then organised an open day drop-in, where those who showed interest could come and find out more.

They got the cabinet sited in November of that year.

The volunteers worked every weekend as a group to dig in the main core.

Then followed a couple of years of planning and discussion and many changes in the plans, including the unexpected end of EIS, which was a great blow to many projects, as it had stimulated investment to get projects going. This project really got the 'rough end of the stick', as the plans kept changing, governments changed rules and it is a miracle the project went on to completion.

The first bit of the dig was fairly traditional, soft dig, and the group were busy planning routes through



The working areas of the village.



The promotion when the cabinet base was installed.



The duct store and measuring ground.



Duct measured out to reach each property from a chamber.

gardens and getting wayleaves for soft dig. Then vouchers appeared, and BDUK changed Halton's classification from a 'rural' to an 'urban dig' as it involved pavements. This meant all the work the volunteers had done was 'wasted' and it was dark days for the project, with lots of confused residents and volunteers. All their plans and routes had already started, or were well into planning, using the traditional method.

By now (2018) Halton had FTTC, (BT Fibre To The Cabinet) and some people were quite content with that, and some were not interested in the internet at all. All this was recorded by them, and then volunteers did not waste their time or bother people unnecessarily.

The Activists persisted, and they re-mapped the village and found a route into the hall and the school. They knocked on all the doors and spread the word that the project would really happen. The initial group of volunteers had dwindled down to about 10 at this point, but they were people of grit, and they got organised. Time moved on.

Then Covid happened just as they got going. How many setbacks could a project survive?

A coordinator from B4RN was assigned, and Elaine Elrick informed them that as it was going to be an urban dig, that their job was now to get sign-ups and get vouchers to pay for it all. They divided the village up into routes, and had meetings on Zoom every Monday night. During Covid they shared all their information, and kept each coordinator updated. They updated their Facebook page and kept the community engaged.

They had training in house digs and house kit fitting from Jorj, and agreed a community pot for dig grants would pay for their equipment and set about to do it all. They soon found that between them they had many skills. Although many were retired they could all dig, and every Friday they went as teams to dig



Volunteers laying sub-ducting through a rough area.



The villagers dig to their hall.



This is what the small toby box in the pavement looks like.



Dig days are always better with tea and cake. Hands up who wants cake?

gardens. Those who were good with drills specialised in the house kits. Rob Thompson kept accurate records of all the work done, and the houses finished, those still to do, and those not interested. Duct was measured out for all the houses they could reach with soft dig.

The Parish council were very supportive and bought them their first SD drill until the dig grants started to come in. They had a store behind HiQ for all the duct and fittings they needed. At the Monday meetings they put their orders in. David Johnson made them a wooden template for drilling the walls for the boxes, and he also helped with telephony questions, as many residents still wanted to keep a landline number, and he advised them all about VoIP (Voice over Internet Protocol) - free phone lines through the B4RN service, customers could choose a provider and just pay for calls.

Logistically Damian had to organise the duct placement, and subduct was often used, with many hands to feed the B4RN duct through it. He was organising all the digs with the volunteers and he said the team could do six on a good day. He was on a four day week during covid so he gave up his Fridays and weekend to help his community with all the others.

Damian says they did over 300 installations as the B4RN civils team did the hard dig in the pavements. He and the team took the connection from the 'toby box' outside every house straight up the path or garden and got it into the property. Inside each toby box was the house duct, brought up through the pavements from the chambers. The volunteer's job was to extend the duct in it to the house box.

He recalls how difficult it all was, as this was the first real hard dig B4RN had undertaken and everyone was learning how to do it. He also recalls how much fun they had and the satisfaction of doing a good job. Meeting people, making new friends. Using the system they had set up recording what jobs they had



The core volunteers get their spades when the cabinet comes live.



Robert was awarded a JFDI spade for his efforts with router installs.



Everyone helps on a big garden dig.



David Johnson on a garden dig.

done they could focus on one chamber at a time. As in all B4RN projects, tea was served.

Volunteers turned out to backfill the trenches carefully. Neat trenches, and top quality backfilling. The intrepid diggers were not fazed by any obstacle in their path, and they made sure stones were removed from the trenches. A mini digger was sometimes used where appropriate.

The volunteers laboured until 2020, when the cabinet finally came live. The tribe were awarded the JFDI spades, which by then had replaced the plastic ones! In the meantime B4RN had started the hard dig, so they continued with house installations. They accompanied the house fusers and learned how to install the routers.

B4RN allocated a coordinator from their newly formed connections team, and Helen McKinstry organised the router fittings with the volunteers. Elaine continued to organise the hard dig, and the project continued, with the stalwart team of volunteers. Each day another strip of the village was done. And the volunteers dug all the house gardens.

Permits were needed to work in the pavements, unlike the soft digs in the fields, so they made sure every house was ready when the blowers and fusers came. This sort of organisation was invaluable to B4RN and another lesson was learnt. They concentrated on doing it in batches so that only one permit was needed for a whole area rather than jumping about from place to place.

Everyone shared their information as they were all exceptionally good at something, and by the end of the project they had all learned a lot more.

Existing broadband contracts were an issue, but they raised this with B4RN, who brought in a new process called CONNECT+. This meant anyone stuck in a contract of less than 12 months could still join B4RN, but would only pay £5 a month until their old



Frank and Barrie blowing the house fibres.

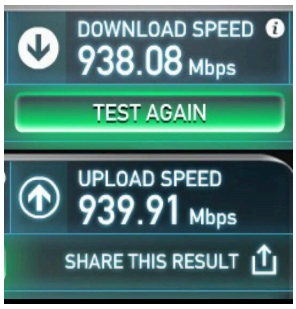


Robert Stavely and Jon Randall Paley fusing in Halton.



Alex Colton and Kit Mackereth fusing at a pavement chamber.





Award from LDCVS, and a fairly symmetric speed test.

contract ended. This meant that customers could go live, and claim the vouchers which were so essential to the project. A great decision.

Frank Brown and Barrie Cheeseman came to blow the fibre when the house installs were ready. Barrie had been an Activist on the Heversham project (in a later chapter), and he and Frank made a great team. Frank's story is also in another chapter, he joined the tribe on the Wennington project.

The splicers from B4RN came to do the bullets, and permits had to be made for that job too, as the pavements were closed for short periods. As all this was done in the Covid period all precautions were taken.

Damian continued to update the Facebook page and help customers, which took a great deal of pressure off the B4RN helpdesk, as wifi issues are commonplace with new installs, and a local person is really handy. In larger properties where meshes or ethernet is needed, he knew how to do it and what a house would need. He gave his time willingly. Damian said once the project was built and every house who wanted a service had taken it the volunteers all said 'what will we do now?' but that they have found other things to do and have all been glad to make so many friends.

Because this was the first 'urban dig', they shared their knowledge at their group meetings with volunteers from Brookhouse and Levens. The lessons were also learnt by B4RN and other urban digs were a lot more organised, thanks to their feedback and hard work.

An award came from Lancaster District Community and Voluntary Solutions. They had done a brilliant job. They also had bragging rights with their speedtests.

The Halton project laid 27 kilometres of trenching, including the Eco Phase 1 project.

Photo credits to Halton volunteers, a picture record of their fantastic achievement.



Soft fill going onto the duct in the trench.



Laying out duct to properties.



Starting the dig down the banking.



Down the banking they go.



Lots of volunteers joined in.



All that is left is to brush the pavement now and the job is done.



No volunteers were lost.



The finished sod back on. The red mark is where it was planned to go.



The house digs in progress, from the toby box to the property.



Sometimes diggers had to be used.



Many hands make light work.



Just to backfill now.



A long stretch.



Laying duct in a trench prior to backfilling,



Getting through a wall.



Backfilling the trench with soft fill.



The start of a pavement trench by the B4RN civils team.



Multiple ducts in the trench, marker tape and clean fill.



Finishing up the dig and the spoil ready to remove.



Small sections barricaded each day to minimise disruption.



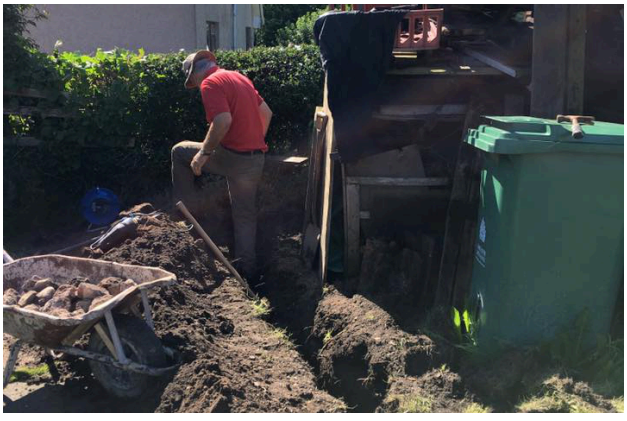
The B4RN chambers. Customer duct is orange, the fibre is black.



David and the team backfilling.



The mighty Halton tribe.



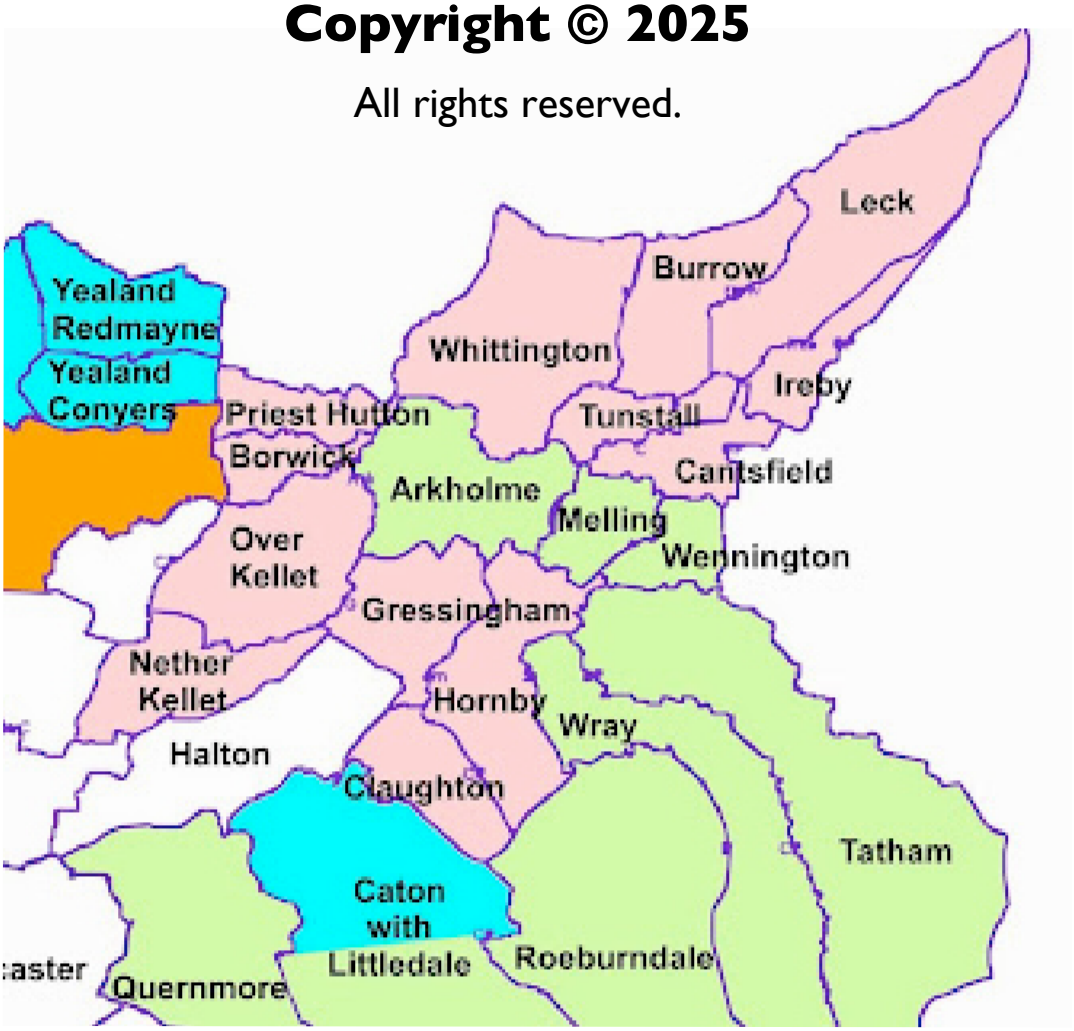
No matter what, they got through. - walls, hedges, wheelie bin stores.

Chapter 4

Wennington | Old Wennington | Burton-in-Lonsdale | Wrayton | Cantsfield |Tunstall | Burrow and Overtown | Leck | Ireby and Masongill | Thornton-in-Lonsdale | Ingleton | Chapel-le-Dale

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Phase 1 green, Phase 2 pink.



Community spirit - What sort of people volunteer?

Volunteers are nearly always retired people, from all sorts of backgrounds. Every village has people who are great at organising, at drilling holes, at digging etc.

The following chapter contains stories from amazing tribes of volunteers. It covers quite a few years from 2013 to 2024, so it has stories from groups that raised the investment totally through shares in the days of EIS (Enterprise Investment Scheme), right through to groups who used loans and then government vouchers. Some did it through Jumble sales, where they sold unwanted items in their village halls.

So what made these people give up all their spare time to their communities? What made them become Activists or Adopters and join in? What made them invest their money, in loans and shares?

Retired men are often bored and are ready to help their community. They are an untapped source of grit, determination and wisdom. They go out dry and come home tired, wet, and hungry. In summer they get suntanned and fit, and their wives fall in love with them again. Sometimes it works in reverse, when the wives are doing the digging.



Jim Murphy, Brian Kirkby, Colin Burford from WenNet and Paul Whatmough.

They dig for the younger people out at work and for the elderly who can not do their own digging. They make new friends and form a tribe.

The transformation in these communities is amazing. Afterwards some continue on, and help nearby villages. The photo shows some of the Wennington tribe who appear in this chapter.



Phase 1 map.



The parish meeting at Wennington School.



Carl Hunter in the trenches laying duct.



Tony Davey and Ian Threlfall removing stones from the trench.

Wennington

After Wray came Wennington, just two miles up the road. It was a short hop with no evident difficulties but with one very striking benefit: a disused railway track ran from the outskirts of Wray to the Bridge Inn, just a stone's throw from Wennington. What's there not to like about such a dig? A nice straight line with hard core access. However, much had to be done before any digging could take place.

Wennington's first formal acquaintance with the B4RN project came when WenNet activists outlined the idea to the Parish Council. At that time, all that most villagers knew about the internet was that their connection was pretty useless. True, the plan outlined by WenNet sounded to some a little bonkers, but for all present, 'a little bonkers' sounded better than 'utterly useless'. Interest in the venture had been sparked, so a second presentation was held at Wennington School. It was September 2011. Barry arrived with Ian Threlfall and Carl Hunter - both members of the B4RN management team - and outlined the challenges that Wennington would have to meet if it was to join the brave new digital world. These challenges included raising interest, raising money, and obtaining wayleaves.

Wennington was fortunate in having Ian and Carl as residents, as both came with the B4RN package. Both were of a techie disposition, and both knew the area well. Together they were responsible for planning the route of the dig, the ducting, the chambers and so on, working off Barry's maps.

Ian lived in Old Wennington, and had experience as an IT network architect for a number of multinational companies. He cooperated closely with Barry Forde. Carl was on the WenNet network and became the representative for Wennington on the B4RN management team.

Though Carl worked full time, he was the coordinator for the village build. He mapped and wayleaved the area, and joined the local tribe with his neighbours. Since Ian and Carl were both locals, the B4RN project became better known as villagers met them around the village and at the various presentations and demonstrations conducted by B4RN. Out of such haphazard encounters volunteers emerged.

Foremost in this tribe was Stephany Kirkwood, a radio ham and computer teacher who bought into B4RN in its early days. If B4RN had a publicity department back in the day, Stephany would undoubtedly have been its boss. She raised local awareness with her many photos and various 'Tiny-letters' regarding the project. A longstanding resident of the village, she was tasked, predictably, with one of most challenging undertakings in the early days of B4RN - going house to house, to see if Wennington met B4RN's three basic requirements: namely, that the village actually wanted hyper-fast broadband, that it would fund the cost of the materials, and that it would find enough volunteers to dig in the fibre. Going round the village knocking on doors was not a job for the faint-hearted, but Stephany was not to be fazed. She asked another resident, Jim Murphy, to help. As 'time was of the essence', preparation was reduced to six or seven basic talking points about B4RN and some leaflets. The appointed day dawned, and off went the pair, armed with information leaflets, to convince any doubters in Wennington of the personal and community benefits of B4RN.

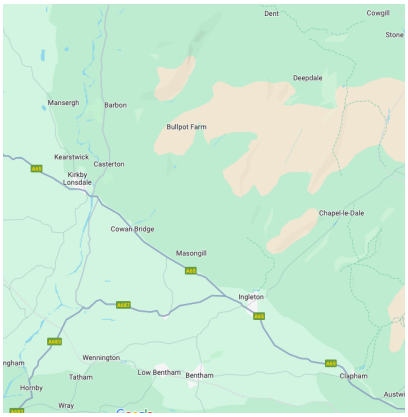
Just as they set off on their missionary venture, the pair bumped into Tony Davey walking his dog. Tony was known locally to be interested in all things musical, so Tony figured high on their list of potential subscribers. Tony is to music what petrolheads are to fast cars. He would surely be interested in B4RN. Stopping the car, the pair eagerly asked Tony if he fancied hyper-fast broadband. Back came a response neither Stephany nor Jim had anticipated in their hasty preparations: 'Will it change my life?' Not quite the response the pair were looking for, but between them, they managed to blurt out that perhaps B4RN might help with his musical interests.

With a polite smile, Tony ambled off with his dog, and the deflated pair drove off on their quest to convert the rest of the village. Little did they know at the time but they had just 'bagged' a subscriber and a volunteer for the digging gang. Reflecting on the potential of B4RN as he walked his dog up the lane, Tony conjured a plan to use B4RN that was, in the event, to change the musical side of his life.

However, things looked better when Stephany and Jim knocked on the door of a couple who had only recently moved into the village, Margaret and Paul Whatmough. After a polite explanation as to the reason for their visit, Stephany and Jim made their pitch about B4RN and then cut to the chase! 'Would Wennington's newest residents be interested in the fastest internet service in the country?' There was, of course, only one answer to that question, and Margaret and Paul obligingly responded with a definitive 'yes'. Then the more difficult question...'Would Paul like to volunteer to help dig in the fibre?'

As a 6 foot 3 ex-paratrooper, Paul was an ideal recruit for Jim's gang of diggers. However, before Paul could answer, Margaret was behind him waving her hands and miming, 'Take him, take him'. The deal was done. Wennington had a digger.

Paul had been dreading retirement when he moved into Wennington, but spent the next few years out digging, and because he had a big drill with a metre long bit, he installed all the houses in his village. He became a community champion, got to know everyone, and he became an accepted part of the community, a



Map of the area.



Colin Burford, Tom Herd, Tommy and Jim Murphy on the first big blow.



Tommy blowing from a fleet on the railway line route.



Multicore duct and the last chamber in Wray before the railway line.

status that other newcomers often never attain. He enjoyed it tremendously, and then he helped other villages get started, building even more cohesion. When he moved to the village, he had joined a gym to keep fit, but he never found the time to go there; the village kept him fit! He was also a massive help to the Melling group in the previous chapter.

Stephany and Jim continued on their merry way, learning in the process that Tony was not merely interested, but very interested. Wennington had another digger. However, not all diggers were recruited on that day. Two villagers, Tom Herd and Colin Burford, became diggers in a more natural way. They just volunteered after attending B4RN presentations, and chatting with Carl and Jim. Tom was initially sceptical about the project - hardly surprising, after a career dealing with 'high risk projects' - but like most volunteers, Tom was impressed by the commitment of the WenNet team and the expertise of Barry. True, B4RN was a risky project at the time, but Tom felt that if it failed, it would fail despite being well conceived and ferociously driven. Colin had many other commitments, not least the preservation of the local church, so he could not always be available, but it was rare indeed for Colin to turn down a call for help.

These guys came to form the core diggers for Wennington.

As for the other two requirements of B4RN - securing enough subscribers and enough investors to make Wennington a 'reasonable' risk: the results of door knocking exercise were more mixed. Just over half the village were enthused by the prospect of a better internet. Few villagers showed a burning interest in investing. These results might not have greatly pleased Stephany and Jim at the time, but B4RN took a different view. Past experience showed that interest in subscribing and investing increased rapidly when the possibility of getting B4RN became a reality. And so it proved in the case of Wennington



The first Wennington chamber on the railway route.



Carl collects the cabinet from the farm store.



Catching the sponge.



TP Metcalfe collecting duct from the farm store.

and Tatham. Wray was about to come online, so confidence in B4RN was growing locally.

The distance from Wray to Wennington was a couple of miles, but as the Wennington project included Tatham and was also a hub for Wrayton and all points North, the actual dig was close to 25 miles. The following story from the volunteers explains how a two mile dig became such a long hike.

The first day in the field for the volunteers required no digging, but the gang was introduced to two new concepts: 'blowing' and 'fleeting'. The act described as 'blowing', was the process that forces the fibre-optic cable through an underground conduit to a chamber, in this instance, some 800 metres distant. The team gathered around Chris as she explained this high tech / no tech job. One volunteer was then dispatched to the chamber with Chris to receive a sponge, designed to test whether the conduit had been compromised or compressed when backfilled. The other volunteers were handed towels to ensure that the fibre optic cable was clean and dry as it passed through the machine, which blew it through the conduit. The high tech side of this task - managing the machine that blew the fibre through the conduit - was, on this occasion, left to Tommy. He blew the fibre that day to where the gang would start digging to Wennington. This first blow from Wray to Wennington (in Spring 2014), was through multicore duct. This is often an easy blow, as the 7 x16mm tubes are in a strong protective sheath and are less prone to getting squashed or bent during the install. Tommy masterminded it all, and we had lots of towel holders. The ducts were sponged and lubed, and the fibre flew through. After the blowing came the 'fleeting' - which they learnt about that day and got plenty of experience later.

The first day for the volunteers was a bit of a school day - learning rather working. A duct stretching half way to Wennington was already in situ, thanks to local landowners Tony Moores and John Holt. They had already called on Tony Metcalfe (Wennington),



Typical B4RN volunteers on their way home. Jim, Paul and Tony.



Tony Davey, Jim Murphy and Paul Whatmough.



Tony Davey, Tom Herd, Paul Whatmough, Jim Murphy, Brian Kirkby and Steph's son, Alistair Kirkwood. The Wennington Tribe.



Paul Whatmough and Stephany Kirkwood digging the cabinet trench.

and Brian Kirkby (Tatham), to duct their respective sections. After a day of blowing and fleeting, the Barnstormers were already halfway to Wennington, without sinking a spade in the ground. Happy days! Could this be true ? Of course not, as the volunteers were soon to learn.

The two-mile route from Wray to Wennington passed through part of Tatham and involved contending with a three-way road junction, a river and a railway. The distinctive 'plus' of having a bunch of retired guys on a mission, was their defiance in the face of adversity. As Paul, the designated member of the gang for connecting the fibre to properties, used to boast about his metre long 'drillbits', "No wall is too thick to stop B4RN getting in," says Paul.

When the volunteers did not have the materials or equipment to do the job, they dispatched Jim, the so-called 'gang master', in the 'works vehicle' (his clapped out Honda), to fetch some more conduit, a bigger crowbar, duct connectors or whatever. Often, perhaps too often, they had to talk to Tony, aka 'TPM Construction' of Wennington, to see if he had a couple of stone flags, a CAT scanner or, on a few occasions, a Bobcat for the weekend. Tony was ever accommodating, and always the first port of call for the gang.

Not all the jobs of the gang master were quite so straightforward, though. On one occasion, he was deputised by the gang to enquire of a new resident if she would allow B4RN to install a chamber in her garden. The lady - let's call her CD - had only been in the village a week or so. CD almost immediately said 'Yep, that's fine.' Whether it was the evident embarassment of the gang-master that decided her we will never know, but it saved the village the cost of a 100 metre pavement dig.

Wennington does not know the debt of gratitude it owes to CD.

Brian Kirkby was the main contractor for Tatham.



Along the old railway line with TP Metcalfe digging.



Along the railway line, view from a bridge.



A neat field dig.



The dig to Wennington with Wray volunteers backfilling.

After he had finished milking, Brian would phone Jim, who would ring around to arrange some volunteers for the day. As Brian had done a lot of work round Wray, he knew the ropes. Most of the land in this part of Tatham was owned by John Holt, who was tremendously supportive of the project and liked Brian to do the digging on his land because he knew he would reinstate it well. The Tatham detour dig was wet, sometimes very wet, but it was eventful.

Usually telephone wires are slung from poles, but in Tatham, they were underground. In some places, however, these cables were barely buried, and were an ever-present worry when the gang were digging a trench three foot deep. On one occasion, a cable was severed by the gang. BT was duly informed, but it could not get an engineer out till late afternoon. The gang continued working, but the heavens opened, and Brian 'rained off' the volunteers, as the tractor was churning up the land. But what to do about the engineer? He would never find the severed cable. One of the gang would have to hang back and show him. Late afternoon turned into later afternoon, when a frustrated engineer finally phoned to ask 'where were we?'. After a short discussion, it emerged there were two Parkside Farms, and he was at the wrong one. By 5 o'clock, a slightly irritated engineer arrived and was taken to the field by a bedraggled volunteer, where he put up his tent and got started. It was sorted by 7 o'clock. So not much was done that day.

Some weeks later, Tatham was to give the volunteers their easiest dig ever. Tipped off by Trevor Sykes - Wennington born and bred - the gang were directed to a pipe. After some careful exploration by Brian, an abandoned cast pipe was revealed, three feet down. Perfect! There is no substitute for local knowledge. This saved calling in the moleing contractor to cross a path.

A very good day was had by all, until returning to the 'works vehicle'. Its back wheels were down, and its

front ones were up. The persistent rain revealed that the car had been parked on a former midden, now masquerading as grassland. Nevertheless, spirits were high - Wennington was in view, at long last.

Now the whole gang could walk to work. True, the guys had covered only one part of (Lower) Tatham, but thanks to some excellent planning by B4RN, the Wennington guys 'gifted' their good friends and deadliest rivals - The Old Moor Road volunteers - a very easy start for their dig towards Higher Tatham, as Wray had previously given them a good start. The B4RN tribes were joining up. One village helping the next, making a stronger and better unit.

One day, 'she who must be obeyed', declared B4RN would be blowing at 10 the next morning, from a chamber at the top of a rather large field, on the other side of the road. Not for the first time, she then glided off telling the gang 'I know I can rely on you guys'. By evening the gang had only managed to get ducting into the field. A cunning plan had to be devised for the following day. Brian would get someone to do the milking and start digging early. The volunteers would have to turn up early, but not quite as early. When the guys arrived around 8ish, Brian had trenched most of the field, so now it fell to the volunteers to level the bottom of the trench and lay the conduit in place. It soon became clear that back filling would have to wait. At nearer 11 o'clock than 10, the conduit was finally at the chamber in Tatham, and B4RN began 'blowing' the fibre back down the barely buried conduit. The rush over, but not the work. The gang took the rest of the day to back fill the trench, and gave the 'Old Moor Road' guys a flying start for their dig through the open countryside of Tatham, with 'their' fibre already in their first chamber.



Working on the old railway line.



Tom Herd and Tony Metcalfe have a discussion about where to put it.



Tony Davey, Paul Whatmough, Chris Berry and Steph Kirkwood.



The long awaited road crossing at the Crazy Cow, Wennington.

Meanwhile back at Wennington, the gang took the Tatham conduit to the village green, where the cabinet was to be sited. It was slow going for the village, with its three roads, three bridges, and a railway and a river running through. The digging continued and wended its way through several routes, one went over the hill via a road crossing near Wray, to Millhouses, and then on to Lowgill.

They had a bit of a hold-up while they raised enough money for a road crossing in Wennington. This was eventually done, and more routes could be blown. As happened before in Arkholme, the railway would not let them 'pop' across the bridge, and a river was also in the way, so a different route was found. Where there is a will there is always a way. Four houses on the island between the river and railway were reached by a special catenary install by Emtelle, with the machinery supplied by TPM Contractors.

So far, so good. The riverside properties in Wennington were ready to go, but most of Wennington sat on the other side of the road that ran straight through the village. We encountered a blockage, which left the Wennington gang watching the 'Old Moor Road' tribe dig their way out of sight in the distance. The old disused pipe was full of silt. Help came in the shape of Alistair, son of Stephany. Evidently what was needed to reach the properties was the one thing the Wennington gang did not have - youthful power. Alistair's determination and Olympian physique managed to clear the blockage that kept the gang so near, but so far, from the properties to be connected. After Alistair's timely intervention, progress through the village was steady. The volunteers also were connecting up properties, and digging gardens when they were not working on the core route.

Some weeks later there was a dig that was never to be forgotten, at least by the gang. A couple of road crossings had badly delayed the B4RN project. Tony Metcalfe was informed of the delay, and agreed to dig to the last houses in Wennington, a couple of kilometres away. Saturday was the appointed day, and most of the gang would be available. On Friday evening, Tony moved his new six ton digger into position for the start. Saturday turned out to be 'the mother of all digs', as Tony and his mighty machine introduced this well practiced gang to a new meaning of the word 'dig'. The gang were now old hands at this, and rotated the jobs of 'levelling' the base of the trench, and 'part backfilling', between themselves, and so managed to keep up...just. By the evening, however, a bunch of tired oldish men made their weary way home, leaving one gang member to hang around with Tony, as he completed the backfilling, and the reinstatement of the land. It was a good day, but a long day, that finished gone nine!

With a few more days of lighter digging, the village part of Wennington was ready. Not all of Wennington was, though, as there were many scattered properties to reach. Wennington was a big branch and about to split into more branches. The Wennington gang headed for Old Wennington, and its last Wennington property before Wrayton. Here the Wennington guys handed over to the two Richards - Richard Parsons and Richard Briggs - to take the conduit from Ravensclose, to Old Wennington and Wrayton.

The Old Wennington people were still on the WenNet network, but the university project had come to an end. They had temporarily put their wireless network on a B4RN feed from Arkholme, but they really wanted their fibre. The route to Old Wennington (WenNet), did not go directly there, it wove its way from farm to farm, connecting all the remote areas. This branch kept splitting off, and new branches grew, including the first-ever B4RN digging outside Lancashire,- in Yorkshire!. Old Wennington is the most remote area of this parish, so a long dig was needed. These people were 11km from their telephone exchange, at the very far end



Bruce fettling the compressor on a frosty blow.



Bruce, Frank, Ian and Annette, from Cantsfield, with towels



Tamsin and Ian Threlfall, Jim and Paul. And cake.



Frank was handy with a spade where two stones had crushed the duct.

of copper phone lines, their dial-up was dire, and broadband was not available.

They put bits of gash duct on fences to mark the routes, and also so that when the fence was replaced the farmer would know where the duct was. The gash (waste) duct idea had come from John Hamlett at Gressingham and is replicated all over the place now

They dug to every house.

Then the blowing started. Bruce was doing it, and Frank Brown turned up to help, and see what it entailed. He lived in Cantsfield, the next village north, and he brought Annette Dixon, to help.

The WenNet group all turned out to help and brought cake. The blow to Old Wennington was very long and fleeting was done many times in between the chambers. There were always plenty of volunteers to help. They also ate a lot of cake...

Because the fibre was stored outside, we had to make sure it was clean as it went into the blowing machine. We also had plenty of sponges to clean out any water or muck in the ducts. We used lots of volunteers with old towels to clean the fibre as it came off the reel.

Frank started helping Bruce and the team get the fibre through. On his first day helping on a blow he went home for a blowtorch to thaw out the blowing machine, 'fettling it'.



Frank's first blow, with Bruce catching the fibre at the other end.



Ian Threlfall, Paul and Chris blowing to Old Wennington.



Radio 4 team with Tony, Nick and Liam.



Bobby Brown catching the sponge at Old Wennington.



Jim and his long-awaited fibre.



Wennington blowing day, with the Daily Mail reporters.



Turning the fleet in sunshine.



Jim, Tony and Bruce and the blowing trailer.



Going dark, last fleet of the day. Tom, Jim, Alistair, Tony and Bruce.



Frank's caravan at to the cabinet, and the electrics and fusing are done.



A mighty 'branch' fleet heading into Yorkshire. And Frank fettling.



Jim, Tom, Frank and Richard Briggs carting gear to chambers.



Alistair shows Bailey how to fuse.

Frank soon got the hang of blowing, and by the end of the Old Wennington blows, he was blowing whole routes himself. He was hooked. There is a rare photo of Frank's first solo blow, with Bruce at the other end catching the fibre. (More about Frank later in this chapter).

They had their share of blockages, too, but dealt with them, and got the fibre through.

Richard Briggs, the local farmer, took the compressor to the fleeting chambers on the WenNet blow, as the Volvo was not up to the hills on wet or frosty days. Richard knew the ways he could get through his land.

Once the fibre is in, the electricians and fusers arrive. Alistair let one of the locals' children, Bailey, fuse his own fibre. By now, Alistair was fusing as well as blowing, he had come a long way since the early chapters of this book! He is proving to be a good teacher too.

By now, because of Arkholme and Abbeystead news coverage, the press started coming to Wennington; Radio 4 and the Daily Mail visited, and the film Suzette commissioned featured this Old Wennington blow.

Beyond the book:
Suzette's film
Lindsey's book



Margaret's first spade and the stolen ones.



Tony Davey patches his own connection.



Margaret Whatmough is delighted with her new connection.



Jim and his tribe digging the electric in.



Carl builds our own electric cabinet to match the stone wall.

Tony patched himself and his mates at the cabinet in 2014 - a fast and efficient dig. He says it was like 'coming out of a dark cave into the light'.

They had been blessed with many 'sunny Saturdays', at the end of which Jim says the lads were 'done in'. Tony and Jim both say (often), that the coming of B4RN to the local area has revitalised it, and is comparable in its impact to when electricity came to the valley.

Margaret, Paul's wife, was overjoyed to come live on B4RN. Margaret will go down in history as a spade thief. She collared as many plastic spades as she could find and hung them on the holly tree outside her house. They are still there, over 10 years later...

Two updates: The electricity duct. And the tree.

Initially the Wennington Cabinet was fed from a private electricity supply, with its own meter. In early 2016 once B4RN had enough money, it bought a direct feed from the electricity substation across the road from the village green. Carl Hunter from WenNet and the B4RN management team, sorted all the paperwork, and the usual gang turned out to dig the trench on the village green. This had to be done to Electric Board standards, so the duct had to be a specific depth, with a sand base and gravel on top. Carl organised all this work and borrowed Tim Hodkinsons' mini digger for the weekend.

B4RN organised a road crossing, and Carl built a little secure cabinet for the meter. He then stone-faced it, so it blended into the wall behind.

Then the 'gang' spied an opportunity that was not to be missed. 'Would B4RN allow us to take an electricity cable from the Cabinet, to the middle of the Green to power lights for a Christmas Tree?' Back came the reply that was to give the Wennington gang its best dig - from the Cabinet to the middle of the Green. The choice of where to



Yorkshire gets its spade.



Clifford Hall, a complex of 12 properties where Ian lived.



Ian Thompson comes to see what it is all about and catches sponges.



Ian Thompson patches the Clifford Hall connections



The electricity trench.

place the tree fell to Bill Kirkwood - long-standing councillor and husband of Stephany - and the gang proceeded to dig to the chosen spot, and a metal sleeve (for the tree) came thanks to Tony of TPM. Wennington could now boast of its first 'lit up' Xmas tree since the village was mentioned in the Domesday Book. Thank you B4RN.

The WenNeteers from Old Wennington had 100% take-up. We were live in Yorkshire! The first Yorkshire connection at Gill farm is featured in Suzette's film.

Wennington laid over 33 kilometres of duct in their project.

There was another development just outside Old Wennington on the route to Low Bentham. Clifford Hall had a dire broadband connection and there were several people who got talking about B4RN.

Ian Thompson, who had just moved in, heard about it and volunteered to find out more. He helped the blowers and diggers in Old Wennington and found the spot where they would finish their route. He then knew where he had to join.

He got to know the farmer, Kenny, who had a mole plough, and whose son lived and worked at Clifford with a welding business. Kenny and Ian moled 880 metres in a day and got the fibre to Clifford from Old Wennington. Carl from the WenNet group showed Ian how to install the house properties, and he

connected up all the houses. There were 12 properties, and they all took service. He got to know his neighbours by drilling holes in their houses. He inspired other communities near him, via his work in the community shop and chatting to people.

Clifford Hall took 4 months altogether. He finally patched all their connections in at the Wennington cabinet (in the dark).

By now Ian had got the bug, He had made hundreds of friends, he really enjoyed it.

He became a director at B4RN but continued as a volunteer, helping many other people get connected in many more parishes.

The Wennington flagpole and the lit up Christmas tree on the green.









Beyond the book:
Suzette's film

Burton-in-Lonsdale

My name is Simon Stockton. I am 38 years old, and I live with my wife and son, who will soon be 5. I have a full-time job, various hobbies (including running a limited company) and keep myself generally quite busy. We live in Burton-in-Lonsdale, which is a small village of 299 households, including proposed developments (I will tell you why I know this shortly), one pub, one church, a village shop, a multimedia shop (not what you would expect for such a small village, but very useful indeed) and a shop that sells harmonicas online. Our village is nestled in the corner of North Yorkshire, with the border of Lancashire merely a mile down the road. This is my story of how B4RN came to Burton-in-Lonsdale (BiL).



My son and I on top of Ingleborough, 1st Jan 2019, my wife (the photographer) is also in the photo, sort of!

It is New Year's Day 2019, and my family are enjoying a walk up Ingleborough, a mountain peaking at 723m, which we can see from my house in BiL. As we arrive at the summit a man is sitting, with his wife, eating his lunch. I recognise this man; it is Ian Thompson. I have heard about B4RN; it has been in the area for a while, but is not in our village (I wonder why?), and I somehow know that Ian is involved in B4RN. Approaching Ian, I ask him 'are you the guy who does B4RN', he replies 'Yes. Tell you what, I am currently volunteering in the village shop every Thursday evening, pop in for a chat about B4RN'. And that is how the B4RN 4 BiL project started.



Burton in Lonsdale Village Shop

Now BiL has a fairly good internet connection, there is FTTC at the bottom of the hill, and the properties close by, including mine, have a 50Mbps connection. But there is something about our remote village having the world's fastest internet connection built by our community for our community that is somehow appealing. The question is: is anyone else interested in getting B4RN and where do we start?

Turns out Ian has been involved in B4RN for a number of years and as a result of his efforts helped get

B4RN to the neighbouring farms, some as close as a few hundred metres away from BiL. These farms had a very poor internet connection, but no way the world's fastest broadband! The method of getting B4RN to these farms is mole ploughing, a method used by farmers to bury plastic water pipe underground, which, as it happens, also works for B4RN ducting. This is a relatively quick and cheap method to cross fields and connect remote buildings large distances apart, especially if those fields are all owned by one person who is amenable to having B4RN cross their land to serve others without reward, a keystone of the B4RN project. However, when it comes to built-up areas, with multiple land owners, Ian tells me that this is a very different type of B4RN project and one that requires an individual to organise and a team of volunteers. This is not something he is willing to do himself, but he is more than happy to support me.

Ok, so I guess now I am the B4RN4BiL Project Champion. Now what?

Over the months Ian and I meet regularly on a Thursday evening in the village shop to discuss how we can make B4RN4BiL happen. I also talked to my friends in the village at Dad's Drinks about B4RN, turns out they all want B4RN, too. Dads Drinks; oh all the dads in the village with kids similar-aged to my son meet in the village pub on the last Friday of the month for a drink, or two! There is a Mum's Drinks, too, first Friday of the month!

Anyway I digress. After much research, reading practically everything on the B4RN website, a lot of stuff on DCMS website and a few of the other community groups' websites, Ian and I agree that we need a leaflet, something that we can post through the door of every household in the village telling them about B4RN and inviting them to get in touch if they are interested . It is now October 2019 and the leaflet is ready. Simon at The Multimedia Shop in the village has agreed to print 300 copies for a modest fee, but when he finds out that it is about B4RN he waives the fee (as I mentioned earlier, very useful indeed).



First leaflet of many, Aug 2019

The leaflet is printed double sided A4 and after an hour or two of folding to A5 all 300 are ready to be delivered by Ian, no mean feat.

The leaflet is designed to be eye-catching, even a little provocative, and I hope would elicit a response.

Phrases like "I want an ultrafast fibre-to-the-home broadband internet connection that is 20 times faster than I currently have whilst costing less. Do you?"

And "I want to help our community get B4RN, because I want B4RN. Do you want B4RN? Will you help?" should help do that!

Well it worked, people got in touch, quite a few actually, enough to know that there was certainly an interest out there, and some people even wanted to help!

Time to make contact with B4RN.

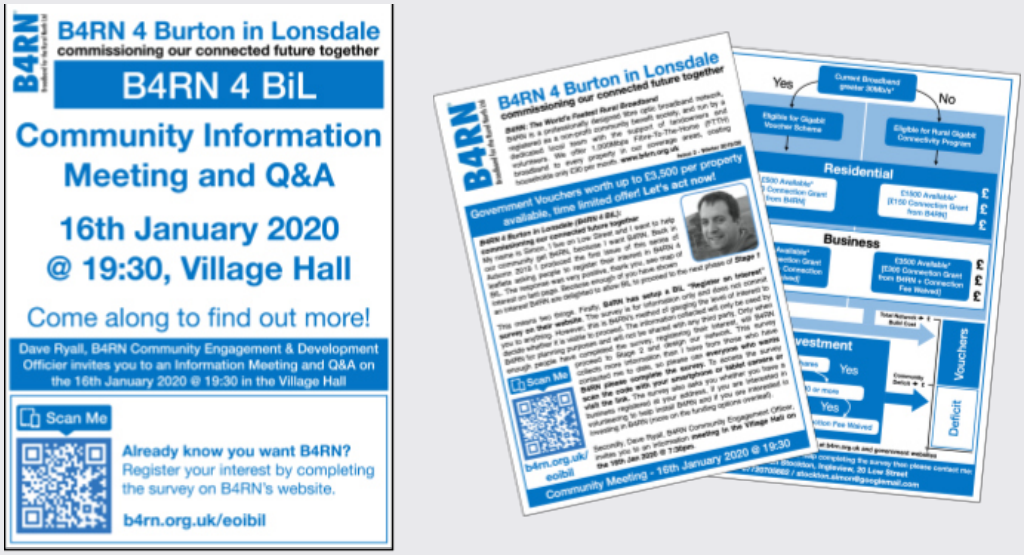
An email to a catch-all email address at B4RN requesting a meeting was picked up by Dave Ryall, B4RN Community Engagement & Development, who kindly obliged. My friend, fellow Dad's Drinks participant and someone wanting B4RN himself and volunteered to help, Andy W, joined me for this initial meeting.

Dave was very helpful, answered many questions, set up an Expression Of Interest (EOI) form on B4RN's website and encouraged us to get households to complete the EOI, as we needed 30% uptake before we could progress to the planning phase. Dave also agreed to host a meeting in the Village Hall to let people know all about B4RN.

What we needed was another leaflet explaining what B4RN is all about, and this time a poster, too, inviting people to express an interest and attend a meeting in the village hall. A draft leaflet was compiled and sent to Dave at B4RN for comment.

Now seemed a good time to get in touch with those that wanted to help. So a meeting (first of many) in the local pub was arranged. Alistair (a retired accountant), Phil (a retired fireman), David (a nearly retired salesman), Andy (my age and very much still working, IT consultant), Ian and I met, and over a pint, or two, discuss B4RN4BiL. These people were involved in B4RN4BiL from start to end (and beyond, more on that later), worked tirelessly for many years and the community cannot thank them enough!

Having gathered comments from the volunteer group and Dave at B4RN, the leaflet and poster is ready. Another 300 leaflets were printed (thanks to The Multimedia Shop), folded and delivered (thanks to the new volunteers) and many A3 posters were printed, laminated and affixed around the village inviting residents to find out more about B4RN.



Poster (left) and second leaflet (right), main emphasis; advertise the meeting in the VIllage Hall and complete the Expression of Interest, Dec 2019

It's New Year's Day 2020, I am now 39 years old! B4RN4BiL has gone from a chance meeting to something that has actually captured the interest of the community, despite most people's broadband being sufficient.

Finally the evening of the B4RN4BiL Community Information Meeting and Q&A has arrived. Dave from B4RN turns up with his projector and screen and four computers are set up to collect any EOIs on the night. The village hall doesn't have its own internet connection, we are using a neighbour's Wifi. We managed to get all the computers online (thanks to Simon from The Multimedia Shop for his help! Again!).

Now all we need to do was to put out some chairs, but how many people will turn up? Maybe 15, no make it 20. As 7:30pm approaches it was clear that 20 chairs were not enough. "Quick put out some more chairs!"



Community Information and Q&A in the Village Hall with Dave from B4RN, Jan 2020

In the end 49 people turn up to hear about B4RN4BiL from Dave at B4RN. Shortly afterwards, 55 express an interest with 50 wanting an immediate connection and five deferring until their existing contract comes to an end.

Well that went better than expected!

Having completed the necessary GDPR paperwork, B4RN provides me with weekly updates on those that had completed the EOI.

By February 2020 we are up to 62 EOIs, just short of the 90 needed to start to put a plan together.

We produce another leaflet celebrating our success, but also being clear that we needed more EOIs.

By early March 2020 we have about 100 households expressing an interest in B4RN. Target achieved! Not bad considering we already have a good internet connection in BiL, but regardless a third of the



Follow on leaflet after the Village Hall Meeting, Feb 2020

community want more! Perhaps they want independence from BT, perhaps they want a faster connection, perhaps they want to future proof their internet connection, perhaps they just want to build their own network or perhaps they wanted me to stop sending them leaflets!

By now B4RN have started preliminary planning, Cath Halstead is now working with Dave Ryall and has taken over BiL from Dave. Cath and I meet (the first of many meetings), Cath introduces me to Edward Wilman, the B4RN planner. Edward provides me with a Google Earth KML file of the preliminary plan. Meanwhile Ian is busy thinking about the location of the B4RN cabinet.

Our next target is 50% Expression of Interest (150 household), this would enable detailed planning to be completed, and a submission to DCMS for Government Grants and to start the build!

I have various meetings with local land owners, including Ian S, whose farm is to the north of BiL and who already has B4RN. In fact he has had it for a number of years. One of our routes into the village comes from Ian S's farm. I meet with Ian S and his wife Glenys at their kitchen table, and using Google Earth, capture from them who owns what land surrounding BiL, because "farmers know farmers". Google Earth is a great tool for capturing this information (more on that later). Ian is now one of my close friends from the village and also a member of Dad's Drinks.

Well we all know what happened in late March 2020. Just when we needed to talk to people face to face about B4RN, to discuss possible routes through people's land and consider how the project is to be funded, everyone is told to stay at home and not meet with anyone (COVID).

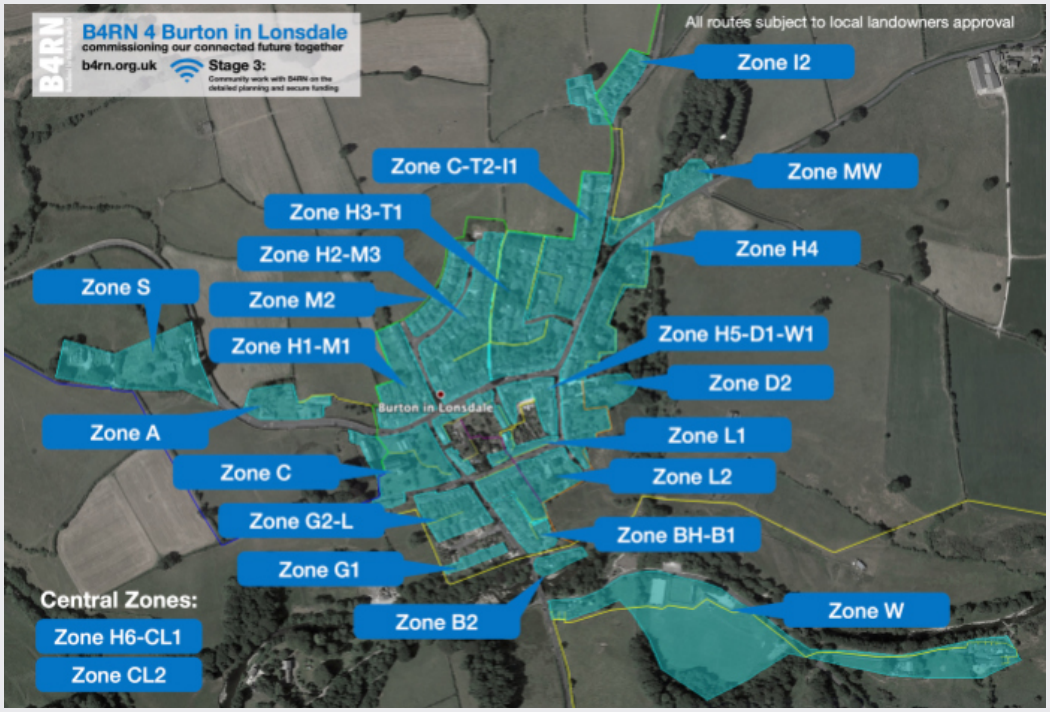


Leaflets, leaflets, leaflets, Apr Jun, Jul & Dec 2020

Desperate to keep momentum going on the B4RN4BiL project, face-to- face meetings with Cath and B4RN are replaced with Zoom meetings and engaging the community is through leaflets, lots of leaflets. BiL has a parish newsletter, the Burtonian, that is published once every two months, and I am invited to write an article for it. What a great opportunity to provide an update on B4RN4BiL.

During 2020 the main routes into the village are planned and wayleaved (an agreement between the landowner and B4RN to allow ducting to pass through their land without reward to serve others). We also start a campaign to raise money through community investments in B4RN (a process where members of the community purchase shares in B4RN, that can only be sold back to B4RN, but attract a 5% annual return).

In June 2020, we are still not able to meet people face to face, we have enough of an idea about how to route B4RN through the village that we can divide the households into Zones. Each Zone is designated a letter corresponding to the street name that it covers and needs a Zone Champion, someone who lives in the zone and can promote B4RN4BiL and engage with those in the zone. We have many zones and so as a starting point we emailed everyone who has expressed an interest in B4RN and invite them to become a Zone Champion. We follow this up with a leaflet in June 2020, of course!



Those who initially offered to help and met in the pub back in late 2019 all become Zone Champions. Joining them are people I have never met before, lots of them! David, Charles, Andy I, Chris, Peter M, Mick and Peter B.

These people are involved in B4RN4BiL from very near the start to the very end (and in some cases beyond, again more on that later), and also work tirelessly for many years and once again the community cannot thank them enough!

Having completed the necessary GDPR paperwork themselves, a Zone Champion receives a Google Earth screenshot showing the area of their zone with the proposed route, and a second screenshot with the households in their zone, marked with a pin that was colour-coded to represent the household's EOI status. Green = Completed EOI, Orange = Completed EOI, but information missing, Yellow = Not Completed EOI. There is also a summary stating for each property contact information and EOI preferences, willing or not to invest, willing or not to volunteer, wants B4RN now or deferred to later.

The Zone Champion's job is simple! Tell people about B4RN, get them to express an interest, get them to invest and in some cases get them to sign a wayleave. All during a global pandemic!

Repeatedly updating the status of each household, informing the Zone Champions and providing the community with an anonymous overview is time consuming. I create a website, now defunct, which provides an overview of the entire project and a breakdown of each zone showing the number of households that have expressed an interest and what that means in terms of the amount of Government Vouchers available (which were later capped). The website automatically scrolls between zones and for a while is proudly displayed on a big screen in the window of The Multimedia Shop (thanks to Simon, again!) for passers-by to observe.

The website also has a logon for Zone Champions, who were GDPR-registered, so that they can see the proposed routes and which of the individual households have completed the EOI. The website is all custom-written code that reads the data generated by Google Earth and displays the data on Google Maps. It is fun to build, but does take a while! Doing it this way mean all I need to do is update Google Earth and the website automatically updates, magic!

With all the time I save I make a video, which is still available on YouTube, search "B4RN4BiL Video", which went through the whole process. If you have a spare 17 minutes and 23 seconds (or are struggling to get to sleep) then I suggest you check it out.

Beyond the book:
The B4RN4BiL video



It works! All our efforts had paid off. By December 2020 we have £63k of community investment and 150 households with an expressed interest in B4RN. We have reached our 50% target! With all these households requesting B4RN, we secure £210k of government grants (later capped at 60% of the total build cost).

We have even installed some ducting. (Where people have dug up their gardens whilst landscaping we take the opportunity to put in some ducting.)

It's New Year's Day 2021, I am now 40 years old! B4RN4BiL has got enough Expression of Interest and B4RN is coming to BiL. Yes! How do we celebrate such an achievement? I know: another leaflet!


GREAT NEWS

B4RN IS COMING TO BURTON IN LONSDALE

B4RN 4 Burton in Lonsdale

commissioning our connected future together

How to Sign up for B4RN

1. Search "Get B4RN" on the internet or go to b4rn.org.uk and click on "Get B4RN"
2. Enter your postcode and complete the form

SCAN ME

b4rn.org.uk/postcode-checker

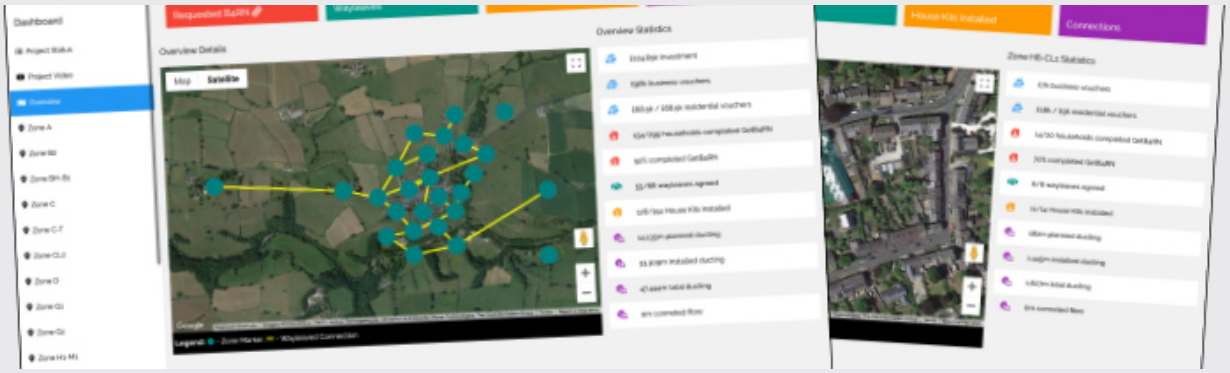
Leaflet, Feb 2021

By this time Edward, the B4RN planner, is well underway developing the Detailed Plan. B4RN admin has loaded our postcodes onto 'Get B4RN'. This means that we are no longer collecting Expressions of Interest, instead we are collecting Requests for B4RN. 299 postcodes are loaded onto the BiL project area. Who knew there were so many houses in BiL? Now the Zone Champions have to encourage everyone who had expressed an interest in B4RN to actually request it. The project also needs to be fully funded before the build can commence, so the Zone Champions are also encouraging households to invest in B4RN.

The B4RN 4 Caton project is in the midst of a 'Hard Dig'. This is where B4RN contractors dig up the pavements and roads to install B4RN ducting. This is a more robust installation, and can get to the boundary of every household without a wayleave, but it does have a slightly higher build cost. Due to the success of the B4RN 4 Caton project, B4RN is favouring a 'Hard Dig' for BiL. In the end a hybrid 'Hard/Soft Dig' is planned and built.

This change of direction means a bit of replanning and some wayleaved routes through gardens were no longer needed. B4RN completes the 'Hard/Soft Dig' plan for submission for Government Grants by March 2021. Along with a plan we have a project cost. The Government Grants on offer at the time are about 60% of the total project cost, the remainder needed to be raised through community investment.

We have a target for requests for B4RN (to get the government grants) and for community investment. The website is updated, still driven from Google Earth, to now show the number of households that have requested B4RN, along with the number of wayleaves, house kits installed and connections. Once again the website shows an overview as well as a breakdown zone-by-zone and as before allows Zone Champions to log on and view details for specific households.



Next we need to organise and get ready for the build. A 'Project Status' WhatsApp group and a group for each zone is created. WhatsApp allows us to invite people via a QR code, so a single A4 sheet was produced for each Zone with a QR code that allows anyone scanning it to get to the B4RN webpage to request B4RN, and to join the 'Project Status' group and the 'Zone Group'. The sheets were glued to the back of wooden clipboards and covered with sticky-back plastic.



Clipboards for every Zone

The clipboards are given to each Zone Champion and used to get households to request B4RN and join the WhatApp groups.

We now have a way to communicate with people, other than leaflets, and this method is two way! People can communicate back, and they do!

I make a B4RN house from real, but defunct parts, as well as some 3D printed parts. It shows the network from cabinet to router as a visual aid when talking to people about B4RN. It is a fantastic tool and really effective in explaining how it all works.


B4RN House

We are ready! All we need is a decision from DCMS about the government grants. In the meantime get remaining households to request B4RN and continue pushing community investment. We wait, and wait. And wait. Finally in November 2021 we have our funding decision, approved!

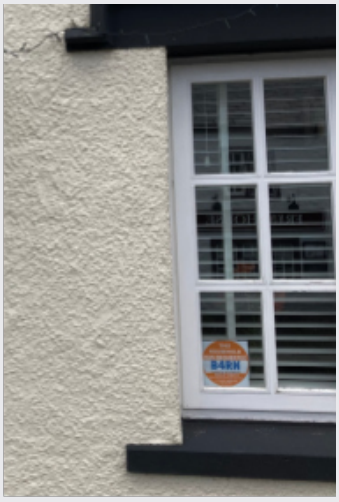
Awesome news! You know how we celebrate such news: a leaflet and an article in the Burtonian village newsletter.

Now we are more focused than ever, we still need households to register for B4RN and still need community investment.

For each household that requested B4RN a House Sign is popped through their door.







There is no explanation given requesting people to put it in their windows, but they do. Soon enough they are popping up all over the village, loads of them. I think to myself, this is the most effective method of getting households to request B4RN. Seeing their neighbours put up a sign in their window prompts them to register, too. We create a community workforce WhatsApp Group and invite people to join it, about 50 do! We have a team ready to dig!

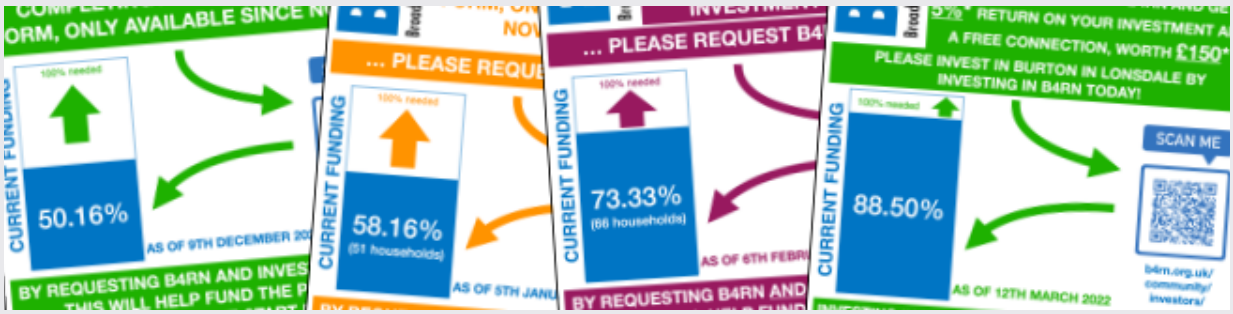
We host a 'PopUpShop' outside the Village Shop two consecutive Saturday mornings. People come, ask questions, look at the B4RN house, gain understanding, go home, and ask for B4RN.



Leaflet Nov 2021. Burtonion Article Dec 2021

Over the coming months we put up a poster in the village shop, which we change monthly, showing our progress. As New Year's Day 2022 comes and goes (I am now 41 years old!) we have submitted a plan to DCMS, it has been approved, and now we need to make a final push to build the network.

By March 2022 we have sufficient households registered for B4RN and the project is 88.5% funded. All we need is £28k additional community investment.



By April 2022 we have it! You guessed it: a celebratory poster for the village shop and individual letters for each zone and/or type of installation within the zone.

The letters explain that B4RN is coming to BiL and even if you don't want B4RN right now your house



Poster for the Village Shop & Letters, individual for each zone (type of installation)

will be provided for, so please get in touch about where on the curtilage of your property you would like the B4RN service.

Households respond, and the locations on the curtilage specified are captured on Google Earth and fed back to B4RN.

B4RN schedules their contractors to complete the hard dig in later summer, leaving BiL and the newly founded community workforce to complete the soft dig and house kit installations.



WhatsApp Advert, Garden Dig Training

We need training! So in June 2022 Sarah Pollitt from B4RN agree to visit the village and train us on a garden dig.

Fortunately there are two properties next to one another with long front gardens and the owners have requested B4RN and were happy to host the garden dig training. B4RN contractors are to install a TobyBox in the pavement at the end of the garden, so our job is to install ducting from the pavement to the house and then install the house kit.

Time to rally the troops! We put out an advert on our WhatsApp group to our 50 volunteers and have absolutely no idea how many people will turn up.

Sarah Pollitt from B4RN and I meet at 9:15am to set up. We unload the cars and agree on the route through the gardens. We are ready. As the minutes pass, Sarah and I wonder if anyone will turn up. A lone figure approaches us, with a spade in hand, then another, then another. In the end there are about 20 of us; 16 stay for the photo at the end.



Garden Dig Training, Jun 2022

Many of the Zone Champions turn up for the training along with others, some who become involved in B4RN4BiL week in, week out from this point to the very end (and beyond.) The community cannot thank these people enough: Colin, Jeremy, Alan, Malcolm, Jonny, Andrew S, John A, Ian C & John.

As we work as a team, digging the length of two gardens and installing the ducting, one of the neighbours asks what is going on. After a brief chat with Ian T, they request B4RN, their neighbour sign a wayleave, the trench is extended onto their property, the ducting goes in, and Ian T fits their house kit. After a few hours we are done. Ducting is installed in two trenches stretching from the pavement to the houses, ready for B4RN to connect to and blow the fibre.

Encouraged by the turnout, we arrange house kit training with Sarah and Jorj from B4RN for a few weeks later. In the meantime we put together a display in the Village Shop to inform households about the impending B4RN installation.





Whilst the B4RN4BiL community workforce is to undertake all the garden and house kit installations, B4RN contractors are to install ducting in the surrounding fields, through the pavements and across the roads. It is important to inform the community that B4RN contractors will be active in the village and there will be the inevitable disruption, and the display in the Village Shop is an integral part of this.

B4RN also supplies us with a banner, which we proudly display outside the Village Hall, and posters which we put up on each entrance to the village.

At this time there is an Annual Parish Meeting, an opportunity for every organisation in the village to report about their activities over the last year, and this year B4RN4BiL are invited. At this meeting another organisation "The Pals with Trowels" (Pals) give an account of their activities, one of which is how they maintain highways land at the western entrance to the village, planting bulbs and growing flowers. Having learnt this at the end of the meeting, I speak privately with the Pals to inform them that B4RN is planning to put the powered cabinet on the highways land at the western entrance to the village, which , as a telecoms company, they are entitled to do, with no permission required.

Uproar ensues. Some Pals are furious. As it happens, a parish council meeting is scheduled for a week later and I am summoned to explain myself. Someone tells me in jest prior to the meeting that I had better watch out as the Pals have been sharpening their trowels. To try and diffuse the situation I draw up and circulate a plan showing the location of the cabinet on the site and the concrete base required. This is largely mis-understood, mainly because of the metric measurements.

At the meeting there are calls of "the cabinet will look hideous", "you cannot put it there" and "it will ruin the village entrance". However, there are some supporters. A district councillor was there and explains that legally B4RN are permitted to do this and actually B4RN listen to communities more than other telecoms organisations. Someone even propose hiding the cabinet with a dry stone wall and paint a water colour to illustrate the idea!



Bamboo Cane B4RN Cabinet

In the end the Pals are generally supportive and B4RN4BiL promise to work with the Pals to improve the area, more on that later. Having established that the B4RN cabinet is to be located on the highways land at the western entrance to the village, I erect a bamboo cane full size model of the cabinet on the site, and, with the tree in full leaf it can hardly be seen.

Following the installation of the concrete base and the cabinet, I have had no complaints whatsoever about them

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WhatsApp Advert. House Kit Training

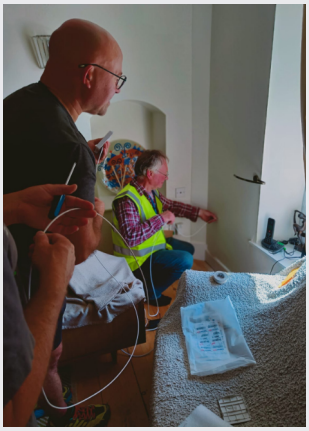
Moving on: house kit training. Time to rally the troops again via another WhatApp advert to the group of 50 volunteers - who and how many will turn up this time?

We arrange to install house kits to five adjacent terrace properties, and Sarah and Jorj from B4RN are going to show us how to do it. Most of the properties in BiL are old and have thick walls, very thick walls. In preparation a selection of 1m long drill bits are purchased. Just as well because we need them. About 15 people turn up and Sarah and Jorj show us how to drill from the inside out to avoid damaging the plaster inside and to go easy on the last few inches to avoid damaging the stonework on the outside.

Unlike other telecoms providers who utilise window frames, B4RN always drill through walls. If the windows are ever replaced, the delicate fibre will get damaged, whereas with a dedicated hole through the wall, the fibre will last forever.

Sarah and Jorj show us how to fit the B4RN house kit consisting of a fibre wall outlet (FWO), which is screwed to the inside of the property, and a customer connection enclosure (CCE), which is screwed to the outside of the property. The two are connected by some ducting in the wall to protect the fibre from loose rubble infill movements and/or hungry vermin. The fibre, neatly coiled, in the FWO is uncoiled, threaded through the ducting and re-coiled in the CCE, awaiting the B4RN splicers to connect it to the fibre blown from the nearest chamber. This method means that the B4RN splicers don't need access to the property to make the connection.

From the CCE, black UV stable ducting is routed down to ground level, where it transitions to orange, easy-to-see ducting through the garden to the B4RN-installed ducting, either in the TobyBox in the pavement or at the property curtilage for those served by a soft-dig.

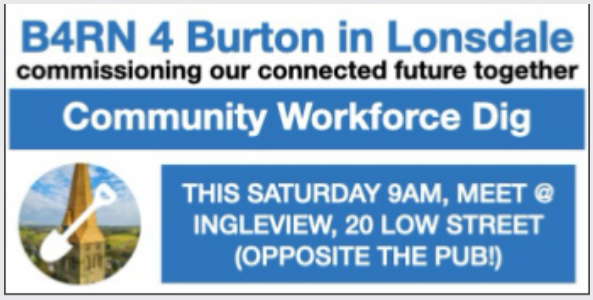






Since B4RN contractors have not installed any ducting yet, for the time being the house kits are installed and will be connected up to the B4RN ducting at a later date.

After a few hours all five properties have house kits installed, Sarah and Jorj are happy with our installations and we are approved to install B4RN in our village. To mark this occasion we are handed B4RN high-vis jackets, a sought after fashion item!



WhatsApp Advert, First Community Workforce Dig



WhatsApp Advert, First Community Workforce Dig Complete

We arrange our first community dig for the following Saturday at 9am. We meet outside the village pub and about 10 people turn up with spades in hand.

Our first dig is alongside a loose gravel driveway, through a flower bed (the owner has removed the flowers), under a loose gravel path, through a wall and into a rear room of a house.

Apart from getting the 8mm diameter 1m long drill bit stuck and having to get creative to remove it, the installation is a success. We celebrate with a WhatsApp post to encourage the community to get involved.

From this point on we use 10mm or 12mm drill bits on thick stone-built walls because hitting the edge of a hard stone can deflect the 8mm drill bit over its 1m length and then it gets stuck.

Through the course of the summer my evenings are filled with visiting households in the village who had signed up for B4RN and discussing the routes to get from the curtilage into their property, and talking to others who want to sign up to B4RN, too.

The B4RN4BiL group meet every Saturday at 9am outside the village pub, I hand out clipboards with the jobs I have lined up during the week and teams of 2-3 people dutifully disperse and install B4RN around the village.



We purchase some tools, mainly drill bits and tarpaulins and, along with supplies from B4RN, put together a kit of parts, including a First Aid kit, which we never actually use, thankfully. People bring their own spades and tools, and we adopt a colour banding system using electrical tape to identify individual's tools. Mine has two red bands, others are yellow or black, single or double-banded.



As the summer progresses, the B4RN4BiL group completes over 120 installations. We have only two mishaps; The first, drilling through the same mains cable twice, each time missing the live and neutral, takes quite a bit of skill. The repair is completed by the village electrician, with B4RN footing the bill.

The second, drilling through a buried water pipe, is a bit of a surprise, but the B4RN4BiL group has the skills to make the repair and re-decorate the surrounding area.

Some installations are more straightforward than others, some involve extensive garden digs, others don't have a garden at all. Each installation raise the same amount of money, which goes to the Burton Regeneration Group (BRG), on behalf of B4RN4BiL, to be distributed by B4RN4BiL for the good of the community. More on that later.









Garden and path digs

















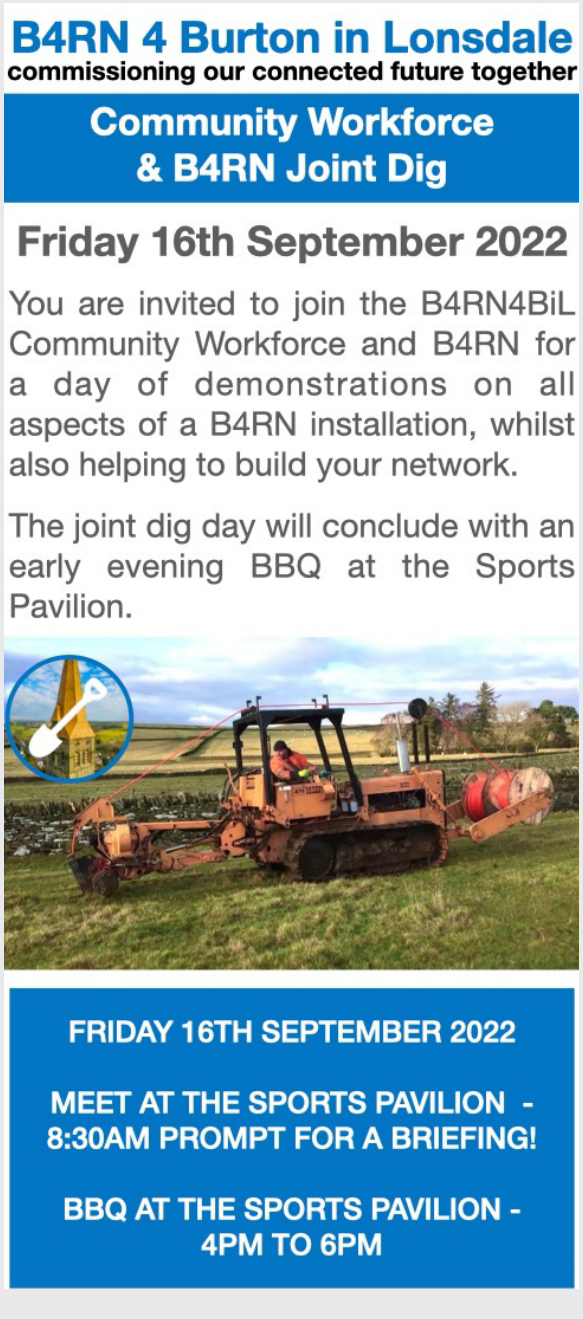
As the Summer turns to Autumn, B4RN contractors start with the soft dig in the surrounding fields and then the B4RN hard dig contractors move into the village.

There is concern that the B4RN contractors could cause disruption in the village and this would lead to complaints from the residents. Whilst residents are informed, through the Village Shop display, Burtonian articles and leaflets / letters, we are not sure how accepted the traffic lights and road closures will be.

One resident is particularly concerned about the noise and vibrations generated as a result of digging up the road directly outside their house. As it happens, they plan to be on holiday for a week and so B4RN swapped the schedule to arrange for the section outside their house to be completed whilst they are away. This not something any other utility company would consider.

In the end there are no complaints about the disruption. I believe this is down to three things; Firstly, people are informed in advance about what is going on and are more than willing to move cars and live around the disruption, even those who didn't want B4RN. Secondly, B4RN uses traffic lights that were all red and change to green when a car approaches, this eases traffic flow. Thirdly, and most significantly, the attitude of the B4RN contractors is unlike anything seen before. B4RN contractors engage the community, cooperate with individuals' needs to access their properties and are a pleasant addition to the village. This is credit to B4RN for managing their contractors, but also to the contractors themselves, who "got it". The number of positive comments I get from the community about the attitude of the B4RN contractors is overwhelming,

During the course of the installation B4RN, being located in Melling (not too far away), wants to arrange a Joint Dig day. This is an opportunity for all B4RN staff to come to BiL and see and get involved in a B4RN installation. This would cover; mole ploughing in the fields, hard dig in the road, soft dig in the garden, house kit installation and fibre blowing/splicing. B4RN4BiL volunteers are invited along and the day will conclude with a BBQ at the Village Pavilion.



Being a Friday, most of the B4RN4BiL community workforce could not be present, but about 10 of us can make it. We divide into groups, along with B4RN staff, and each group visits, and helps out, each different aspect of a B4RN installation. It is a great day, beneficial to B4RN staff and B4RN4BiL volunteers alike.

Throughout October and November the final installations are completed, including 4 large garden digs that take several days to complete, and 40 House Kit installations. The B4RN4BiL team steps up the pace, including installing house kits mid-week.

The plan is to 'go live' in December 2022. There are a few hurdles to get over, such as getting power to the cabinet, blowing and splicing all the remaining fibre connections (some of which require a council permit) and installing all the routers.

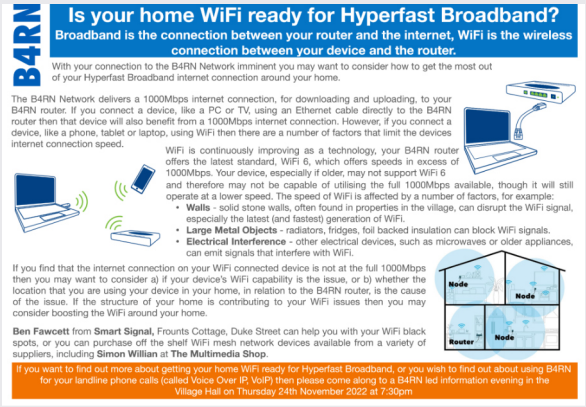
Training on installation of the routers is arranged, in the pub, with the plan for a mass rollout on the 23rd & 24th November. It seems like a good time to talk to the village about the difference between WiFi and Broadband.

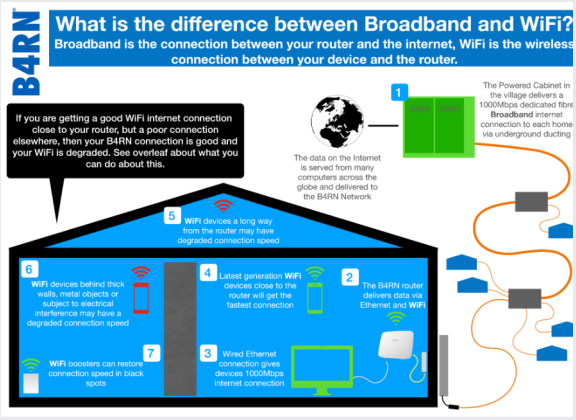
A meeting is arranged in the Village Hall, a leaflet/factsheet is generated. We hope to get the Village Hall B4RN connection live for the meeting, but with the aforementioned hurdles, this is looking unlikely. B4RN actually provides four community assets with free B4RN connections, the Village Shop, Hall & Sports Pavilion as well as the Church, a very generous offer.

The B4RN4BiL team are trained on router installations and about 80 B4RN routers are installed over the course of two days. The routers are powered up, contracts are signed and those near the cabinet also got a connection to the internet.



Ian Thompson, Debra Dennick, Simon Stockton, Charles Mason, Paul Huck and Phil James.





The evening of the meeting arrives and, lo and behold the Village Hall B4RN connection is working, having been connected the day before! About 50 people turn up to listen to a presentation from B4RN as well as to see some of the WiFi products on the market that can be used to ensure that households can enjoy B4RN everywhere in their home. Even the B4RN User Group are online ready to answer anyone's questions.



During the rest of November and into December installations continue and routers are fitted, and towards the end of December the majority of the residents in BiL who wanted B4RN have an active B4RN connection.



B4RN Snowman, Dec 2022

The B4RN4BiL group, now quite tightly knit, even goes out for a Christmas meal. One member remarks that he has not been on a Christmas 'do' in the last 15 years since retiring. It was this remark that made me realise that the B4RN4BiL group is more than just about B4RN, it is about bringing together people, who normally do not engage with one another, and allowing them to form relationships with one another.

As New Year's Day 2023 comes and goes (I am now 42 years old!) we have done it, 4 years in the making, but Burton-in-Lonsdale now has the World's Fastest Broadband.

For each property that B4RN4BiL connected we earn some money from B4RN. During the course of the project we had amassed about £15k. The plan all along is to provide this money, ideally as match funding, to support projects in the village. To facilitate the distribution of funds, a WhatsApp group is formed of 17 members of the B4RN4BiL group, who are considered regular 'workers' and whose efforts raised the money, and so should also have a say in how the money was spent.

To date the money has supported; a joint initiative with the Pals to landscape the area around the B4RN cabinet at the western entrance to the village; a loan to the Burton-in-Lonsdale Community Inn initiative to obtain a survey for the potential purchase of the village pub; funding to meet the shortfall for the grant-funded renovation of the Multi Use Games Area (MUGA); funding for materials to complete the renovation of the Village Hall. Funds still remain and will support projects in the village for years to come.

The last property to have a B4RN installation completed by B4RN4BiL is in March 2023, but we have a problem. For the last 6 months of 2022 people in the village have met every Saturday morning and spent 4 hours working together, and over the last few months this had not been the case and people miss it.

It is suggested that the B4RN4BiL group met once a month and complete a task around the village. The BiL community workforce was born.

Our first task is to replace the wooden boards around the MUGA. Half of the boards have been replaced by members of the Recreation Committee, but it is a time consuming task and has taken many months.

The BiL community workforce meets for four consecutive Saturday mornings and with 10 members. Job done.



Mike, Ian C, David, Alan, Malcolm, Julian, Sam, Paul, Ian T, Simon

4th March 2023
Inaugural Community Workforce Task

Replacement of the second half of the boards around the Multi Use Games Area (MUGA) at the Recreation Ground. Meet at 9am, 4th March 2023 (first Saturday of the month) outside the village pub.





All materials will be supplied, but if you have any battery screwdrivers/drills/impact drivers, battery angle grinders (metal), mobile work benches or spanners then please bring them along.





Burton in Lonsdale Community Workforce

working together to improve our neighbourhood

Other tasks to date include the landscaping around the B4RN cabinet to establish a bench and stone planters to improve the western and eastern entrances to the village.

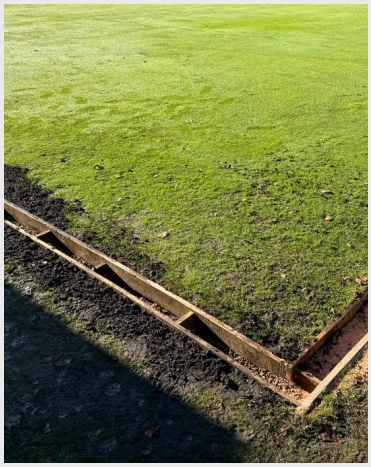
The BiL community workforce continues to meet once a month, or more often as the tasks require. Different members join in as and when they are available and work together to get the task done for the benefit of the wider community. Long may it continue....















Replacement of the guttering around the village bowling green.





Removal of the old toilets from the Village Hall.

Pals photo gallery





New foundations for the scoring shed at the village bowling green.





Left: Phil, Alan, Right: Andy W, Ian C, Alan, David, Simon, Phil, Julian

A final note on B4RN: on numerous occasions, since the B4RB4BiL project concluded, new households have moved into the village (maybe because of B4RN?) and requested B4RN to be available in their new homes. Often the B4RN4BiL team, led by Ian T, ensures that their connection is available shortly after they move in. On one occasion we installed B4RN before the keys changed hands, and on another we installed B4RN on the moving day, before the new owner had even unpacked.



Painting the inside of the Village Community Shop





Painting the inside of the Village Hall.

Having provided for every property in the village new B4RN connections continue to be activated, something which will no doubt only conclude once everyone in the village benefits from the World's Fastest Broadband. B4RN led to B4RN4BiL, which led to BiL community workforce, what will follow is unknown, but for sure the B4RN legacy will live on.

Thank you B4RN,

Simon Stockton 2024

Burton fusing photos.



Volunteers fixing routers, cleaning the patch points.



#Teamb4rn patching customers at the cabinet.



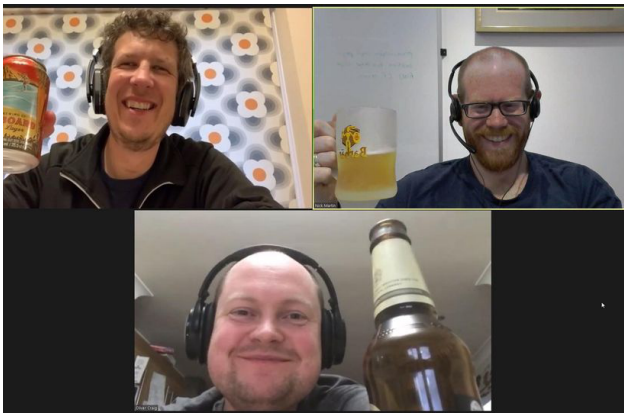
Simon peeping in on Rob who is fusing in the tent.



Fusing the bullets.



Martin gets his MBE spade award



The lads club on Zoom for their beer and craic.



Happy customers.



Simon on his router fitting round.

Wrayton

So now, we go back in time 10 years, to 2014, to the end of the Wennington network where Ian Thompson brought Clifford hall online, which then led to Burton-in-Lonsdale as you have just read.

It was 2014/15, and Wrayton, like Clifford Hall, joined the Wennington cabinet via the Old Wennington branch route. Adrian Francis had been to the meeting at Wennington school, but he remained sceptical and thought it was 'pie in the sky'. Ian Threlfall from the WenNet community tried to convince him it would work, but he could not imagine it happening and could not see the business model working, and said 'who is going to do it for us?'

There was also a lot of negativity in his village. As the success of the Wennington project became apparent, three of the villagers decided to take the matter into their own hands, thinking 'hang on, if we don't do it then nobody will'. Three Activists amongst a sea of Agnostics and Antis.

Wrayton is a tiny hamlet, a long way from the exchange. Adrian Francis, Pat Holmes and John Lowery rallied the community to dig to join the core. John borrowed a digger from work, and Pat dug tirelessly. The dig came over the fields and down to the houses.

They dug every weekend from August 2014 to April 2015. John and Pat dug all the way round both sides of the village, and Adrian hand dug-duct to every property, even all the ones who remained negative about it. He thought either they would change their minds at some point or someone else would move in who wanted the service one day. They installed the chambers, and Adrian backfilled a lot of the trenches and tidied up after the digger, and he fitted most of the house kits for people. A few of the householders helped, but a lot were elderly so Adrian just did it. John was great at the mapping and cutting off the right lengths of duct, so Adrian laid all the duct out ready for the digger. He remembers getting into some tangles before he got the knack of doing it right, though. He said they had a lot of laughs, you had to laugh sometimes or you could easily have cried.

Sometimes the task they had set themselves seemed un-ending. Unlike other villages, there was not the same community engagement in Wrayton, but they were determined that what they were doing was a 'good thing' and they carried on. Tom Hartley from Hornby was a great support to them, and he spent a lot of time helping them with the ground radar and giving useful advice.



John and Pat digging the core route into Wrayton.



Adrian assembling a chamber.

They used Tommy to mole under some lanes, but that was the only contracted help they had. The rest was done by the three musketeers. Some of the jobs they did turned out to be fun though, and they bonded into a great team and got through the workload.

When Christmas 2014 came, there were a few days between Christmas and New Year where Adrian spent the time hand-digging up a track, and for 4 days he got up and put his old clothes on and just went out in the wind and rain and dug. At least he managed to cancel out the overdose of food consumed on Christmas day, but he just thought if he could get it done, it was another week's work saved on the timeline. In Winter it seemed as if there was no end in sight. Adrian said it was a case of grit your teeth and JFDI, no matter what the weather was like. It would have been so easy not to, and he realised they had not imagined at the start how much work was involved.

They were doing all this work as volunteers, donating time and effort (and a digger) for the benefit of all, so the project self-funded itself with the financial investments.

Then it was time for the real fun bit: getting the fibre blown. Bruce came and twice managed to spray Adrian with water, as the ducts had not always got end-caps in those days. It was nice weather by then, and a lot of tea was consumed, offered by the grateful householders, who, by then, had seen all the effort that had gone into getting their connections. Adrian says he really loved that bit, as it seemed to be the fruition of their labours.

They went to each house and blew the fibres back to the chambers. Then the fusers appeared in their trailer and connected all the houses up to the core fibre. Simon and Alistair were the team in the fields.

Finally the great day arrived when Adrian patched his community in at the cabinet at Wennington,



Blowing the house fibres.



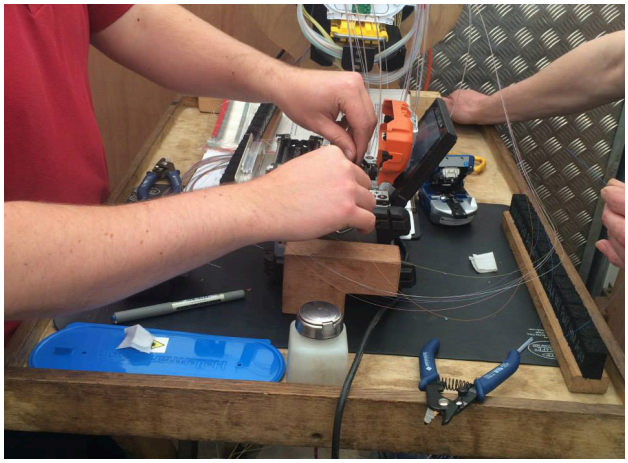
Bruce and Adrian setting up to blow and fuse the houses.



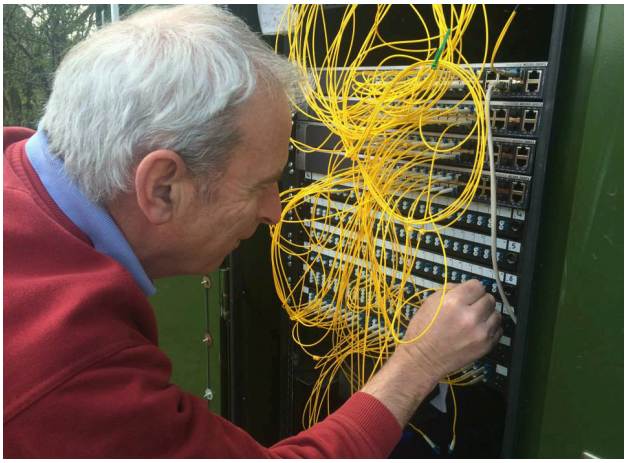
Alistair and Simon in the splicing trailer fusing the bullets.



The splicing trailer in field next to the Wrayton chamber.



Alistair and Simon fusing the bullet to bring Wrayton live.



Adrian patching the Wrayton customers at Wennington cabinet.

and he had the joy of seeing their lights come on in the switch, knowing they were all connected to the best network in the world.

In July 2015, three months after Wrayton came live with its 1000 Mbps symmetrical fibre to the home, Openreach appeared and dug up the whole road to install its 'fibre' cabinet to supply 'up-to' 30 Mbps 'superfast broadband' subsidised by the government. The villagers had paid for their own hyperfast real fibre network,and dug it in themselves. We saw this redundant BT overbuild with an inferior service in many of our villages at the time. There will be more about what we ended up calling 'the superfast fiasco', in the politics chapter, towards the end of this book. As you can see from the BT sign, it clearly says 'Fibre Broadband', which it is not.



The new Openreach chamber in the road at Wrayton funded by the sponsors on the poster hanging off the barriers.



Openreach dug the road all the way back to the main road to supply FTTC broadband. They also sited cabinets in the hamlet.

Just before it reached Wrayton, our 'Real fibre' core branch sprouted again, and headed to the river next to Cantsfield, picking up farms on the way.

Frank Brown, who caught the 'fibre bug' in Wennington, took over that branch dig, as he wanted it at his farm across the other side of the Greta river, and also to his community. We will talk about Frank for years to come, and you will see him in many chapters of the book, so here is his story, followed by the Cantsfield story.

Frank Brown



Frank, from Infinity to Beyond. Paul Parsons and Frank on a 6km blow.

Frank joined the digging crew first in 2014, then joined the blowing tribe.

Frank knew of an old unused water pipe under the river, and got the fibre through it to his farm. The cabinet is sited at his farm, and Frank sorted all that out, too. He dug and moled all the fibre round and into his village and the next three villages. He used a digger and a mole plough with his friend Kenny Hunter.

At the end of a day's training with Bruce on the Wrayton route, Frank had blown his first fibre.

He was then recruited onto the blowing team and trained many young staff how to get the fibre through.

His unfailing good humour and unflappability even impressed Prince Charles.



Frank delivering Leck's cabinet.



Frank waiting for air.



Frank on his first solo blow.



Frank telling Prince, now King, Charles how it is done.



Frank working with Flick Greenwood, the Nether Wyresdale champion.

Frank's photo gallery.



Frank and Gina Barney, Cautley champion, getting ducts ready to blow.



Frank and Lesley Gee, the Over Kellet champion, fettling the ducts.



Frank blowing fibre to the caravans, and talking to Kira Allmann.



Kira asking Frank questions for her Oxford University project.



Frank's rig with the blowing trailer.



Frank's rig got the fibre where it was needed.



Frank, Bruce and the volunteers with Annette, blowing fibre.



Frank and Will Dehany and Infinity.

Frank is an expert on blockages and sorting them out, nothing ever was allowed to beat him. Frank knows everyone. He can arrange all the blows just with a quick text. He works with all the volunteers and preps the final chambers when he blows them, ready for the fusers.

Cantsfield

From Wrayton/Wennington the fibre also took another route and travelled to Cantsfield, where Frank helped them get it right round his village and the fibre blown. Annette and Ian Dixon were the local champions, Richard and Rod encouraged take up, and kept blowers and fusers supplied with brews, and also helped the next village get involved too. Jon Randall Paley from Tunstall (the next village) came to see what it was all about.

Annette says: 'Having relied on an unreliable service coming through my dongle strapped to the ridge pole in the attic, it is a luxury to have broadband that stays on. I was regularly being ditched before, just when I got to the crucial part!'

Annette is pictured with her silver spade award brooch and Ian brought us tea. They got the duct to every property in their little hamlet and helped the Tunstall activist find out what it was all about. The first customers came live in April 2014.

There were17km of trench dug in Cantsfield .

Tunstall

Around 2014 Jon Randall Paley had heard a rumbling around in the background about B4RN and had a look at the website but knew Tunstall were not in phase 1. He was 'mildly inconvenienced' by his poor connection but

Beyond the Book

Frank and Tunstall



John Randall-Paley, the Tunstall champ, with Annette Dixon and Frank.



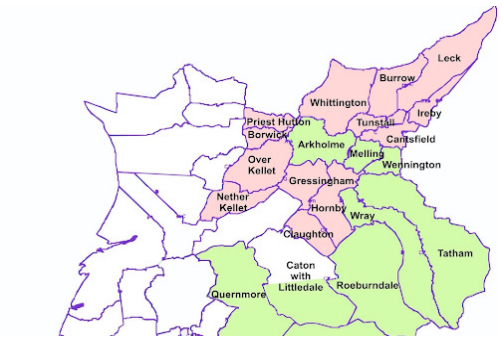
Bruce, Frank and the volunteers blowing the fibre.



Annette Dixon with her Simon Silver spade award.



Ian Dixon bringing tea at the Cantsfield blow.



worked outside all day and did not need it specifically for work in those days. His wife worked at the university and was out, and they had Sky for their TV. He said many webpages would not load and large emails with attachments were hopeless, but he started talking to other people. They became aware of the Wennington project and the fact it was going to Wrayton, which is the village next to them. They did not know who to talk to at B4RN as there was hardly any staff in those days, so found it best to talk to other groups first.

Jon went to talk to John and Adrian at Wrayton, and Annette and Rod at Cantsfield. At first they tried to work out how to connect to Wrayton, but Tunstall had the same 'head in the sand' landlord blocking their way that Wennington had had to work round. They finally found Frank, and working with the fantastic Cantsfield farmers, they realised they had a route in to Tunstall that way.

Frank told them what they needed to do, and first of all, Jon spent a Sunday walking round the village talking to everyone (about 50 properties). He was amazed to find 90% in total support of the project, and at least 80% were desperate. Some had already tried to join on to B4RN via a microwave link from Arkholme via the WenNet network, but B4RN did not want to do that. Robert Harker had been campaigning to get BT to bring 'superfast' broadband to the village but was getting nowhere. With only one person in the house being able to use the internet at a time, and now more devices becoming available families were desperate. Some had up to 20 gadgets that needed the service. People could not Skype relatives abroad. Jon fancied a Sonos bluetooth system, but he knew that would not work on his connection either. By talking to everyone they decided something had to be done, and they formed a tribe.

In 2014 Jon contacted Barry, explained everything about his village, and Barry agreed to come to the village hall and do a presentation.

The meeting was well attended, and they all decided to go for it. They then held their own village meeting to get volunteers signed up, get investment and organise wayleaves. John Hamlett from Gressingham came to speak and explain how they had done their project, and Simon Salzedo, a London barrister, spoke about buying shares to give people confidence in investing. He said 'this is our chance'. There was also a group from Burrow, the next hamlet along at the meeting, and they started their planning too.

A lot of people volunteered and a lot volunteered their wives...

A core crew of Jon, Malcolm Robinson, Steve Barber,



We will get under, worry not!

Angus Wilson, Bob Summers, Robert Rawkin, Brian Litley, Steve Melton and John Clare formed the main installation diggers and house fitters. Others joined in when they worked in their areas. The team offered to do every single dig to the house wall. Only a few dug their own. This meant there was a very high standard of installation maintained throughout the village. Out of the 50 houses, only a handful did not want it, but even those, bar one, have joined on since, as houses change hands.

Barry drew the plans, and they got going. Frank Brown moled the duct from Gary Atkinson's farm at Cantsfield right through Tunstall to where Jon lived ready to pass it on to Burrow. Ben Towers at the village farm borrowed the mole and did all his own land. Jon assisted and made sure the right ducts went in the right places and the job was done to the plan.

Jon was a landscape gardener at the time, so he knew how to dig through gardens, and many looked better after the duct had gone through. He had plenty of spare time in winter, so he used that time to get B4RN done. The roller leaves a perfect surface, the membrane goes back, then the wood-chip, and you cannot tell anything has happened.



Laying out the garden duct.



Digging the garden trench with soil put onto a sheet.



Rolling the trench level.



Finished job.



Digging down the side of the garden with sheets to protect lawn.



Reinstated lawn.



Feeding the fibre off the reel into the blowing machine.



Reeling off.



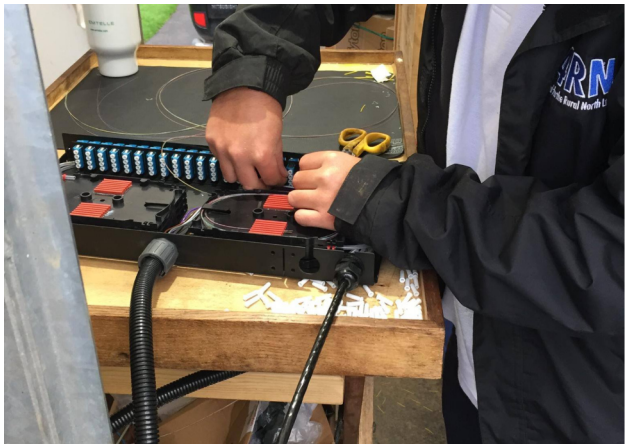
Bruce blowing the fibre back to Cantsfield to join the core.

Once they had got all the duct laid through the village, Bruce came to blow the core fibre, and all the volunteers turned out to help with the reeling and with towels to clean the fibre.

Bruce then blew all the property fibres.

The splicers arrived to connect all the bullets and connect the Tunstall cabinet to the Cantsfield one at Frank's farm. They located their cabinet at the village hall, which gave the hall a free connection.

The house splicers connected up all the properties that Jon and his tribe had installed, and then it was time for the cabinet to come live.



Alistair fusing the main core fibre into the switch.



The village children plotting routes to their homes.



The BBC breakfast team.



Party time, with visitors from nearby villages getting inspired.



The volunteers kept everyone supplied with bacon butties.

Alistair prepared all the switches, and the great day arrived in August 2015.

The BBC arrived to film the switch-on at Tunstall, and when they had finished, we awarded them a Lindsey spade. They had arrived before dawn to set up their equipment to go live on BBC breakfast. They started filming straight away and interviewing people. They filmed the great switch-on when Tom Rigg plugged his laptop into the connection to configure the switches. As it flickered to life, he did a quick speed-test for the camera crew live on air.

Then there was a bacon butty breakfast for everyone.

The kids plotted routes to their friends' houses on the wall map; that is how word spreads.

Tunstall Castle also holds the title of the first FTTC we installed; Fibre To The Castle. The Lion at the entrance to the moat got a spade.

Jon says he dreads to think how they would have managed in Covid without B4RN and how grateful they are for it. The 'superfast' fibre broadband BT had said they would get is still dangling from the poles in the village. It appeared shortly after the B4RN project went live.

They dug 10.5k of trenches in to Tunstall.



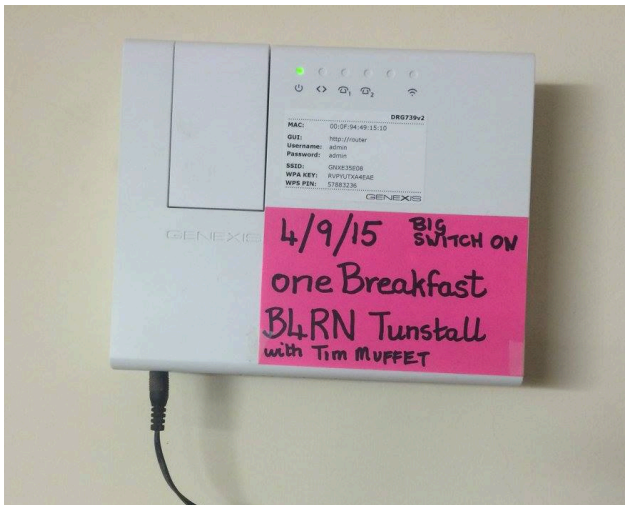
The BBC breakfast team arrive before dawn.



Getting ready for the big switch-on with Tom Rigg.



They film Tom switching on and doing a speed test.



The router about to go live when Tom switches the feed on.

Beyond the Book:

BBC breakfast Tunstall

Burrow and Overtown

Dave Thomas and Neil Jennings heard about the work of Tunstall at a Parish Council meeting, and they decided they had to get going or miss out.

Dave went to the Tunstall switch-on and talked to other tribes and found out lots more.



Tunstall castle entrance with the Lindsey spade on the lion.

Nick Gillibrand got all the route maps for them, and the Crackles family, a big local farm in between Tunstall and Burrow did most of the dig to get them joined on. The land was good, and a lot of it was moled in.

Dave and Nick did a lot of door-knocking and share-raising and they had an email newsletter to keep the village involved. Pam Burch, Gaynor and Holly Grinstead, and Sue Hunter did a lot of the PR and helped with work parties and teas.

They did not have any issues with wayleaves, as the two main landowners, the Crackles and Warburtons, were really supportive and did a lot of work for the project, too.

David says that although he is the local doctor for the village, he did not know many of them prior to the project, as they are all a 'pretty fit bunch'. He knows them all now, and they had many street parties.

Once they had got all the routes sorted and digging was underway, Ray Carberry and Neil got all the houses fitted. John Handly had a digger, and he dug a lot of the smaller routes that could not be ploughed. He took it to a lot of properties and made the garden digs easier.

Because of all the work Frank Brown had done in his village (Cantsfield) more villages on that side of the river wanted B4RN. Tunstall was the first, and Burrow got digging, then the Overtown diggers collected duct and got going and Frank organised or did routes to them. Frank used his own old digger or Kenny's mole.

Tom Kay-Shuttleworth had initiated it all and was keen to get it into his properties and the wider community. He organised a chat in the village hall at Cowan Bridge, where John Hamlett from Gressingham came and told them how to go about it.



Pat Close from Arkholme project talking to Dave Thomas at Tunstall.



Tea breaks are networking, too.



Tea break.



Frank digging, and the volunteers lay the duct and soft fill.

Nick Gillibrand was building a home in Burrow and he got people together in the Highwayman pub, and John talked to them, too. John inspired them with his talk and triggered the Overtown project to start, with people investing time and money.

Nick drew all the plans up, and he knew all the local farmers and landowners so got the routes and chamber duct plans sorted. He said the farmers themselves were not that bothered, but their wives ordered them to do it, and in the end they were absolute stars. They borrowed Kenny's mole plough and literally dug all the main routes in a very short time.

Nick said they chose coordinators based on their amazing skills: 'Dave Thomas was the perfect choice for Burrow'. English Heritage were very helpful in Burrow, as they had to reach a designated ancient monument, actually a Roman fort,' which Nick recalls thinking was quite an achievement.

The build to Cowan Bridge was very quick because 'Everyone seemed to know what they were doing and got on with it. Leonie managed to get all the utility maps for the whole area, so we knew where they were. It was not that difficult thanks to the skills in the community and the hard work of the farmers.

Ray Carberry and Neil Jennings were always available when we needed labour to dig to houses and connect them up. Lots of us bought shares to help pay for it all, and the farmers worked for digging shares.

We had 95% take up of the service, but we put duct to every house. Frank Brown was a brilliant source of work and inspiration We awarded him the Freedom of the Hamlet, i.e. the keys and freedom of the city for the tiny hamlet of Overtown that could have been passed by by the digital revolution. When B4RN came to blow the fibre, Bruce was a lovely guy and very helpful.' Nick recalls.



Overtown gets its Lindsey spade.



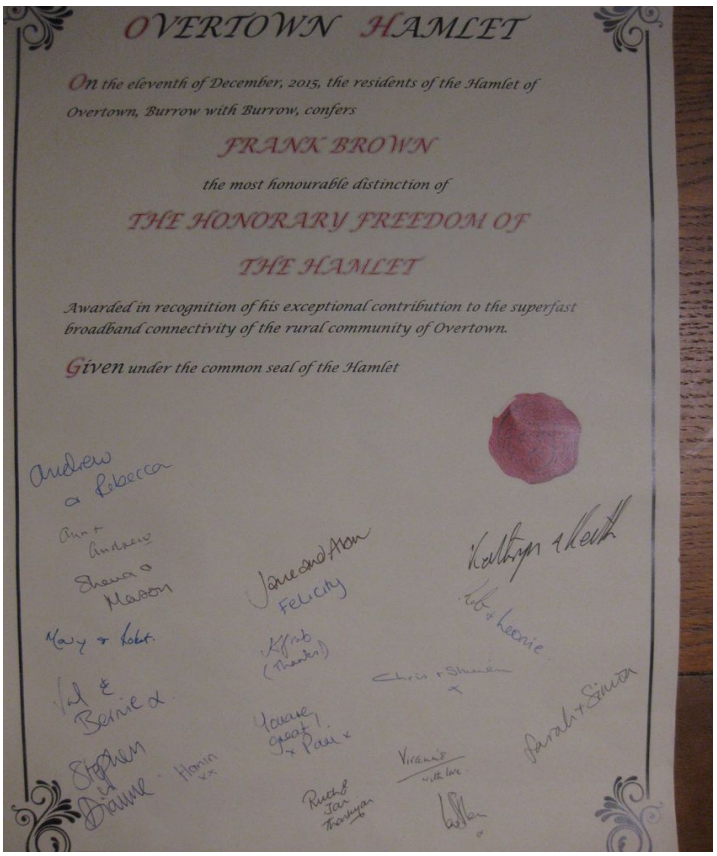
The village signpost gets its Lindsey spade.



Leck shows on the map as the northern end of the initial project.



Neil Jennings gets his MBE spade award.



OVERTOWN HAMLET

On the eleventh of December, 2015, the residents of the Hamlet of Overtown, Burrow with Burrow, confers

FRANK BROWN

the most honourable distinction of

THE HONORARY FREEDOM OF THE HAMLET

Awarded in recognition of his exceptional contribution to the superfast broadband connectivity of the rural community of Overtown.

Given under the common seal of the Hamlet

Frank Brown - Freedom of the City.

Steven Jury co-ordinated and led the local projects, and individual co-ordinators stepped up for each bit of the network. Leonie Rutter was the one for Overtown, Janet Nuttall was Cowan Bridge and Paul White for Leck.

Leonie says they would not have been able to do it without Frank. They had lots of massive rocks on what had been a riverbed, that had meandered through their patch, and sometimes even the digger could not move them, so the volunteers hand-dug round them. They also had lots of utilities running through their properties and Leonie liaised with all the companies to find them. She did the route maps for Overtown and Cowan Bridge and part of Leck.

Their connection was joining onto Burrow but would be fed from Cowan Bridge cabinet. Leck worked with them and then took over from them at Cowan Bridge. Contractors from B4RN did their road crossings, and householders all joined together for the house digs. They connected every home, with just 3 elderly residents not taking up the service.

Everyone was actively involved, and Robert Hughes coordinated and did all the house installs and trained the Cowan Bridge volunteers in the method approved by B4RN. Leonie says it was a fantastic community building project, the effects of which were very useful during Covid, and later still continue. They have just clubbed together to buy a defibrillator for their village, which is dedicated to the memory of Steven Jury, who sadly died of a heart attack, but they will always honour his memory and what he did for them. She says they have a positive warm feeling whenever they think of him.

These villages all working together, sharing their ideas and helping each other, is how B4RN grew in the early days, as there were not the resources to pay many staff members; all the money that came in went on materials to help more communities. If a certain skill was missing in one area, an expert stepped up to coach them through it.

Leck

From Overtown the dig continued to Leck, and the new cabinet went in at the village hall in Cowan Bridge, delivered by Frank and his tractor.

Leck parish got onboard. Tom Kay-Shuttleworth had spread the word, and villagers formed a working group. Leonie and the Overtown team had got the network to them and Paul White, Janet Nuttall and Karen White took it round the parish. Karen liaised with B4RN to get maps and spreadsheets.


The ladies of Leck.

The ladies of Leck rolled out the duct. Paul worked out all the routes, as his previous work experience made it easy for him, and he managed to save doing several road cuts and avoided utilities.

Tom was their major landowner, and apart from one bit which he did not own, agreed all the routes with

them, and there were no problems with the wayleaves. Tom not only wanted it for himself; most of his tenants needed it.

Paul looked at what previous parishes had done and thought that the best way to install the duct was with a mole plough, if the weather played ball. Richard Fawcett was their chosen contractor, and he had tried an ordinary mole plough, but for this project he built himself a vibrating mole, and fixed the tractor up to carry the reels of duct, so he could lay four at the same time. Paul followed him round, helping out and making sure it went well. Nigel Pearson helped, too.

Paul says Richard is a brilliant contractor, and his work was really good. The volunteers had been digging under walls for him to save time, and it was backbreaking. Richard stopped them, brought his digger, made a hole each side and punched a scaffold pipe through, then they threaded the duct through that. It took very little time.

Despite Leck being full of rock in the clay, the blows only failed twice where they had been nipped. Bruce sorted them right away and got the fibre through. Gavin Keeble helped Paul put the house kits on and various people helped do the garden digs.

Paul remembers one day when they were digging up to Leck Hall, and everyone came out to help. They cleared a blocked duct under the track and saved getting a cut done, and they all got muddy and had tea and cake. One of the ladies said she had never had as much fun in years. The community aspect of B4RN really worked in Leck, and Paul got to know everyone who he had only nodded to for years on dog walks. A lot of neighbours said the same, and they have all stayed together since then and looked out for each other.

Paul was used to making decisions, and he found B4RN was really easy to work with, as they let him



The mole plough with reels on for multiple purposes.



Starting the mole plough from a trench.



Bruce coupling up the blower, and the windmill in the background.



Starting the house blow back to the first chamber.

get on with it. He said Bruce was brilliant, and looking back, he is really proud of what they all did. Paul's wife had died in 2012, and he said the project gave him something positive to focus on. One job was to dig to the very top of Leck Fell, where the farm wanted a connection. The chap who lived on this farm had been born there, then he had raised his own family there, and they were off-grid for all the utilities. They generated their own electricity with solar and a windmill and pumped their own water, but they really struggled with communications and the internet.

Paul says that it took Richard 2 days to mole the 3-5 miles to the farm, and he used two tractors in tandem to pull the mole up there.

The farm had a satellite broadband connection, but it was unreliable and very expensive. They had tried everything and so when B4RN came close, they invested in shares. When B4RN commits to a parish, they insist that every single property would get its fibre. There has probably never been a dig to a single property longer than the one to Leck Fell Farm.

Bruce and Paul from B4RN went to blow the fibre. Bruce started at the top, and Paul blew fibre to the house and then blew downhill to Bruce, who moved down, then Paul moved down and Bruce blew to him. It remains the longest single fibre blow in our record books. It was fleeted a few times using a method Bruce invented, of blowing the fibre back into an empty ring and restarting the blow. (Patent pending).

The volunteers in the village got their spade awards to celebrate their achievement getting the fibre through. Leck cabinet came live in January 2016.

Leck laid over 32km of trenching and 40km of duct.

On Friday, 2nd June 2017, Leck suffered from a



Alan Middleton, Bruce, and Paul blowing the house fibre.



Bruce fleeting the fibre on the blow down to Leck.



Paul Parsons blowing the fibre back down to Leck.



The solar panels and the view…

major fibre break. It is a fairly common occurrence in cities, but not normal in rural areas. Copper thieves! There were two large fibres coming out of the cabinet, and the copper thieves struck, and cut both of them. They also cut the telephone lines into the area, in their search for copper. Here, there was no mobile signal, so the community was effectively cut off. The police were notified, as all the burglar alarms were off, too.

The B4RN team mobilised and worked through the night to repair the damage and get everyone back online.

Edward from #teamB4RN delivered tea and pizza to keep them going.

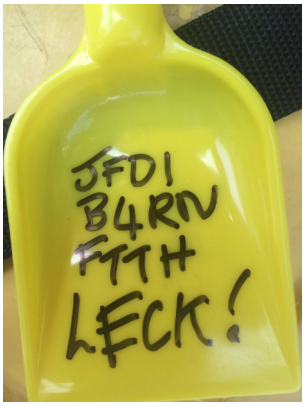
Fibre breaks can happen any time, to any network, but B4RN always responds immediately. No matter how well a network is built, there is always the danger of damage, whether by diggers, fires, rodents or many other hazards.

As our network grew, it got more resilience, so routes could be diverted through other villages whilst repairs were done, but in this case the Leck cabinet was the end of the line until the onward routes were completed, so it was an emergency repair. This break happened at 4.30pm. The main core to Ingleton was reconnected by 10:45pm and all customers were then back online by 4:38am on Saturday morning.We often find if there is to be a break, it happens on a Friday afternoon! Bank Holidays are the favourite time for fibre strikes, but we have not found a reason why, apart from the Law of Sod.

Fibre breaks can be mended in a few different ways. A new chamber can be dug, and the joins done in fibre enclosures, what we call 'bullets'. If a break is near a chamber, then spare fibre can be pulled from the previous one, and an original bullet can be re-spliced. Sometimes the fibre is simply re-blown from the closest chamber through a repaired duct.



Eric Walker (the micro digger) from Ireby comes to help and gets a spade award.



The Leck Lindsey spade on the village signpost.



Paul White gets his spade award.



Mending the fibre break in the middle of the night.

Engineers on the spot decide what to do in each case and JFDI.

Ireby and Masongill

Now we were well out of the original 8-phase plan, and the routes had expanded out to other counties!

Some volunteers from nearby villages had been helping out at Leck and learning how it all worked. Ireby were very keen to join on. Leonie Rutter and Steve Jury from Leck helped Ireby get plans done and got them utility maps. Tim Hancock from Ireby had a meeting with Masongill and enthused them to join on, and Nigel Pearson stepped up. They rallied their tribes and they got going.

Tim went round all the houses in Ireby (about 26 plus some farms), and nearly all were very keen.

He remembers visiting Lesley Murrell, and she did not know anything about the internet and computers but wished she did. He had many conversations with her and eventually helped her purchase an iPad. He showed her how to use it and showed her how to do her shopping online. He knew she did not drive, and Ireby is quite remote, and he also knew her husband had failing health. He knew once she got the hang of things it could mean that they would not have to relocate in the future. This was the type of scenario where internet access enables people to remain independent. Lesley had already said she wanted the connection in the property, but had no idea what to do with it and was not sure if she should take the service.

Months later when the service was live, Tim kept an eye on her and eased her into the shopping and email apps. She took to it like a duck to water, and is still living there looking after her husband. Lesley says, 'I was not really interested and panicked a bit until Tim and the B4RN volunteers explained it all. I got connected and from that day onwards I do not know what I would have done



Tim Hancock and Paul Graham finish a dig.



Paul and Tim and their spade awards.



The mole plough in action.



Sometimes they used two tractors to pull the mole plough.

without it. Especially during Covid, and with my husband suffering from Alzheimers, I cannot go anywhere, and I could not have managed. Tesco comes regularly, and I order off Amazon and Cotton Traders. Tim set it all up for me, and I could not have done it without him. He is fantastic. For anyone reading this, do not be scared, it is well worth doing'.


Lesley Murrell unloading her online shopping delivery.

Tim raised enough in investments, including a £5k Yorkshire Dales grant, to finance the dig, and they commenced digging to join on to Leck.

They built their own reel stands out of scaffolding poles to measure out the duct. Nigel was doing the same in Masongill, and they worked together. Steve, from Leck, kept an eye on them and told them what to do, and he was Tim's first port of call if he had a problem. Tim only had one small wayleave issue, but they went round that field, so all was well.

He remembers the local small farms did not want 'broadband'. But one chap, Thomas, said he remembered when the electricity companies came and wanted to bring electricity to the village, he did not want that either. But time had proved how useful that was, so he would let the broadband through 'for the youngsters'.

Tim used a local farm contractor, Richard Fawcett, to do his digging, and Eric Walker did micro-digging for gardens or obstacles and chambers they needed.

Colin Chick did the tube maps so they knew which duct went where in the trenches, and they reached every property.

They fitted all the house kits themselves. Frank Brown and Paul Graham also helped out with the house kits and digging.

Bruce and Paul came to blow the fibre, and the whole project in Ireby took 9 months. Most of Masongill was done at the same time. They had 'village days' and got volunteers out to help, but most of the work was done by a core team and the contractors. They joined on to the Leck cabinet at Cowan Bridge.

Now the villages outside the plan wanted to join on. The other phases were not complete, so activity was spread over a very large area in three counties. Enter stage right: Jack Pickup.

Thornton in Lonsdale

Jack was asleep in front of the fire in January 2016 and missed the B4RN meeting for this area. In his absence everyone agreed he was just the chap to organise the route from Masongill to Thornton.

They were proved right, as Jack ultimately worked tirelessly until it was all done. Half-way through he actually had a suspected heart attack, but his wife Zoe did not panic and just put him to bed to rest up. He continued shouting out instructions through the window to the volunteers, as she would not let them in to talk to him.

Jack took on the contractors used by Ireby and Masongill, and he worked alongside them to lay 10km of core route and sub-routes. The tractor they used only just fitted through many of the small farm gateways. They came across many phone lines just under the surface and the inevitable water pipes, but where possible, they went under them.

He took photos and kept an eye on things. They laid multiple ducts where needed, with Jack and his volunteers helping to keep them in order.

They took ducts up to every property on the route, making sure to keep gardens tidy. Jack took photos and documented everything, as you can see from the following pages.



Tight fit.



Thornton's B4RN banner in spring.



Digging under utility cables.



Thornton's B4RN banner in winter.



Black sheet laid to protect lawn from trench soil.



Thornton's B4RN banner and duct supply.



Chris Fawcett and his lads getting ready for the off at Easterby's Farm.



Volunteers helping the duct through the mole, June 2016.



The Millennium seat road crossing.



The mole going under the road.

Jack recalls:

'We had 14 road (lane/track) crossings on the Thornton route, all of which were recorded and photographed. All it cost was £500 each apart from one which cost £2,500.00 and took 3 days to complete for one day's actual work !! Steve Foster who with his vibrating mole was invaluable when a minor road/lane crossing was required at the Millennium Seat, before the long lonely 5k journey along Kingsdale.

I recall calling at Kingsdale Head farm and the farmer , Michael Faraday, inviting me in. I explained why I was there. He immediately disappeared and returned with a cheque for the appropriate amount, which took me a bit by surprise. Of course he explained his enthusiasm. He said, " **Whenever I have visitors at my holiday cottage next door the first question is...Eh mister have you got broadband up here?. I aim to resolve that problem with your help".**

The Yorkshire Dales National Park loaned us £15K returnable.... to encourage the installation.'

The big difference with the Masongill to Thornton/ Westhouse dig was the long distances.

They covered 10 km just going from farm to farm, to say nothing of all the twists and turns in between.

Jack found a way to go from house to house with the duct in verges and putting flags down, which are a great improvement to slippy grass for people to walk on.

Bruce blew all the fibre through to where they had sited their cabinet in Ingleton at the scout hut.

Jack connected all the houses, and Bruce blew in their fibre, too. The fusers arrived and got everyone's fibres fused.



Geoff Burns and Jack Pickup sorting duct for the digger.



A Thornton dig.



Flood water damage.



Duct crushed by two big stones.

Geoff Burns and Jack Pickup were the two prime Thornton/Westhouse volunteers on an almost daily basis, from May 2016 until Jan 2017, in conjunction largely with the Fawcetts Team.

They had a few 'disasters'. One was where the contractors had not gone deep enough, so a flash flood washed the soil away and a big stone cut the duct, but the B4RN civils team repaired and re-blew the fibre and buried it deeper.

Another was when the core got crushed between two stones, but again they rectified the damage when the blowing team came. Normally in farm tracks the duct would be sub-ducted in scaffolding poles to protect it, and they learned that lesson the hard way.

One disaster Jack recalls is in a ferocious storm, where a tree blew down and pulled up the duct.

Miraculously nobody was hurt as it was overnight, and the damage was repaired the next day by B4RN.



The duct pulled up in tree roots.



Duct laid in the verge and covered in gravel.



Paving stones on the gravel over the duct.



The Thornton cabinet at the Scout hut.



Jack patches his first customers.



That Eureka moment; the payoff for all the hard work.

After an awful lot of hard work, the great day dawned, in January 2017. The final connections were made, and Jack patched the first customer to come live.

His work did not end here because he carried on to get the connection up to Ingleton Central. After installing a massive line through an extremely rural area, the next job was to be totally different. There were houses close together, busy roads and pavements, but as he was fully trained in cave rescue, and one of the people on the Ingleton team was a highly skilled HSE person, so they had no fear.

Phil Papard was a great asset to the project and liaised with the planners at B4RN to get the Ingleton project underway. Sadly he still awaits his fibre connection as he lives in a BT area of Ingleton, New Village, where everyone believes that fibre is coming to them soon from Openreach, so motivation is sadly lacking around him. Because BT say they will do it, there are no vouchers available to help the people.

Phil and Jack worked ceaselessly to extend the fibre into Ingleton village. On occasions numerous local residents helped with local supervised digging to properties on route. Jack says: 'As we approached the outskirts of Ingleton lots of local volunteers came and got stuck in, for the experience. It would be their turn next'.

They supervised the laying of over 58 km of duct.

Ingleton Central

Posts from the Hyperfast Ingleton Facebook page.

Hyperfast Ingleton
10 February 2016 ·

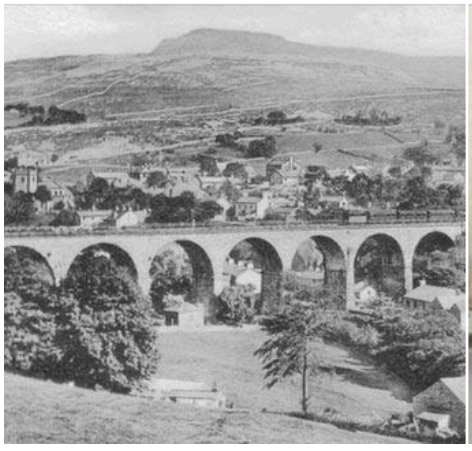
Around 130 people filled Ingleborough Community Centre on Monday evening to hear from Barry Forde, Simon Peach and Ian Thompson. We have already started to receive investment pledges and Hyperfast Ingleton is on its way!



Hyperfast Ingleton
10 February 2017 ·

Built in the first half of the 19th Century and soon to be a cutting edge superhighway in the 21st Century! Yes we seem to have been talking about it forever, but perseverance has paid off and ducting will be laid across the viaduct between February 21st & 23rd. The work will be carried out by B4RN technicians supervised by Highways England representatives. For Health & Safety reasons, none of our volunteers will be allowed on the viaduct, but we will need people to help splice at the chambers on either side. If all goes to plan, the Community Centre cabinet will go live the following week and B4RN will have arrived in Ingleton village centre. As if that wasn't enough good news, B4RN and Highways England have managed to reach agreement that the ducting can be properly laid under the surface and doesn't need to sit on top of the decking.

Through remarkable forward planning, Hyperfast Ingleton are having a Jumble Sale at 2pm on February 25th at the Community Centre to raise funds for the purchase of tools and odd bits & pieces that we will need in order to navigate ingenious routes when connecting individual properties. John Rogers is Master of Ceremonies and needs volunteers to help on the day, cake and prizes for tombola and raffle. It would also be very useful if we have some good quality jumble and John is very bravely offering storage facilities and use of his trailer for collecting all of the treasured possessions that you have been saving for just such an occasion! If you can't bear to part with it all until the last minute, you can bring it along on the day from 10am.







The adorned Ingleton sign.



The Lindsey spade adorns the sign.



Working safely at height.



The jumble sale.

Once into civilisation, the house installs on the main Once into civilisation the house installs on main street were more complicated, but Alex Price used a Unimog to do them safely. They were working at height, so all precautions were taken. Phil Papard was very hot on personal safety, and all the work was done very carefully. They perfected a way of connecting an urban street by running duct under the gutters and dropping off connections to each property. This involved getting wayleaves, but as they knew everyone, and everyone wanted it, there was not too much trouble.

They raised money for their tools by holding jumble sales at the community centre, which were always very well supported. The project was done prior to any government grants, so there were no payments available to use contractors for house installs. Ingleton have some great jumble sales, and it really helps projects if they have a fund for essential equipment they can use.

Every village did it differently, but they all found ways of getting sorted, so they could buy things like drill bits, which were always getting blunt or breaking.

They finally got permission to go over the bridge, to bring the fibre into the centre of the village from the bottom of the village where the Thornton route had finished. This route was fraught with difficulties, including getting over the old railway viaduct.



Lots of stalls at the jumble sale.



Phil, Dick and Nobby.



The mole comes out at the other side of the wall.



Going over the bridge, very carefully.



Taking the duct up the slope to the bridge.

Negotiations for that would have broken many communities, but they got there in the end.

Phil, Dick and Nobby installed a chamber at the ambulance station, and Steve Foster moled under the wall for them.

They worked tirelessly from 2017 until 2019, but due to many bureaucratic issues some areas still remain unfinished. All the outlying rural areas and the main street are done though.



The mole ready to go under the wall.



Says it all really.



Road crossing by the B4RN civils team



The volunteers dug the cabinet base out and build the plinth.



The Ingleton central cabinet arrives at the community centre.



Jim Walkden, Jack Pickup, Paul Nicholas, Nigel Thompson, John Rogers, Simon Done, Paul Radford.

The work round the village was always reinstated very tidily, with many rocks carted away to make rockeries in gardens.

Road crossings were done by the B4RN civils team, and houses reached with many spade digs.



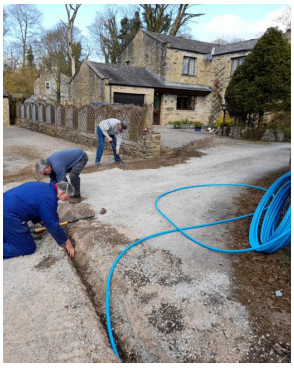
One of the oldest houses in Ingleton was built 1668,. Hopefully its disfiguring old wiring has now disappeared.

The team of volunteers worked during Covid to connect more properties, protecting duct in alkathene pipe on pathways.

Jack and his team also perfected a protected means of taking the plastic duct up and through a big wall by using stainless steel pipe and special clips to stop animals chewing or pulling it off.

Individual householders often dug their own trenches to their properties. The trenches were all checked by the team and found to be very good.





Trenching with a mini digger and sub-ducting with alkathene pipe.



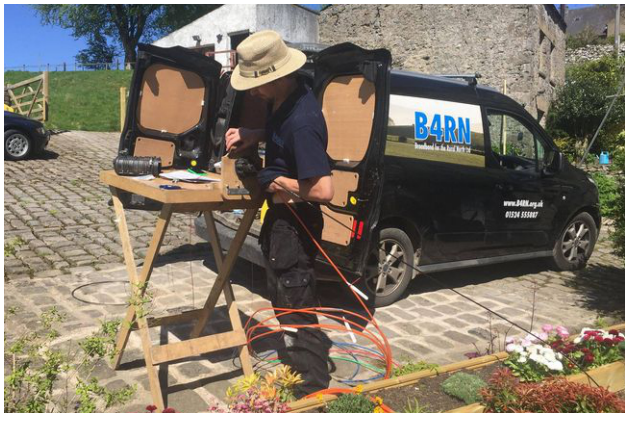
Tidy trench in the route to a property.



Back-filled trench, and a very neat job, too.



Paul Parsons, Ian Thompson and John Rodgers on a blowing day.



Paul fusing a small bullet join.

Where the digging was very rough, they enlisted the help of Iain Robertson from B4RN with the mighty Toro machine. Iain did the digs at the industrial units, and the volunteers levelled the trench and backfilled it.

The blowing team with Ian Thompson arrived, and there's a rare photo with John Rogers, a local champion, who sadly passed away before the project was completed. The fusers arrived, and the houses came live.

Ingleton and Thornton dug over 58 km of trenches.



Iain Robertson and the Toro trencher.



Joe Brown and Simon Done fusing the main core.

Ingleton photo gallery



Finished dig up to the community centre over the bridge.



Getting to the community centre.



Neat trench, hand dug, at the community centre. Subduct ready.



Laying the duct in a trench and backfilling.



Ready to go through the car park at the community centre.



Ray Newport from Dent comes to lend a hand with the mole plough.



Measured out duct.



Jack and the team taking long lengths of duct to the trenches.



The mole in action.



Stainless steel pipe, firmly secured with fibre duct inside.



Neat mole trench.



Pulling out rocks and replacing sod in the trenches.



Purple sub-duct round the playing field.



We made good use of all the Ingleton rock from the trenches.



Multiple ducts being buried, each one of them a separate branch.



Phil Papard is awarded his MBE spade award by Bruce.

Chapel-le-Dale

Here's a report from the beginning of the dig on the railway embankment in Ingleton from a September 2016 newsletter.

Broadband: Chapel-le-Dale B4RN project

A lot has happened over the summer. The route is pretty well finalised, along with who's digging where, from Ingleton to Broadrake. Permissions have been obtained from landowners and for the SSSIs and archaeological sites, and we have started to dig!

Around 300m of ducting is in place near St Leonard's church and a start has been made (on a very wet Saturday!) at the beginning of the Chapel-le-Dale trunk from Ingleton. Thanks to all those who have helped in so many ways to get the project to this stage.

Val Winchester



We've begun! B4RN Champions Val Winchester and David Ireton beside the chamber on the Ingleton viaduct where the line to Chapel-le-Dale starts.

Val Winchester had originally been involved with a group that met at the Hill Inn and were looking into getting a wireless solution for their area, as broadband was pretty much non-existent. It was not going well.

So they went to a meeting at Ingleton in February 2016 where Barry was presenting, and asked 'Can you get fibre to us?' Barry said they had to get a group together and raise shares/investments etc, so that is just what they did.

They decided on a separate project to Ingleton, and the valley was split up into several phases.

They could not raise enough money in one go at the start, so they did it bit by bit. The way you eat an elephant...they sought, and got, financial support from Craven District Council, the Yorkshire Dales National Park, Hanson's Aggregates and from locals willing to invest in B4RN, and they raised enough to begin digging.

Val and David Ireton, a local county councillor who had supported the Clapham project, were joint Champions for the first phase, and they started digging – initially in the middle section of the dale - trusting that they would overcome any obstacles to joining things together eventually! They met most days, discussing, planning, visiting neighbours and landowners and generally keeping the project up to speed.

Tony Rushton did most of the moleing in the lower part of the dale, over his own land but also over others. He

dug from Manor House Farm up to the houses at St Leonard's church. David worked with him in the evenings and weekends and collected duct throughout the project with his trailer.

Road crossings were done by Steve Foster and his impact mole, with streetworks from B4RN and Nick Hall, the civils manager.

The back road through Chapel-le-Dale is literally cut through the rock, and when we say rock, we do mean rock: Massive chunks of it with very little soil to dig in. In fact, most of the area is solid rock.

The plans for the routes they had been given by B4RN were impossible to do, and working with the farmers, they found viable routes to get to all the properties. Long stretches could be moled and rocks dug out when they cropped up.

Settlement in Chapel-le-Dale is very scattered, and Val remembers arranging working parties of volunteers in each area - most were over 65 - Coates Bargh was 82 at the time, and he spent many hours outside digging, angle-grinding across the car park entrance and taming ducting wherever needed - right from the outskirts of Ingleton up to Bruntscar Farm.

A lot of stretches were very steep and had to be dug by hand. The railway embankments by the viaduct in Ingleton is solid clinker, and the bank of the disused railway near the Scout hut were some of the worst digs. Stan, Richard, Vicky and Rhys Bargh, Coates, John Metcalfe and Martin Carter all worked here, alongside Angus Winchester and David. Dermot Griffin helped dig up to Gill Head, as did Mike Benson and Will Brennand, who mole-ploughed the route. Rachel Benson had her first go driving a tractor while helping install B4RN on Bruntscar land. Everyone was very community minded. Coates said he was not going to do much at the start, but he carried on helping all the way through. The farmers dug their own fields or moled



Tony Rushton and David Ireton moleing some of the early dig.



Steve Foster and Nick Hall on a lane crossing with the mole.



This banking may look like grass, but underneath is rock.



The road through the dale, cut through rock.

where possible, but the limestone was a serious problem in some areas. Val and her husband Angus had to resort to the reinforced duct wedged through the crags in some places.

Reaching Scar Top and Colt Park was a challenge! The limestone scar by Colt Park required a very long section of ducting threaded through protective black 18mm duct aided by the helpful transmission of instructions by John Cunningham, opera singer, whose voice carried beautifully over long distances! Angus and Val had an enjoyable, if a little nerve-racking, day threading the ducting through the limestone, burying it wherever there was a bit of topsoil in between rocks.

Val's job was to organise all this and join the ducts together. She had been trained at B4RN but thinks she need not have been quite as fussy; traumatised at the thought of getting muck in the duct she carried baby-wipes, and cleaned everything, resulting in the cleanest duct in B4RNland.

She really enjoyed walking the routes and finding the best places to dig. Val reflected on why she volunteered: "It's actually rather nice feeling useful. You get to know people. I found it very rewarding. I initially trained in landscape architecture. This is basically project management, so I liked reviving that bit. The infrastructure is like plumbing – you have to see 'how will that get to there?' – I enjoyed it."



Rock everywhere.





Rocky 'digs'.



Black 18mm duct used for extra protection through limestone.



Coates Bargh digging up the bank.



Stan Bargh hand-digging down the bank.

Digs to properties were very stony, some were done with diggers, and some had to be hand-dug.

Val organised things, from raising shares and investments to getting wayleave. She got permission from Historic England to cross the three scheduled ancient monuments (at Meal Bank Quarry, Twisleton and Ribblehead) and Natural England to cross various sites of special scientific interest. Hannah Saxton of Historic England and Annette Evans of Natural England were extremely helpful in giving guidance, with Annette explaining the need for letters of derogation from landowners to ask permission for works liable to damage the land and helping streamline the process as much as possible so that we did not miss the window of good weather when we could get the physical work done.

More investment came in as they went up the valley, and more phases got going. Alan Bennett from the Ingleton Scenery Company with his digger was seen many days, as the Scenery Company were very keen to get connected and very helpful. They made sure Alan was available, not just on their land but wherever he was needed, such as digging the very stony stretch by the Waterfalls Walk entrance.

The farmers and volunteers laid duct to their homes and cut across tracks when they could. The other landowners were really helpful, too. The Brennand family were not especially bothered about broadband at the start, but dug all their own land to get it to the rest and then took a service too.

Val was very grateful for B4RN staff's support and expertise from Tom Rigg sorting knotty technical problems with Dave Ryall and Nick Hall in the early days and Edward Wilman working things out in Phase 2 They updated all the maps and chamber locations after Val sent in the 'as built' maps recorded on her mobile phone app as she walked the route. Chris from B4RN was always there to help – from fusing fibre to giving technical advice. Val remembers emailing late on a Saturday



Will and Coates Bargh - site meeting.



Volunteers out on a rocky dig.



Farmers dug where they could. Angus, Mike, Will and Coates.



The waterfall entrance dig. Lots of rock.

evening, thinking "Chris will be able to answer that on Monday" only to get an immediate and very helpful phone call! Val says 'They got things done'.

Frank Brown came and did house connections for them, He had started to struggle with a bad hip and he told her it kept his mind off it.

Once the duct was in on Part 1 of the project, it was time for the blowers to arrive. Mainly in the form of 'Bruce the blow' and Frank with trailers towed in by the farmers. B4RN civils team and David Ireton helped out when needed on difficult blows. Bruce and Frank finished all the blowing of the core, then they did the house blows, and then the fusers came.

Val remembers one awful dank wet day when Paul was completing the last three enclosures to bring them live, and he was determined to finish. It had begun to snow as the light faded that afternoon and was bitterly cold. But when she went to bed at midnight she could still see his lights on in the field. They were all impressed by the dedication of the fusers and especially Paul.

Phase 1 was completed early in 2017 – about a year from first meeting Barry. Many of the properties they connected had been built 300 years ago.

Iain Robertson came with the Toro to get to the Station Master's House and to all at the Salt Lake Cottages.

All of this was accomplished by the community digging for shares, investing, subscribing and volunteering.

They had reached Gunnerfleet Farm, near Ribblehead, with Brent as contractor for that stretch, when vouchers came in. It meant Val could finance a very long stretch from Ribblehead to Colt Park and to High Gayle, so she took that on, too.

There were several small businesses eligible for



David Ireton moled any bits that could be moled.



Coates Bargh cutting the track in the car park.



Paul Parsons, the dedicated fuser.



Iain with the Toro.

Blowing day photo gallery



House blowing kit.



Farmer brings the blowing trailer into the field.



An audience arrives to watch the blowers as Frank arrives with fibre.



Bruce blowing core fibre.



James Taylor from B4RN civils, David and Bruce fleeting fibre.



Bruce on the walkie talkie waiting to hear if 'they had the sponges'.



Three hundred years later, the property gets fibre.



Back to the truck after a long blowing day.

grants up there, including the interactive visitor display at the Station.

Steven Foster did the main digs – Val says he was a godsend. The route to the Station Inn and the other businesses was fraught with problems. Apart from the physical issues which they had proved they could surmount, now they were faced with complex bureaucracy. The viaduct is a scheduled ancient monument.

There were two landowners involved – Network Rail and The Ingleborough Estate, and the area is common land, so there were three commoners as well. They got Natural England's permission to install B4RN as long as it was out of the birds' breeding season, so there was the usual time pressure. Everyone was very helpful but they could not dig across the viaduct until they had Historic England's permission, and Network Rail needed them to dig pits to show that they were not going to damage the viaduct in any way before they gave their permission.

Eventually, with good will on all sides, they got permission to dig trial pits for Historic England and arranged an archaeological 'watching brief' to ensure that nothing of archaeological importance was disturbed by B4RN. In the sort of weather the old navvies at Ribblehead would have had to suffer – blowing a gale and freezing cold – Ben and Sam from B4RN carefully dug the pits, and the subsequent archaeological report showed lots of 'undifferentiated rubble' – probably the result of repair work on the viaduct in the late 20th century.

Another problem was finding the owner of a very large field near Ribblehead Station. Asking neighbours about the ownership drew a blank until eventually Val discovered the land was managed by solicitors for the owners. Eventually she got a wayleave but, in the process, Katie, the neighbour at Gauber Farm Bunk Barn convinced Val that it would be 'fun' to continue - getting B4RN to them



Nearly there.



Alan Bennett digging on rough land and to go under walls.



Steve Foster moling on good land.



The inspection pits for Historic England and Network Rail.

at Salt Lake Cottages, where Aileen and her neighbours helped dig, and up to Colt Park.

With the new voucher scheme, it was then possible to take B4RN from Ribblehead up over the moor to High Gayle – eventually to join up to the Dent route at Newby Head. Rodney Beresford moled the soggy hillsides from Winshaw to High Gayle and Newby Head, so building resilience for them all.

Stephen Foster, a specialist contractor, was brilliant in installing some of the most difficult stretches – from stony land near Colt Park to bog at Ribblehead.

Eventually they were digging under Ribblehead Viaduct, and the blowers came and got the fibre up there.

Six years on, and the local network stretches between Mealbank in Ingleton to Colt Park, High Gayle and Newby Head. Val says much of her role was coordination – raising funds, gaining permissions, organising work parties and encouraging involvement: "One neighbour teased me, calling, "here comes the gaffer" when I turned up! I wrote lots of emails – more than 2,500 – but also spent a lot of time in muddy holes, joining ducting!"

Val expanded on what B4RN has enabled, for families and businesses: 'Take the kids down the road; there are two in the family, and the previous broadband was not fast enough. They would have to wait while one did their homework, then the other could start.'

'In another case, a farmer had a lot of cattle and very unreliable broadband. His cows were fitted with sensors, so he knew when they were going to calve. He needed the reliability.

Many farmers dug for shares and even people who were not interested in B4RN got involved. People



Steve getting closer to the viaduct.



Steve is nearly there.



At last. Brent reaches the viaduct.



Sam Robson from B4RN civils, blowing the Ribblehead fibre.

would dig their own gardens and for neighbours – ready to help in work parties, if you called on them. It was a joint project and I worked with Councillor David Ireton, as co-champions, during phase one of the project'.

Val was recognised in the Queen's Birthday Honours list in 2022, for services to the community. Val was also awarded the B4RN Silver Spade. You can see it pinned to her hat on the 'we are a bunch of drowned rats' day.

Val concludes: 'Thinking back it made me realise again that the last bit of the phase to High Gayle was done just as Covid was hitting - we got the dig done before lockdown but Frank did the last connections just into it, while B4RN was continuing to work under special permission as an essential service. I was so glad we managed to get so much of the dale connected just in time - during the pandemic a reliable, super-fast connection to the internet become more vital than ever. It's a pity there was a gap before we managed the Winterscales spur but at least most people who wanted B4RN did have it by March 2020'.



Val's silver spade on her very wet hat after a day of house blowing.



Val taking photos, this one shows the viaduct in the distance.



Val on a dry day.



The Chapel-le-Dale Lindsey spade.



The rock statue on the road through Chapel-le-Dale, in the rock.

Chapter 5

Dentdale and Garsdale

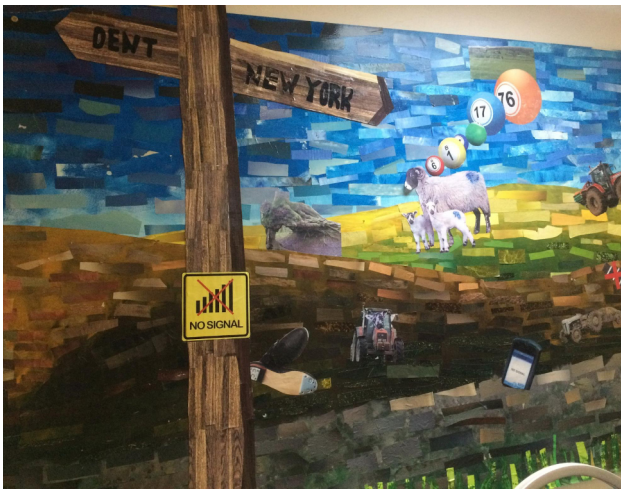
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Dent

About this time (2015), a northern altnet got into difficulties. Fibre GarDen, the project to bring the internet to two very long valleys consisting of Garsdale and Dentdale had fallen foul of the politics of the day. B4RN had been offered the same deal from the government, i.e. we raise half the money needed and the government would fund the rest. B4RN had turned it down because it meant going out to tender for the construction. As nobody at the time had tried to work in fields using their own duct and fibre, it meant no company knew how to do it, and it was not in our business plan at that time to use contractors.



Picture in the village hall.


The road through the valley, very sparse population.



Gawthrop and its Lindsey spade on the signpost.

In 2012, Fibre GarDen had put in their plan and raised the money. The company entrusted with the job used up all the money raised from the community, but could not bring the project live. This meant that Fibre GarDen could not pull down the funding to complete the project. Nor could they pay their digging contractors or pay back the shareholders.

Two of the directors were determined to get the money back, and the dispute went into arbitration. They later did get 85% of the money back as Fibre GarDen were not at fault.

The people who had won the tender asked B4RN to help out. B4RN, despite being very busy in the Phase 1 build and besieged on all sides by other villages, agreed to help.

The first stage was Gawthrop and then into the village centre. Gawthrop got the Lindsey spade.

David Pilgrim was the original Activist, and what follows is an account from one of the key people from Gawthrop, which was the first part of Dent to be connected.

John Sibley worked tirelessly to help his community, and recruited more Adopters to help.



Adrian Gordon and Ray Newport.



John Feltham with the picnic basket.



Anthony Fisher.

John Sibley's story

David Pilgrim got the whole thing started, and it was David who raised the funding and selected a team of people to deliver the project's intentions. Ray Newport was not known to David Pilgrim but when Ray saw that things were not going right, he just stepped in and got his hands dirty. David Pilgrim did a huge amount of work behind the scenes, but Ray took on the lion's share of the building work.

I was originally recruited by David Pilgrim as 'supplies manager'. It would be my job to ensure that materials were in the right place at the right time for use by the section leaders. Soon I was to become a project quantity surveyor. I then took on David's role as a digger, but by then we had Tony Middleton on board with his home-adapted mole plough and enough enthusiasm to conquer the world. He took to the job like a duck to water, so all I had to do was to point Tony in the right direction and say go.

Two of the people that David Pilgrim recruited were Antony Fisher, a retired consultant anaesthetist from Kings College hospital in London, and John Feltham, a retired indirect tax adviser, pictured above bringing the afternoon tea to a dig. These are not the sort of people who would first come to mind to work with that special breed called a 'dales farmer' and get mucky in the process. Those impressions were soon expelled when we saw them in action. They both developed very good relations with the farmers in both the acquisition of wayleaves and in cooperation when digging the really difficult sections where the route was in steep rocky ground. In any account of B4RN in Dentdale, these two men deserve a mention.

This may seem a minor point now, but there is an issue which almost saw the Dentdale project failing before it started. It was the matter of how the farmer-diggers were paid. Before we had got the first spade into the ground, it became clear to me that the B4RN 'Shares for Digging' payment procedure would never be accepted by even the most naive and trusting farmer, let alone a 'dales farmer'. The B4RN procedure, for tax reasons that applied at the time, was for the farmer to undertake the work and then, (this was the sticking point) send a cheque to B4RN for the amount he had earned for digging. B4RN would then credit his account with the same amount, thus demonstrating to HMRC that the farmer had paid money for shares. Barry, the then CEO was understandably, concerned that if B4RN initially sent money, the farmer would prefer to take the cash rather than the shares. Given the failure of the Fibre GarDen project, one could see the farmers' point, too. I too thought the plan could fail due to the farmers' lack of trust in B4RN. It didn't help that, in the minds of the potential farmer-diggers (who we also relied upon for most of the wayleaves) that B4RN staff too,



The terrain.

were 'off-comers on the make'. It wasn't until Dave Ryall, bless him, reminded Barry that the failure of Fibre GarDen was fresh in the minds of Dentdale residents, some of whom had contributed to Fibre GarDen, that Barry recognised our difficulties.

At a meeting between Barry, Kristina Fournier, David Pilgrim and myself with Dave Ryall listening in, the Dent representatives suggested that I should measure the work done and compile a claim form which would then be signed by the farmer claiming shares. I would then submit the claim to Kristina who, after the claim was approved by Tom, would send to me a cheque made payable to the farmer. At a face-to-face meeting with the farmer, I would exchange the B4RN cheque with the farmer for his cheque to buy the shares for the same amount. The system worked, due in no small measure to the prompt turn-around of claims, cheques, and share certificates by Kristina.

The digging shares were also an issue in other areas, and John's work to sort it out taught B4RN a valuable lesson.


Paul Parsons and Frank Brown blowing the fibre to Dent.


Typical road to a farm.

Frank Brown was instrumental in getting the fibre to Garsdale and Dent, often volunteering on weekends to make it happen. In November 2016 Paul and Frank blew 5,670 metres of fibre in one continuous blow from Barbon to Gawthrop, the hamlet at the edge of Dent. This set a new record. To Infinity and Beyond you might say. This very long dig had been moled in by Tony and Liam Swidenbank, and Graham, AKA TS Trenching, and it blew well. There were no properties on the route over the fell, so the fibre was uncut. There are many small farms on the hillsides around Dent, and it was a marathon to connect them all. It really helped public relations that Frank was a farmer and known to many of them, and the farmers started to get on board.

The main B4RN workforce was tied up in other village builds, but they, too, were pulled into Dent, where the people were desperate and upset at the failure of Fibre GarDen.

John Sibley and the volunteers organised all the digs to the farms, no matter how remote they were, and enlisted the help of route champions, who knew all the local farmers.



The disc cutter. It didn't work very well on the tough fell.



On route 5 above Cowgill. Don Bentham choosing weapons.



Moleing the duct over the tough fell.



Extra wheels on the tractor for grip.



Jim is also one of the volunteers and claims to own …



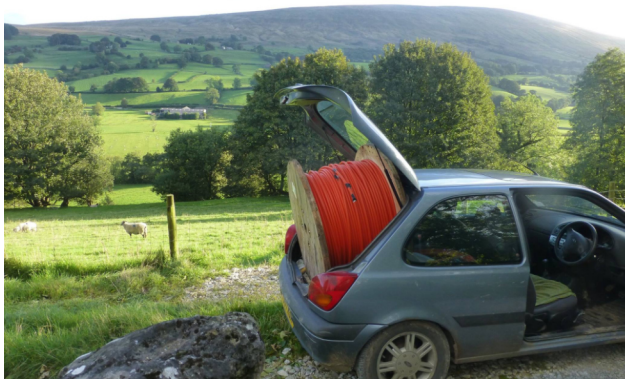
…the biggest B4RN spade in Dent.



Hard to spot your neighbours - very sparse population.



Finding the septic tank drain.



Dent duct delivery by Fiesta.



Bruce Alexander and Frank Brown blowing core fibre.



An early morning start.



The terrain. Not for the faint hearted.

The tribe grew, and the individual skills of the people were applied to the project.

The group organised more of the routes to make sure they worked, and got the duct to where it was needed. If all else failed, it went in the boot of a Fiesta.

Enter stage right, the mighty 'diggerers' of Dent. Because of the very difficult terrain, the Dent diggers had to resort to serious kit. Nothing stopped them getting to where they had to be. The digger and mole tractor worked together: The digger would remove any obstacles in its path and sometimes dig under walls, or they dug under them themselves. Don Bentham dug a lot, and the photo shows him changing buckets, the right one for the right job - 'choosing weapons to have the most effective results,' as he said.

One of the jobs that is so vitally important is finding the septic tank drain before you dig the duct in!

Once the ducts are in a route, then the blows begin.

Bruce took over from Chris H, who was tied up with lambing, and he and Frank did most of the blows in Dent, with the civils team helping on the really big ones. He showed Frank how to blow and as Bruce was tied more to his desk, so Frank did a lot more blowing. Between them they trained new young staff.

They often had an early morning start in the hope the blow would go well. The photo shows a 7km blow of 288f. They were fleeting off 2km to go back to the cabinet and then starting the core off on its journey onwards. According to the Facebook Hyperfast Dentdale records, this blow should have taken a day, but took a week.

Some of the fields look very easy to dig, but the limestone was often present and lay in wait to dent the duct. Dentdale is a Geological mix.

Dent had quite a few blockages where the fibre



Frank Brown and Will Dehany digging for a blockage.



DentBentDuct.



Frank, Sam, Bruce and James looking for the dent.



Matt, Bruce, Joe, Paul and Adrian join in on another blockage.

would not go through, but Frank, Bruce and Will would not be beaten. They measured to where the fibre stopped and dealt with the obstructions and fleeted. Sometimes clearing the blockage meant the fibre blew again and no fleet was needed. These photos show the problems, like a bit of DentBentDuct. If a rock was too close to the duct when it was backfilled, it could Dent it. Dent had an awful lot of rocks.

They had several core routes coming out from the cabinet, all very long routes so the fibre blows were very difficult. In some areas the fibre flew through, but Dent was a steep learning curve for the diggers.

They updated the Hyperfast Dentdale Facebook page almost daily to keep everyone involved with progress and to recruit volunteers. A lot of these photos are from there.

About this time it was a mad scramble to help all the groups who were actually digging. (2015/16). Nowadays things are scheduled better, but in those days B4RN was still struggling for staff.

As more customers got on board, more local staff were employed and things got more organised. A civils team was taken on, and they obtained code powers, which meant we could get road crossings done quickly and more efficiently. The civils team also did some blowing, so on the really difficult blows they could help Bruce and Frank dig holes and fleet.

The theory of a blow is that there is a chamber every 500 metres and you blow and fleet if necessary. With a small fibre you can often blow 1000 metres in one go. If you have very long routes, over 5km you can start in the middle, fleet off enough fibre to go each way and blow both ways, fleeting where necessary and leaving spare fibre in each chamber. In Dent, the rocks decided they knew best, and tested the blowing teams to the limit.

The Dent network needed very long runs of 288f,



Will Dehany and Frank Brown doing infinity.



Sam and James on a frosty morning digging for a dent.



Will and Frank fleeting.



A good blow day, with Sam and Nick Hall.

which is notoriously hard to blow. So the odds were stacked against them from the start, but they persevered, with one 2km blow taking a week to complete.

But in the end they reached Richmondshire over the rough moor and enabled many other communities to join on. By then there were contractors helping out, and they, too, learned on the job. They invested in better kit, they welded attachments onto their gear to hold extra reels, and they worked in all weathers. Because of what Tony the contractor had learned in Dent, he also helped Garsdale to complete the Fibre GarDen project, sharing the new-found knowledge of the pitfalls of digging. Each community then had to raise the money in investments to pay them, as there was no funding in those days. The farmers had been paid in shares for their digging work. The going rate was £1.50 a metre.

Steve Foster and Tony Middleton, the contractors, modified and upgraded their kit constantly to cope with all sorts of terrain. Steve also did many of the drills under the farm tracks and roads with his mole. To do this, you dig a big hole on each side of the wall or road you need to go under. You direct the mole to the hole on the other side and hopefully it pops up in the right place. They could attest that it nearly always did. But sometimes it did not. The tracks have to be checked for water, electric or phone lines, and can go under them. But usually if there are any present, a road cut is done instead. This became much easier once B4RN got its own civils team. The routes were very long, so an awful lot of fleeting went on in Dentdale. Sam Robson joined the B4RN civils team and rocked up to help get the fibre through with Frank and Will. They perfected the infinity dance, as the following photos show. Once the fibre has been blown as far as it can be, it is fleeted out in a figure of 8, and then it is turned over to find the end and the blow starts again from that point.

Several volunteers managed their own routes.



It is here somewhere…



Sam and James. First lift it up…



…Turn it over and step through.



Sam Brown and James Taylor from B4RN civils doing the Infinity loop.



Steve Foster fettling the mole.



Digging the hole for the mole.



Steve Foster with his pneumatic mole.



Steve with version 2 of the pneumatic mole.



View of half of Dentdale from near Dent Station looking west. The core route of B4RN fibre from Barbon arrives through the centre of the photo.



The official Dent Lindsey spade.



The dig up the dale from Barbon to Dent.

John Feltham reports: 'Both Antony Fisher on the south side and me on the north (and no doubt other section leaders) walked all of our sectors several times in all weathers to work out the best places to dig, which was often nowhere near the initially suggested routes provided by B4RN, based on Google Earth screenshots.

We negotiated and agreed what turned out to be provisional wayleaves with landowners, which were ultimately replaced by "as dug" ones. This is because, sometimes, on the day, we had to think on our feet when encountering problems, and so had to re-route. Sometimes it was because the brilliant Tony Middleton had a brilliant idea!

I think it is also worth mentioning that our wayleave maps were made using a subscription to "Parish Maps" organised by David Pilgrim. These maps were infinitely superior to the Google Earth-based ones which had been suggested to us. They enabled a great deal more detail to be included since every

building, structure and boundary were clearly marked. It enabled us to create maps, which also showed the utilities, etc, and anything else relevant to the location of the duct that an unannotated map could not show, e.g. distances from field gates to where the duct comes through.

I really enjoyed the map making. John Sibley unofficially awarded me the "best maps" award!'

Some of the volunteers with their MBE spade awards. Some others are too shy to be photographed.



Jim Bolton reports: 'I now know what the local sheep feel like, having been out in all weathers. I will not forget the giant drum of ducting from Geoff Woof's down the field to and under the road. My first day on the job, David Pilgrim said to meet Ray by the salt box at the top of Barbondale and dig the ducting to the school in Dent - a daunting prospect as I could not even see the school from where we stood. Between trenching, I would call on John Sibley who would have a few job cards for properties that needed prepping for fibre. John would be way ahead, having been to all the homes, and found out exactly where the entry point for the duct was needed, even down to a chalk mark on the wall. A huge thanks to John for doing all the work involved making it so easy to follow. Also a big thank you Tim Wood, who did some early work obtaining wayleaves in the area. I met people and neighbours that only the postman knew more of'.

Dent dug over 61 kilometres of trench.



Dent Urban.



Sam and James from B4RN civils.



Rodney Beresford.



Tom Rigg loading the duct.



He's not lost.

From the Hyperfast Dentdale FB page Sept 2018

The guy at the end of the line.

He is always the guy at the back of your mind, he is the person that makes the whole project make sense. He lives with an impossibly poor internet connection and you can make a real difference to his life and his family.

Being a non-profit organisation with the underlying commitment to reach every house in the community, B4RN have always given extra importance to the 'guy at the end'.

You begin in Dent heading for Cowgill and beyond to the very point where Dentdale begins. It is 8 miles away. It takes 2 years to get there.

Our 'guy at the end' is Rodney Beresford, a giant.

He has spent a long time planning the last 2 miles to his house and has now spent 2 weeks digging it in, going where few would dare.

For example he was down in Melling this morning to pick up the duct for his last link to his house and he got the COO Tom Rigg to load it for him, and Rodney laid the whole section this afternoon.

He can now be connected!

It opens up an important link as it will now provide the possibility of connecting to Ingleton and on to Hawes.

He is the man that crossed the Pennines for B4RN in September 2018.

Thank you Rodney!

We lost him a few times, but we never worried.

Dent fusing in action



Paul Parsons fusing one of the first bullets in Dent.



Another day, another bullet for Paul, after he's blown the house fibre.



Paul working at the cabinet.



Alex Colton and Hugh Tamlin working on a Dent bullet.



The first house to come live, fused by volunteers in Dent, in torchlight.



Paul working in the cabinet.



Ann, a local route champion, learned how to fit and install the routers.



Ann Wilson was awarded the MBE Simons silver spade.

Ann Wilson's story

In the beginning there was in Dentdale.....Well, as Ray put it, disbelief in the B4RN project.

As a volunteer in the early days I, as well as most people in Dentdale, understood very little of what it was about or what it involved.

In reality, it was a mega undertaking and seemed impossible for the community to accomplish.

This sort of infrastructure surely needed the expertise of a major provider?

When I look back now, knowing that Dent dug over 61 kilometres of trench through difficult terrain, and laid fibre to every household, I find it mind-blowing.

Dentdale has its own fibre network, thanks to David Pilgrim's belief and a handful of volunteers. It was successful for many reasons but one was perhaps because of the eclectic mix of volunteers involved. Basically a bunch of ordinary folks. A mix of retired professionals, some recently arrived and some long standing, as well as farmers and willing, fit residents with spades. They brought many and varied skills to the project, and the locals had the knowledge and experience of the terrain.

Tony Middleton, an extremely skilled, local young man with the ability to adapt his diggers, was invaluable. He knew the terrain and all the pitfalls. Jim Bolton was an expert at drilling through the thick stone house walls, often 3 feet wide. When it became obvious that he couldn't possibly do all the households where people couldn't do their own, he helped me to set up training sessions for local lads in his yard. He did the training.

There were women who couldn't do the physical digging. They took on administrative tasks of fundraising and managing the grants. As someone who knew most of the folks in the dale, I enjoyed the job of communicating with householders to inform them and to collect details.

Ian Middleton did the dig from boundary to house on our property.





Ian Middleton doing Ann's dig. Ann installing a router.



Success!

From the Hyperfast Dentdale Facebook page March 2018.

We began this Facebook page 2 years ago. Two years is a long time.

Now that Dentdale is over the hump of disbelief in the B4RN project, and the volunteers at least look as though they are competent, things are a lot easier.

Two years ago things were tough. We had the important step of persuading farmers to let us cut their land open, this coming straight after the failed Fibre Garden project - a similar but ill-fated B4RN style scheme. We had to do all the awkward bits by hand, pay for a digger with our own money, and then hope to persuade someone to do the straightforward moleploughing sections for digging shares.

An early part of the learning curve was realising that B4RN are a tiny organisation and can give important advice but basically you're on your own. You have to figure it all out yourselves. Your valley will have unique problems that no-one has come across before. You will have landowners living perfectly happily in the stone age. You will have householders asking why 'their' duct hasn't arrived yet.

But two years on it all seems easy. All of the work we have been involved with has been for the digging for shares scheme, which has made any cash flow problems easier. And we have several experienced people queueing up to do work for us.

We now have techniques for streams, walls, bridges. Farmers now see the inevitability of the duct crossing their land and are easier to deal with. Plenty of fields stand as examples of our tidy work, and now no farmer wants to be singled out as the guy that said No.

And it's been a while since anyone has dared to say 'where's mine?'

We have been so successful recently that we were in danger of making a profit. So much so that we have been able to give donations to Dent School, the choir and the defibrillator.

We have been lucky in Dentdale. Despite some disorganisation at the start, we have had some good problem solvers and system organisers who just got on with it. All with about 8 volunteers.

The cake never got here. There was no time to eat it anyway.



Dentdale First Responders cheque.



Dent School cheque.



The Cowgill heart.

Garsdale



Tony Middleton collects the first duct for Garsdale.

Garsdale was also part of the failed FibreGarDen project, and the easiest way for them was to join the B4RN network was to join the Sedbergh line. Garsdale is a big long valley that had tried a wireless daisy chain solution in the past as they could not get anything through phone lines. CBN (Community Broadband Network, - see chapter 1) had been asked to help, and they suggested fibre, but at the time the NWDA (North West Development Agency), were firmly under the impression that 2Mbps was enough for anyone. The community soon found the wireless solution was not going to be long term, and they joined Fibre GarDen. When that was scuppered, they were losing faith in anything to do with government and advisors, so they decided B4RN was the answer.

Gavin Keeble and Richard Dickinson were the first Activists, but the process with B4RN took so long that Gavin had to return to his work commitments. Richard's connection was so bad he had to go to the libraries in Sedbergh or Hawes to use theirs. He had invested in FibreGarDen, and that had failed. He had not bothered with the wireless network in the valley because it used to fail so often, as some of the relay stations were on holiday cottages, so they were often turned off when nobody was in them. Gavin used it, but having moved from Leck where he had been a B4RN volunteer and where he had got used to a B4RN connection, he was horrified at the slow speeds in Garsdale, and his business was suffering as a result.

Gavin spoke to Barry and started making plans, and Richard helped drum up interest in the new project. He found that many people were willing to give B4RN a try, but many were very suspicious, having lost their money on the Fibre GarDen project. So, they needed a bit of convincing.

Luckily the Dent project was proving successful, so that helped. Richard also says that the contractors that Fibre GarDen used had a very bad name with the farmers.The original contractor TS trenching (Swinny) had not been paid so had stopped working for the project, and they had got a rubbish contractor in as a substitute. Richard had to convince the farmers that substandard contractors would not be used if B4RN were doing the job.

Everyone knew Tony Swidenbank and Tony Middleton, so when they knew they would be on their land, they softened a bit. But it was a stressful time, and Richard was immensely relieved when he met Allison and Neil.

B4RN resources were scarce, and many people in Garsdale, like Dent, had already invested in Fibre GarDen and lost their money (It was reclaimed eventually) so they were very sceptical about another project. Allison Redpath had just moved into the area, and she and her husband, Neil, attended the village meeting about B4RN, where volunteers were sought. Gavin and Richard told them all what had been done and what still had to be done. They joined up, and Allison sent an introductory email to the residents of Garsdale to raise awareness of the project and to enlist volunteers.

There was a core team of about 7 - 9 people who worked nearly every day. Alan and Peggy Critchlow, Austin Sedgley, David Heller, Steve Inman, Philip Johns and John Colton, with Alex Colton joining in at weekends and evenings after work. Dave Bracken did the GPS mapping.

Allison says they all got on really well, and it was often a lot of fun. Initially there was a handover and introduction meeting with Barbara Hartley, who had brought the line in from Millthrop/Sedbergh with her husband Derek. They gave the group all the benefit of their experience, because at the time B4RN did not have anyone available to advise them. It was extremely beneficial to have had this meeting and they gained a real insight into what was required.

Alan and Austin took charge of the wayleaves; Richard and Gavin had already sorted a lot of them, and Allison recorded them, so she knew where the route could go. A spreadsheet was maintained and a newsletter sent out so people were aware of the progress being made. Derek Hartley helped with the tube maps and provided a great map and information for them. Allison and the volunteers knocked on every door and visited each farm to communicate what B4RN would entail, and she believes that because she and Neil were new to the area and were unaware of any issues between people and had no involvement with past schemes, they were welcomed. They had just moved into their new home and people were interested and friendly, so it gave her a chance to explain about B4RN.

Peggy and Alan Critchlow helped out with advice, as they had lived in the area a long time, and they helped sort wayleaves. They worked on the core team, and Allison told them where they were all needed each day. Peggy said Philip Johns made sure they had supplies of duct etc. The householders kept them supplied with refreshments and were very appreciative of what they were doing. Peggy and Alan were very keen walkers and knew all the tricky bits in the land. Working as a team, they advised on route changes to make life easier.



The core team of volunteers working with Tony Middleton, the contractor.

Peggy said it was great to be on the team, and Tony and Liam were brilliant with the diggers. The team did all the tricky bits for the contractors, hand-digging under walls and streams, etc., leaving them to bash on with the mole.



The volunteers walk to work.



Late night for the contractors and volunteers.

The whole core route was done in record time, as they were very lucky with a mild autumn. Allison says it was a really good time for the dale, everyone helping in their own ways, but the core team worked non-stop. They did all the community assets and a lot of the garden digs for the elderly.

The government voucher scheme started during this period. That meant a lot of their project could be paid by the government once it was built, and householders had a small grant from B4RN to pay contractors to do the house fittings and garden digs. (Although most were done free by the volunteers in actual fact.)

By then many lessons had been learned in Dent, and the contractor who did the work there had also upgraded his kit and lived in the area, so he knew all the farmers, and that made things easier as he 'knew what he was doing'. Tony Middleton and his son Liam were just amazing, Allison says. He rang her every morning and told her where he was working and if he needed volunteers. Allison and Tony arranged everything between them. Others joined them when needed, and so they took up the strain, with contractors working long days. However, they did it, and as Alex lived in Garsdale, she was on the spot to fix things and also to try to get information out of B4RN, as she worked there as a splicer. The team did the house digs when the contractors did not need them on the core.



They have it in spades.



Digging where diggers could not be used.



And there was tea.

Allison recalls the first dig they did with Tony on Maurice Waring's land. It was full of stones and boulders, and she just thought 'we are never going to be able to do this'. They carried on, every day for 3 weeks, sometimes in awful weather, to get the momentum going. People came out to see what they were up to, and duct started appearing through the valley. John Colton stored it all for them so it was handy.

The farmers wanted to know how it worked and what impact it could have on their land, so the team showed them. One farmer followed it right through his farm to make sure it was 'done reet'. He thought it was 'amazing'.

Allison says she and Neil had just bought their cottage and were doing it up (still are!) so had taken a sabbatical from work, and so they just gave their time every day to this worthwhile project. They met lots of people, and they knew how much internet access was needed in their valley. Every day her mantra was 'we will keep going'.

All the stretches up to garden walls were dug by volunteers, and then the mole took it through the fields. The volunteers went where machines could not. This kept the contractors doing the long stretches and kept the costs down for the community. You can see them on the photos, going down the steep bank where it was not safe to use a tractor.

Tricky bits needed getting through and many hands made light work. (No pun intended.)

The job got done, with every single property getting a fibre to their door. Fibre GarDen became B4RN, and was dug thanks to the power of the community.

Richard said that there were still a few wayleave problems, a legacy from the FibreGarDen contractor's wayleave officer, who had put people's backs up, and this delayed the route due to a road



John Colton digging under a wall for the duct to go through.



When mole ploughing a hole was dug under walls by the team.



Volunteers backfilling the trench over the duct that has gone under wall.



The mole with the duct ready to thread under the wall.

crossing into a farmer's field. But Richard managed to sort it out. He said it all seemed to take a long time, and people kept asking 'when when when', but in actual fact it was about 14 months.

The diggers they got worked really well and fast, and he said Allison and the volunteers did all the 'hard bits' in advance so they could 'bash on in the fields'. He had stepped back due to health issues so the volunteers stepped up and made it all happen. Richard says the voucher scheme made an enormous difference to the project. People still had not got their money back from the company hired by the FibreGarDen project, and many could not afford to invest again. He says 'Thank goodness we persevered, the community got together and made it happen, and I dread to think what would have happened to us when Covid struck. B4RN made life bearable as the libraries were shut, mobile coverage intermittent and no other choices. In power cuts the EE mobile service went off, sometimes Vodafone would work, but not in the whole of the valley. With B4RN we could order shopping to be delivered and keep in touch with the world.

A lot of people put a lot of time and effort into it and we all reaped the rewards. Gavin helped in the background although he'd had to go back to his work, and we had regular meetings in the village hall.'

Refreshments were provided! House kits were installed and everyone geared up for the fibre blows.

Phil had a personal complaint (!) 'Garsdale is 9 miles long and home to only 135 residential properties, plus some holiday/second homes, which are strung out along the dale, so coming together as a community was fairly rare. B4RN changed that,' he said. 'Once the residents took on the project they came together to make it work. Sometimes too many turned out to volunteer but many, who could not help with the digging, provided the diggers with vast quantities of bacon or sausage butties, cakes galore,



Danish style sausage rolls and beer cake made with Guinness today.



Another day and more delicious snacks with tea.



Philip drilling the wall for the outside box.



Alex closing the box after the fibre blow.

tea by the gallon, hot soup and even had Danish pastries courtesy of Annette Colton who is Danish. Sometimes, I ended the day so full of food, I couldn't eat my dinner!'

A house fitting needs someone with a good SDS drill to get through the massive stone walls. A plastic box is fitted to the house wall outside, a duct is threaded through and another box fitted on the inside of the house. Philip Johns did most of the house fittings. The fittings change with time and fashion, but basically they are just boxes. The fibre is curled up safely in one of them and a fancy end is put on it to connect into a router which provides the gigabit service and wifi.

They hit many snags along the way. Road crossings were a major issue to them and caused delays, with no info coming out of B4RN at the time. Information about vouchers and government systems caused issues and confusion but they resolved them. Allison and Neil found they were the local face of the project. As changes were made it was up to them to source information as best they could.

This project must have had the most refreshments but also the most stone walls to go under.

Richard reported a snag that has not surfaced so far in the stories. This was a farmer who would not allow any Sunday work on his land on religious grounds. Once he was assured that nobody would set foot there on a Sunday, and they would work to his remit, and he was happy to proceed. All the farmers were assured that their land would not be messed up, and eventually as the project progressed and they started to see the benefits, everyone was pleased they had supported the project.

Then there was another delay when a global fibre shortage meant some routes could not be blown for a while, but Allison kept everyone updated on the fibre supply front.



Tony Middleton digging for a duct dent.



House fusing with a view.



Tony knows just where the duct is.



Railway cottages connected.



Fleeting out the fibre from the blockage.



David Hellier at the station.



Finished job with a little patch jointed on.



Alex fusing a house connection.



David reaching the other side…



Two Neils standing, one Phil kneeling (behind the wall), and Stephen lying and trying to shake hands with Phil through the hole.



David with his spade award.



David Heller's short road.

Phil said another snag was when one of the B4RN staff who had done a lot of work on wayleaves in the early days of Fibre GarDen failed to get a wayleave to his own property. A landowner refused permission to get the fibre through, so that property was fed from a wireless link.

Once the valley project was dug up to the cabinet, they went on to help David do his patch up to Grisedale.

Allison says she now knows many faces at the village quiz nights, and everyone says how great B4RN is, as was proved when Covid hit, and many people had to work from home. She says it could never have happened if they had not got B4RN.

David Heller was out on a spur at Grisedale, and he helped them all get connected - the road to a friend's house is never long. Gavin (who had been involved earlier in the project) was still very busy with his job, but he helped out when he could. When they finally came live, it was just before Covid. Gavin said it was in the nick of time, as if they had not got B4RN installed, then their business would have folded. He and his wife, Belinda, run an international business, doing presentational skills training, and Grisedale has no comms to speak of; even mobile telephones do not work in their valley. On conference calls during Covid he noted how many of the town connections would drop, whereas his was rock solid.

David Heller was the champion who got the network to Grisedale, and he helped get the connection to the little station at the top of the valley. Despite having fibre on the railway lines they do not make it available to the public, and often there is no phone signal or landline. Providing a phone at these stations is a community benefit.



Phil, Neil and Allison with their MBE spade awards.

Spades were awarded to the champions, David, Phil, Neil and Allison who had helped their neighbours.

Enter the blowers from B4RN. Frank and Will.



James Clapham joins the blowers and learns to fleet with Frank.



Frank feeding house fibre into the blower.



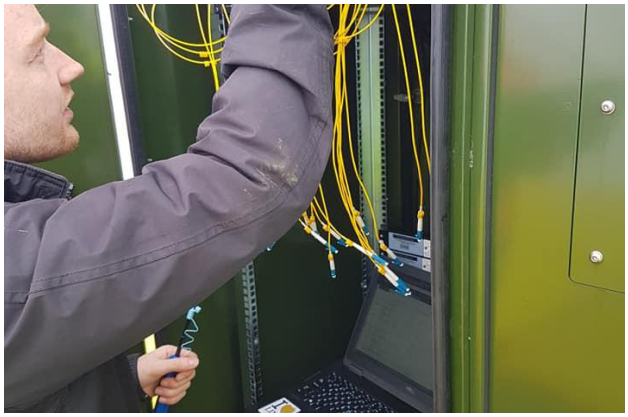
Frank Brown and Will Dehany, the blowers.



Frank blowing a fleet.



The fibre finally arrives at the cabinet.



Ben patching the customers into the switches.

Despite the lessons learned in Dent, they still had difficulty with some of the bigger fibres and damaged ducts. They persevered, and got the fibre where it had to be. Phil went out with them to show them where chambers and routes were.

A youngster called James Clapham volunteered to help Will and Frank with the difficult blows. (He got a job with B4RN and ended up fusing with the core team, and now helps in the Network Operations centre and on core maintenance with Alistair).

Phil Johns, August 2019

'Woke up this morning with rain flying past the window horizontally and the river in full flood. Will and Frank, volunteers, along with James, work experience, will never turn up today, I thought. Lo and behold, our heroes defied the Garsdale summer and there they were, trying to persuade 288f to push through barely-there 16mm ducting on the way to the cabinet. Umpteen blockages, lots of digging, fleeting and re-blowing. These guys truly show the British Bulldog spirit. Finally gave up for the day outside the graveyard at St John's at 7.00pm, cold, wet and very tired. 288f blowing has certainly put up a fight but with these guys, defeat is never a possibility.

To Will, Frank and James, Garsdale thank you for your dedication and will power. Thanks also to Tony Middleton who turned up after a stint in Sedbergh to help find the line of the ducting and help with the digging. Wimpish me, the promise of bacon butties faded with the weather, I promise to do better in future. You guys put me to shame!'



Gavin and Belinda Keeble. *Photo credit DCMS.*



Alex fusing a bullet.



Alex adding more capacity to the cabinet as customers come live.



Alistair and Ben bringing the cabinet live.

Liv Berit Engedahl

'Will and Frank battled on, aided by James, unofficial apprentice. Fibre flew like magic between 203 to 202, round the 'awkward' corner in the road verge where the ducting was done during the roadworks, through the Quaker graveyard (no dead end there!), to 202. Hopes rose that the cabinet would be reached but the fibre stuck fast after 260m on its way to 201, so end of play today. Play should restart on Thursday'.

The civils team did some of the longer blows, and still the blockages happened. They cleared the ducts, and got the massive 288f through to the cabinet.

Enter the fusers. The house fusers had some lovely views. Alastair's team of core fusers got all the joins done and the cabinet installed. He and Ben brought the Garsdale cabinet live amidst great rejoicing.

Before long, Alex had to put another switch in the cabinet, due to almost 100% take up.

Phil Johns, December 2019

'The race to complete installing Ultrafast World Beating Broadband in remote but beautiful, Garsdale is in the final furlong. Railway Cottages are now being fitted with house kits, some have fibre and routers will shortly be on their way!

All road crossings are done, all chambers are dug in, all core fibre blown, all house ducts are in, and just a handful of properties are waiting for fibre and routers. The champagne is chilling!'

Gavin Keeble's story

My wife and I emigrated back from Australia to a rented cottage in Leck near Kirkby Lonsdale in 2015/16. We saw some flyers about B4RN and being very tech interested and having just started a business, I got in touch with Dave Ryall, and we volunteered to do some of the Leck route. It had already got to the digging stage, so we helped with that, and then Paul White and I did all the house installations. It was a great way to meet everyone!

We then bought a house in Grisedale (off Garsdale) and were told by Dave Ryall it was potentially getting B4RN, so we then volunteered again!

It helps to understand our location. Garsdale is not a well-known Yorkshire Dale, but Grisedale is unknown (almost)! It was once the subject of a Yorkshire TV documentary and book - 'The Dale that Died'. Everyone who comes to visit says Grisedale is the back of beyond. It's a cul-de-sac.

1250-1500ft up, so it gets all the weather - it's also one of the wettest places in the UK - 9ft of rain last year.



Belinda and Gavin Keeble, *photo credit DCMS.*

We don't have mains water; everyone is on a well, spring or borehole. We have no mobile reception. And, the BT landline is literally at the end of the line, 5 miles or more away from the local box.BT said they'll never be able to deliver good internet, let alone clear telephone lines out here. During Storm Arwen we had no power for 8 days! It's not for the faint-hearted, but it's wonderfully wild and full of wildlife.

To stay in touch with the outside world, we paid for a Kencomp business microwave 20Mbps service, with 100GB data cap. It cost us £114 a month! It was hopeless. It collapsed every week. I talked to customer support a lot! Hilariously(!), when RAF jets flew over the signal just dropped out. So we were absolutely desperate for good internet, not just for the internet, but for a phone line. And not just for checking Facebook, but for our businesses! If we hadn't heard B4RN was coming to the dale we would never have considered moving to Grisedale.

Richard Dickinson and I became the first B4RN champions in Garsdale/Grisedale and met with David Pilgrim, the driving force behind the Dent and Garsdale route, numerous times over a few months. We

were lucky as most of the funding was in place following David's team's hard work. So, Richard and I decided to take the bull by the horns and visit every landowner in the dale whose land lay on the planned route.We went to talk face to face to the occupants, endeavouring to get their support, and ask them to sign a wayleave. Virtually every conversation took a lot longer than we had envisaged! It was a very hard, mostly thankless task, and took a lot of time, many people landowners did not understand why they would not be receiving payment for the ducting to go across their land - after all, they received annual payments from BT/ENWL so why shouldn't they receive payment from B4RN?

We also arranged a village meeting through a flyer drop, and presented to about 40 people. The task was becoming more and more time-consuming (and painful!) as I was running two businesses. I decided I had to give up the Champion role and hand over to someone else. Richard pulled back his time too, and we handed the baton over to Neil and Allison, and David, plus others, who did a far better job than I did, and got B4RN up and running a few months before Covid.



I'd like to reinforce the fact that, if it wasn't for B4RN, running two international businesses during the pandemic would have been impossible and we would have gone out of business. It saved our lives! Thank you.

But our association with B4RN didn't end with the service going live. Somehow we became a 'face' of B4RN. The government's Department of Culture Media and Sport asked us if they could use our story to sell their broadband Gigabit voucher scheme. I don't know why but we said yes. They interviewed us via video-call which we couldn't have done without B4RN. In fact we had a bit of a laugh and shared our screen whilst running a speed test which showed over 900Mbps symmetrical - they were completely flabbergasted. They then sent a photographer out. Here's a link to photos taken by the DCMS photographer

The DCMS then used all of this for PR on their Facebook page where it got some trolling and negative comments because it was worded badly. It implied we had been given the £1,500 personally rather than as a voucher to B4RN!). It was also used on their website, and since then our 'case study' has been used all over the place.

We were featured in a DCMS press release in August 2020, and then in a local BBC News interview the same day (we were interviewed by the BBC's David Molloy).

Then we were contacted again in Jan 2021 by a Policy Adviser who wrote to ask about how we found engaging with B4RN and other stakeholders, and any particular barriers faced.

Then we were contacted yet again by the DCMS in February 2022 to ask permission to use our story to illustrate part of their business plan. This was also put on a DCMS press release.

A German consultancy contacted us about our experience with vouchers.

We were also asked for our consent to an advertorial in a piece in Wales.

And, then someone had seen the PR in Scotland and out of the blue they got in contact with us to ask about B4RN and how it worked

And, finally (I hope) I was asked along with Richard to do some PR shots and an interview for CGTN Europe (the English-language news channel of China Global Television Network, based in Beijing, China) who had heard the B4RN story. It gets everywhere!!

B4RN also use our photos on the website too.

We remain champions of B4RN in the greatest sense. It's the best bloody internet in the world, and we're in the middle of nowhere!!



The end of the Garsdale route to Mallerstang gets to the Moorcock inn.

With the completion of the Garsdale line, talking to the volunteers they are still involved in one way or another. Peggy said that just this week someone came up to her in a shop to congratulate them on getting B4RN to the valley, adding they would not have considered living in the dale if it did not have good broadband. People always comment on how good the service is and how helpful everyone at B4RN is if they have a problem. Old houses and wifi are a major issue, but there is always plenty of good advice. So the joy of the project is still there quite a few years after they finished building it.

Mallerstang, where Peggy's friends lived, became interested. She told them she would help them get it into their house, but the village would have to come together to make it happen for everyone, and that is what they did. To get there involved a long dig, with Lunds the first stop. Now Mallerstang is a gigabit village too.

From Philip, January 2020

'Wow! All house kits have been fitted to all the properties that requested B4RN services in the parish of Garsdale! This was the last and Alex went beyond the call of duty to come out on a Sunday morning to fit a router, much to the great pleasure of the owner, who previously had no broadband at all. Next stop the pub, B&B and Mallerstang and beyond!'

Garsdale cabinet also fed the Lunds project until Mallerstang joined on, and so the web of ducts entered Richmondshire. Lunds (Cotterdale) is at the intersection of three counties, Cumbria, Yorkshire and Richmondshire (which is not actually a county anymore but still has the sign). Gina from Cautley masterminded the dig to get the tiny Lunds community joined on and helped advise the Mallerstang tribe. Their stories come later in this chapter. Cautley is itself in the Sedbergh chapter, as the feed to Garsdale comes from there. 27.8 km of trench was dug for the Garsdale project.

Stefan Kosciuszko's story

Now with the last fitting by Alex (well done for so ably following on in the footsteps of your father, John) this is the last chapter of the story that started in 2010 (THAT winter !!) with Fibre GarDen and the team effort to bring superfast broadband to Garsdale and a valley with no mains water or public sewerage! There was a small team of volunteers that had the energy and vision to volunteer to undertake, totally unpaid, thousands of hours of meetings, paperwork, fundraising and shoe leather to get this critical service for their community in Garsdale and Dent.

Briefly remembering some of those who contributed, without whom it would not have been possible, and conveying many congratulations to;

John Colton, who with his encyclopaedic knowledge and experience of all matters fibre and technology-related gave us all the (slightly mad) confidence to take on the BT monopoly and make the government recognise our small rural idyll. In 2012 we were the first community in the nation to get a Rural Community Broadband Grant (£157,000) and a visit from the then Secretary of State, Owen Patterson, as part of the government's scheme to bring broadband to Britain.

This long arduous road had many twists and turns, but a dear favourite vignette of mine was a "guerrilla operation" by John and Stefan to check the existence (or not) of the fibre backbone network owned (and under-utilised) by Network Rail on the Settle-Carlisle Railway line. And naturally we used the trip to visit the Moorcock for an ale or two.

Andrew Fleck our brilliant and tactful chairman and leader for being a first class shepherd (and heavy-lifter) and keeping all the idiosyncratic sheep on the B4RN farm and generally the project moving forward. This is in addition to his duties as Headmaster of what is increasingly recognised as one of the best and most distinct boarding schools in the country, firmly anchored in this amazing community.

Anne Fleck, director, who ably and efficiently acted as our face to local government and other local/regional institutions and who executed innumerable other critical project tasks.

Tony Roberts our diligent Board Secretary and Director for doing all the paperwork nobody else wanted to do (there was a lot!!) and with his sage and measured advice, generally ensuring we were compliant with all rules and regulations.

The community - spirited and visionary farmers who gave the project early encouragement (you know who you all are) and wayleaves for the cable to cross their land.

Those very few folk who were initially cynical and sceptical, but generally not obstructive, thank you for indirectly spurring the team on to prove you wrong whenever the going got really tough.

Andy Hudson, former MD of Network Rail, for originally kindly offering us use of a spur to their national hyperfast fibre backbone along the railway line and giving us REAL hope that our valley could enter the 21C, only for Andy to be stymied at the last minute by the bureaucrats.

A huge final congratulations to B4RN and all of their first class leadership and staff for bringing this wonderful story of community effort (all diggers!!) fully and finally to a successful conclusion with their vision and unwavering support and confidence in our community to get it done.

This is from a homesick refugee in Hong Kong, who is not a wordsmith, but wishes he could write some poetry on the symmetry of the project being started and finished by a father and daughter team who are longstanding (even upstanding!) family members of the Garsdale community.

Once again to B4RN a salute from the other side of the world.....and many pints when I return.



The long route through Lunds to Mallerstang.

Lunds and Cotterdale



Richmondshire, Cumbria and Yorkshire road signs at Lunds.



The handover point for Mallerstang.

Once the fibre got to the Moorcock Inn, there were two routes; one to Mallerstang, and one to Hawes. On the way to these new parishes there were a few small hamlets. Two of them asked B4RN if they could be connected as quickly as possible. They did not want to wait until the next new cabinets that they were assigned to were built; they wanted to 'borrow' the 24 fibres that go to the new cabinets until they were needed and then swap onto the network when the new cabinets came live.

Lunds were the first to dig to Garsdale cabinet. They had a group of houses with businesses that were really desperate for connection. Their area was where three counties come together, Richmondshire, Yorkshire and Cumbria. Gina Barney from Cautley met the Activists at a volunteer day at Melling and took up the challenge. One of the businesses put a lot of the money up to do it, and vouchers provided the rest. B4RN took some persuading, but Gina is known for her persistence. She installed all the houses and supervised the digs, and she got them done. She then helped Frank blow all the fibre in. Then she got the volunteer fusers in to fuse them all. Months later, the lines were reversed to feed them from Mallerstang, but all through Covid they had connectivity.

The photo shows where the dig ended, and the duct reel was where the Mallerstang team had to dig to, but Lunds had saved them quite a few kilometres of digging and also self-financed it all. It was a good start for them. Cotterdale was similar and was featured in a newspaper article in May 2022,

Richmond MP Rishi Sunak was there for the switch on ceremony and photo shoot: Sunak, later prime minister said, 'Volunteers in Cotterdale dug in about three miles of cabling with the support of non-profit community benefit society B4RN, using a Government voucher scheme, as well as £10,000 from the national park authority's Sustainable Development Fund (SDF)'. 'They have installed gigabit full fibre broadband to all 14 homes in the hamlet, which is situated off the A684 in Upper Wensleydale.'

Beyond the book
Cotterdale News



Frank Brown and Gina blowing the fibre to Lunds.



Gina and Will Dehany fusing the Lunds bullet.



Installing houses on the training day.



Fixing the external house duct to the wall.

Mallerstang

John Peel from Mallerstang had just moved into the area and had seen the Channel 4 programme Lakes and Dales that showed how Barbon and Clapham had got B4RN in their area. He found out that David White had been speaking to B4RN and that Rob Bradley was leading the project in Mallerstang. He immediately joined the team to do whatever he could, as his broadband was terrible.



First training day, connecting up the first houses.

Rob was doing all the wayleaves and planning the routes with B4RN, and John set about raising the money.

Gina Barney from Cautley had brought the core close to them at Lunds, so a large length of their main route in was done.

John could not get any help from the council, but the Yorkshire Dales National Park was supportive, Andrea Burdon was his contact, and she got them a grant, which paid for the cabinet.

They had many delays getting the route completed. From where they joined Lunds, they came down the valley and needed to go under the viaduct. Network Rail took forever to approve it, even though they had wayleaves from the landowners. It caused an 8-month delay, then a further 3-month delay because they had to 'be present' at the dig, and that took a while to arrange. In the meantime contractors installed house kits.



The outside clip with the wall drilled.



Hand digging where diggers could not be used.



Pick axes and mattocks to get the trenches dug.



A B4RN presentation for the community.

Vouchers were available, and the dig grants were in operation at the time.

John said Rob Bradley did all the real work, and John just helped him.

Householders either dug their own gardens or used the dig grant to pay a handyman to do it for them. Chris Scrimshaw, Rob or John helped to install the house kits for everyone and advised on siting of routers in the house.

They got all their vouchers up to the cap, and although some expired due to the delays with Network Rail. Amy at B4RN got them reinstated.

Rob remembers all the working parties, and how the volunteers all helped each other. There were lots of places a digger could not go, so they found ways to do it by hand.

In July they held a volunteer day, and work was done through a wood which was impossible for mechanical diggers, and across Outhgill village green, and most residents helped.

The village team took over to get to the houses. First the sod was removed, then the pickaxe was used, then spades, then trowels.

They only had one wayleave issue, but they dug around that land. It was owned by a trust, and they did not seem to understand what B4RN was about, but the volunteers overcame it.

John says the best thing about it all was getting to know everybody, and the fact that if anything goes wrong, it gets fixed right away. He had to ring the B4RN help-desk one morning, spoke to people who knew what they were talking about, and the problem was sorted in 10 minutes.

They have parish meetings every three months, and people have no worries about their broadband any more. It just works.



Plenty of volunteers to help dig down the woods.



Laying the ducts in the trench.



Reinstating the trench.



A long hard dig was done.

Dave White and Rob visited all the houses to gauge interest, but Dave had to back out and Rob took the project forward, helped by John. He helped to put all the house boxes on, and out of the whole area there were only two who did not want it, as they did not have computers and were not interested. He took the duct to their houses anyway.

There are about 50 houses in the area, very isolated and spread down the valley. Gina was a personal friend of Rob and his wife Sue and gave advice and encouragement throughout the project.

Rob says, 'The local residents at Outhgill got together to bring it through the church yard and up through the woods. This was a great example of a community getting together to carry out the work. The weather was fine and coffee and biscuits were served! Everyone had a great day, and we cracked it'.

Before and after photos show a very good job was done.

B4RN lent them the Toro to get through a big garden to get to five houses. This was a particularly long stretch of meadow garden in Shoregill to get through without crushing sapling trees or upsetting the bees, so they called in Mr Toro, and Iain came and trenched that bit for them.

They got the core through to the houses. The volunteers laid the duct and backfilled the trench, and long stretches done safely and well.

The volunteers continued ducting to their houses whilst Tony was bringing the main core duct through to them with his big machinery.

On the core route 1 to Mallerstang their biggest hiccup was getting the core to Ravenstonedale as it was wild terrain, and there was one small field that the landowner would not let them through due to a past experience with BT making a mess in it.

The trenchers at work



The dig continued, many hands, many trowels.



The ‘before’ photo.



Mr Toro., Iain Robertson from B4RN.



The ‘after’ photo.



Trenching through a long rough stretch, lots of bees, so no diggers.



The victory salute.



Mr Toro making progress.



Before and after.

The terrain, the man, the machines



The road to Mallerstang.



The terrain and the hills.



The dig over Ravenstonedale.



Tony Middleton.



Tracked pneumatic mole plough.



Another pneumatic mole plough.



Laying the duct in the trench.



Soft backfill on the duct.



Bruce blowing core fibre.



Bruce finishing a core blow.

One aerial installation had to be done over a track because of a neighbour dispute.

Rob had lots of fun meeting everyone in the valley, and on the training days with B4RN. He speaks very highly of their contractor, Tony Middleton with Jess (the dog), and says Tony was always willing to listen and help. He dug over some very rough terrain to reach them, as you can see from the photo gallery.

Tony then continued the dig to Ravenstonedale.

The blowing team arrived and blew the fibre in from Lunds, and then they came live off the Garsdale cabinet. They used a mixture of chambers, depending on how many joins were needed.



Barry Cheeseman blowing house fibre.



Well done to all the volunteers.



Tom Rigg B4RN COO and Matt Warman Digital Minister watching contractor Tony Middleton, moleploughing near Pendragon Castle.



Matt Warman and Michael Lee.



Matt gets his JFDI spade off Michael.



Matt watches Barry blowing a house fibre.

Bruce and Barrie then did all the house blows ready for the core fusers.

Over 34 km of duct was dug in Mallerstang

Digital Minister Matt Warman visited B4RN's project in Mallerstang. Volunteers and staff made the case against changes to the gigabit voucher scheme. Projects in Cumbria and Northumberland were to lose access to that funding from 24th September 2021.

Voucher availability continues to be a thorn in the side of alternative networks like B4RN.



Jorj Haston showing Matt how to fuse the house fibre.

Chapter 6

Casterton / Barbon and Middleton / Sedbergh / Killington / Firbank / Howgill and Lowgill / Marthwaite / Millthrop / Frostrow / Cautley

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Casterton

Following on from the previous chapters, thanks to the core route reaching Overtown and Leck, there was a route possible for FibreGarDen, but Casterton was not in the plan. A young lad who was 9 years old desperately wanted a good internet connection. He wrote to B4RN but was told there was not enough interest expressed by the villagers (many of whom were already on FTTC), so there was not a project planned unless someone could inspire them. There was no help from the government in those days, and every village had to raise the money to get to every property in the parish. This was a formidable task, but doable if the community worked together. It was impossible without the commitment. Nobody would listen to a 9 year old. William tried his parents, who understood the problem and agreed with him, but they were far too busy to run the project themselves. William did the most sensible thing. He asked Grandma to help.

It was Spring 2016, both Marjorie and Richard were retired, and having been the local vet, Richard knew the local landowners. There was no escape for them. Retired people are the lifeblood of B4RN. They care about their communities, and also are putty in the hands of their grandchildren. So, William's grandma, Marjorie, set to and found out more.

She sent Richard out to visit his old farmer clients to find out if they were interested. He came back with the news that a farm at the top of the parish was on the core route to Dent, and it was going to bypass the village because there was no interest to get B4RN. Time was of the essence if William's dream was to come true. He asked his parents if they would host a meeting at his house to discuss with the landowners how to proceed. At that meeting a decision was made to invite B4RN to give a presentation to a gathering of the village at Casterton Golf Club. Over seventy folk attended and from those numbers a committee was formed on 23rd May 2016. Marjorie says, 'Every committee member became a valued and committed member, working together through varied skill levels, to drive the project forward. No one ever missed a meeting, There was 100% commitment, and without all of them I doubt whether we would have succeeded. After the routes were mapped by Richard and Dave Ryall of B4RN, Duncan Hamlett worked tirelessly with the contractor to roll out the connections throughout the village. Richard and I salute each and every one of them, and all the volunteers too'.



Map of the area covered in this chapter.



Richard and Marjorie get their MBE B4RN spade awards.



Chris Dodd, Ron Bulman, William Mawdsley, Fred Dodd, Gary and James Mawdsley.



Trenching for connection to centre of Casterton village.



Steve Wilman digging through rocky terrain.



William levelling the bottom of the trench.

She found a stalwart in Michael Bryant, who agreed to help her with a newsletter and to be the editor. They also created their own website. Most of the photos in this story came from the newsletter posts, which kept the community informed, the majority of whom got on board. They opened a bank account, organised a fundraiser at Casterton Grange, received donations, ran a raffle and raised £1,000 to help with flyers, posters and basic equipment for taking the ducting to properties. A new branch on the B4RN tree was growing.

When they posted for volunteers Marjorie 'shook the sieve'. They all wanted to help, but when called up were on holiday, had visitors, had arranged something else or were poorly. She just shook the sieve again until she had enough. She ended up with about 30 regulars, including William and his family, and they met up on a Saturday and dug the house duct from the boundary where the core duct was, into every single property who requested it. They found a contractor, who B4RN would pay at £1.50 a metre to put the core in.

An excerpt from the great newsletter, sent out regularly by Michael Bryant and written by Marjorie: 'A spell of fine weather was forecast for this last week, making it possible for Steve Wilman to dig a trench, from the chamber serving the group of properties at Chapelgarth, to the boundary wall of one of the converted farm buildings on his land.

'How times have changed. Owned by the Wilman family for several generations, Chapel House Farm, once one of the largest dairy farms in the area and, even further back in time, the watering and stabling facility for the Royal Hotel in Kirkby Lonsdale, is now a mixed beef and sheep farm and its original stone buildings have been converted into lovely contemporary houses with all modern facilities. One could say a fusion of the traditional with the best of the new technology! The building of this final spur will enable three properties to take B4RN hyperfast



Rosie Jones, Cath and Steve Wilman and Richard Murray.





Richard Murray and Chris Benson meet under a wall.



Alkathene used for extra protection.



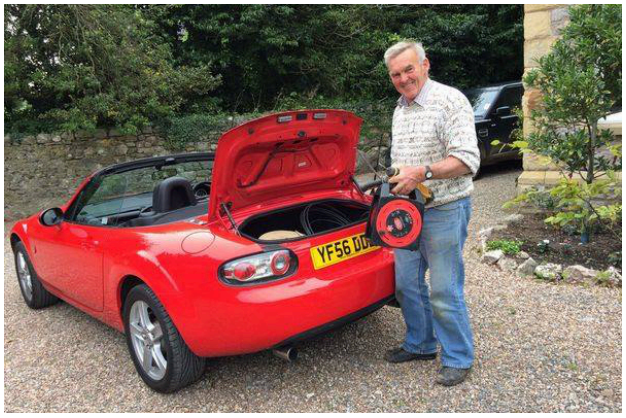
Rocks replaced carefully on top of the sod.

broadband now or in the future'.

The route was over rocky ground and could not be mole ploughed but had to be carefully trenched. After two days digging by Steve Wilman, the trench was ready to have the ducting placed within it, done carefully to ensure that it was protected from compression by heavy boulders and rocks that might be present in the backfill. The ground was so uneven that the bottom of the trench had to be cleared of rubble before the ducting was placed there. The duct was then covered with soft turf to protect it from any heavy stones which might be in the earth when it was back filled. Rosie Jones, Cath and Steve Wilman and Richard Murray placed turf on top of the ducting. Stones were carefully replaced, by hand, to reduce the risk of damage to the ducting.

The boundary wall was eventually reached and now the challenge for Richard Murray and Chris Benson was to mine under the wall. Chris Benson successfully found the way through and a blue protective sheath was fed through to provide a safe route for the ducting. Marjorie watched every bit of the dig, both to take photos for the newsletter and to keep an eye on the work. Every property had a duct left close to their boundary by the contractor, and if the owner wanted to take the B4RN service volunteers met every week to dig it in.

Frank Brown came over to assist with house installations. Marjorie says, 'Frank is a gem of a guy, spending hours passing on his knowledge to our



Frank coming to do house installations with a boot full of tools.



William Mawdsley scanning the garden at Ghyll Cottage with a CAT.



Chris Fawcett duct wrangling.



Multiple ducts in the mole plough.



Martin Coombes and Laura Mawdsley threading four 7mm ducts down a 32mm pipe.



And the lights come on.



William Mawdsley with his photo picture.

team. So very generous in time and spirit - thanks Frank.'

Duncan Hamlett did all his side of the village and by the time the fibre came, they were all ready to go live. Marjorie and Richard, despite being the major activists, were the last to be made live, as Marjorie insisted that nobody should plug her connection in at the cabinet until the rest of the community was done.

Tom Rigg from B4RN was able to tell us, 'I have just connected the Casterton cabinet to the core network. It is now live and ready to provide service to customers.' William plugged the very first connection in at the cabinet on 1st Oct 2016. It was his own, swiftly followed by several others. He was presented with a photo picture signed by all the B4RN staff as a thank you once Casterton was complete. A fitting tribute to a boy with Grit. He and his family had spent all their spare time for 16 months digging and trenching their neighbours and left gran to get on with the organising.

Marjorie talked to her friends in the next village, Barbon. They soon took up the baton. Barbon owes a lot of its success to Richard, Marjorie and Duncan in Casterton and Frank and Will from nearby villages.

An article at the time in the Westmorland Gazette read:

"FAST speed broadband has reached one of the most remote destinations in the north of England due to the determination of local volunteers.

The group Broadband for the Rural North (B4RN) raised £91,150 locally to bring the fibre optic network to Bullpot - headquarters of the Red Rose Pothole and Caving Club - within the parish of Casterton. They also received a £9,950 loan from the Yorkshire Dales National Park Authority at a special event to celebrate the arrival of broadband along with an £8,000 grant from the Rural Sustainable Fund to allow the pothole and caving club to build a library.

Local contractor Tony Swidenbank laid duct from Barbondale to Bullpot, and two other properties beyond, while volunteers connected fibre into the new caving club library. More than 45 volunteers in Casterton helped build the network locally and place fibre into peoples' homes.

Permission for laying duct was given by Natural England across Barbon Low Fell and by Aygill which is a Site of Special Scientific Interest. The caving club now has a robust telecommunications system to contact emergency services in case of accidents.

Previously isolated homes now have modern telecommunications and broadband and rural businesses have the technology enabling them to expand. Gary Mawdsley, who runs Casterton-based Anzen Data, a technology business associated with databases and security of data, was on BT fibre before B4RN arrived. 'The analogy I draw is that BT is the horse and cart and B4RN is the Mercedes Saloon. It is that marked', said Mr Mawdsley, whose business has the backing of the world's largest data company, Oracle, based in the USA. 'B4RN gives us the capability of almost being in Phoenix next to the machinery we are using whereas on the BT network we would always feel we were remote because of the fragility of the system.'

In Casterton almost 70 per cent of houses have connected to the B4RN service. All new housing developments in the village will be connected to the service in the future.

Casterton dug over 17 kilometres of trench.

Beyond the Book:

The Westmorland Gazette story





Photos by *Westmorland Gazette,* taken at Bullpot, headquarters of the Red Rose Pothole and Caving Club .

B4RN Beats The Lockdown

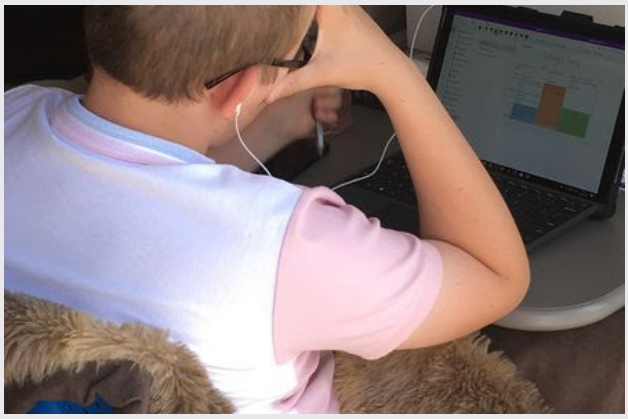
Simon Drakeford describes his family's experience locked down in Casterton, and playing 'musical rooms'!

"Even before the 'Lockdown', I knew that the bandwidth of B4RN was fantastic. It easily handles streaming movies, my 13-year old's online gaming, playing radio through my SONOS system and other bandwidth hungry activities.

However, even the new circumstances we find ourselves in, with a lot of extra internet activity, have been absorbed by the bandwidth with no noticeable slowing down.



Becky Drakeford and boyfriend occupy the dining room.



Matthew Drakeford working in the 'snug'.



Gillian Drakeford working from home in her son's bedroom.

During lockdown, not only have we had to ensure that our son was able to access his remote school lessons, that Gillian was able to work remotely online attending numerous video conferences, and my more moderate requirements could be met, we also had our daughter and her boyfriend locked down with us. Both were fortunately able to work remotely but also needed to join online group chats and conferences.

At certain times in the day, four people needed to work remotely at the same time without any concern that the line would drop.

Just as importantly, because the mobile phone signal is totally unreliable, we rely heavily on the Vonage landline for non-mobile phone calls. So far, we have experienced no problems with the much increased demands.

Perhaps inevitably, we participate in a weekly family quiz using 'House Party'. It is clear that within my wider family we have the best internet connection. So far, we haven't yet dropped out of the family's get together, whereas almost all of our external family have had access problems at some point during the evening. My brother who lives in a remote village in Somerset is constantly struggling to use the video function, reinforcing how lucky we are to have such a literally world class service right here in South Lakeland.

Simon Drakeford



Visitors at the showtell day watching a fibre blow at Casterton.

Marjorie also talked to friends far and wide, and 9 years later another big B4RN project came about from those conversations, Kirkwhelpington in Northumberland! From tiny acorns...

The Casterton project hosted a visit from other communities at one of the B4RN showtell days. Visitors from far and wide came to these events and learned how to plan networks, blow fibre and splice the joins.

Barbon and Middleton

This was the next parish after Casterton, and most people there had not been interested a few years ago when they first heard about the B4RN project, as BT were doing FTTC (Fibre To The Cabinet) in the village, but once they saw what Casterton were doing, they started talking about it. The FTTC meant that many outlying farms and homes still had a very poor connection because their phone lines were too long, though the ones near the BT cabinet in the village had a better one, but nothing like a real fibre connection.

At first it was just a few chaps having coffee at the Churchmouse at Barbon, but they soon formed a tribe.

Two diverse but linked communities in the Lune Valley. Middleton is very dispersed with very poor broadband speeds from BT (2 Mbps down to 0 Mbps); Barbon had BT FTTC from Autumn 2015, but some residents wanted 'future proof' connections, plus because it came through old phone lines, many found they still had poor broadband. David Stamp kept everyone informed with newsletters and a website and kept records, which we are using in this story.

The project's first meeting was at the Churchmouse on March 11, 2016, and a steering group was formed.



The first meeting in the Churchmouse.

a The public launch meeting was held at Barbon Village Hall April 27, 2016 (80 attendees); £130,000 was the estimated project cost. To start the project they also all chipped a bit of money into community fund. After they had the green light they had a few fundraisers for the kit they needed, and the main volunteers did all the house installations. The Fund Raising Social September 24, 2016 raised nearly £7,000 for tools and supplies. A Yorkshire Dales Social Development Fund loan of £9,900 was received in January 2017 for the Barbon + Middleton cabinet.

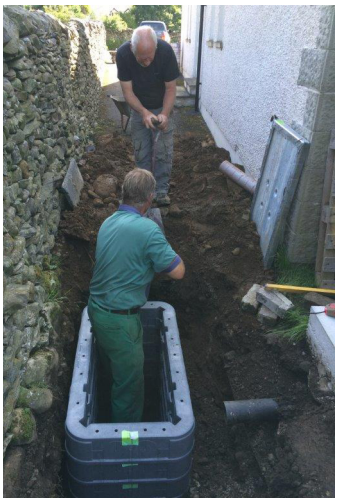


Duncan and Raymond got their JFDI spades.



True North filming the fusing process.

John Barnes had bought a mole plough, Jim Huddleston had a digger, and he and Will Dehany did a lot round the village with it, and the sight of them stimulated more interest and investment. By November they had raised the money in investments and dug to their hub at the village hall and to the Churchmouse. True North did a television project and came to film the B4RN crew blowing the first fibre to the houses. The first filming of B4RN fibre blowing + house installation (Churchmouse) for 'The Yorkshire Dales & The Lakes' More 4 series in November 2016, was broadcast in 2017.



John Barnes and Jim Huddleston installing the Barbon chamber and cabinet.

David, one of the original activists, got his JFDI spade outside the Churchmouse. Duncan and Raymond got their JFDI spades too, pictured at the village hall in November 2016 where the main B4RN hub was situated. Barbon and Middleton chamber and Cabinet (switch) had been installed at the Village Hall June/July 2016 - it was dug in by John Barnes and Jim Huddleston.

The chamber where the filming was taking place was the first one dug in Barbon, outside the Churchmouse. When they were digging it, they struck metal where none was expected. It turned out that it was the original lead water pipe that the vicar and parishioners had dug in to bring water to the village from the fells in the 1870s, many years ago. What a coincidence that Barbon was going to dig back up to the fell to help the FibreGarDen project, one community helping another one.



David Stamp with his JFDI spade.



The first chamber where they found the old water pipe.



The Magnificent Barbon 7, Jim Huddleston, Mike Openshaw, John Barnes (B4RNY), Peter Anstiss, Will Dehany, Ian Hale, Ian Dodsworth.



The 'Middleton 4'. Steve Rogers, Martin McHugh, Garry Lancaster, Will Dehany.



The handover between the two villages.



Will blowing fibre.



Will fusing the house fibre.

A major helper at this time was Will Dehany from Middleton. He had fixed up a wireless mobile solution to his property, and several locals had asked if it would work for them. Will tried it at their homes, but sadly it did not. Will lived quite high up and could see the mobile mast, while they could not. Will had been told that when Barbon telephone exchange was upgraded that Middleton would benefit, too, but time proved that would not be the case. He ended up deciding to join the B4RN tribe, and without him, many of the surrounding villages would still be waiting for Openreach. By helping Casterton, it got the fibre closer to his community, and he had learned the 'ropes', so he put it all into practice in Barbon.

The 'Middleton 4' and Barbon Volunteers started installing main B4RN fibre duct with their JCB mini-digger. They had completed all the core work before village installs started. Mike Kingsbury kept all the records, and Merlin Hibbs did a lot of the house installs. Merlin also did a lot to help the village hall connection and helped users get sorted with their hyperfast connection. He helped with wifi issues and VoIP (Voice over Internet, i.e. phone calls) choices.

Will worked tirelessly with all the digging teams and then worked with Frank to get fibre into the ducts and connect people. At first he resisted fusing as it was too fiddly but soon realised he could get more people connected if he JFDI himself. He was a quick learner and was soon doing installations himself, from digging through the gardens, connecting



Sub ducted under a wall.



James Will and Frank blowing core fibre.



James Taylor, Frank Brown, Sam Robson at blockage, blowing core fibre.



Pete Daniels prepares a protective alkathene pipe (helped by the indefatigable Raymond Gott).





The garden dig to Michael Robert's house.

house kits, and blowing fibre, and fusing the house and the bullet. He often blew fibre himself for short blows, but called on Frank if there was a lot or if it needed Frank's big compressor. He ended up working for B4RN full time for a few years but has reverted back to contracting now as he can get more people connected rather than doing paperwork. Will was, and is a true JFDI volunteer, but now with professional skills which he passes on to others.

Tony Middleton and Tony Swidenbank were contractors for some of the digs, but most were done by locals. The field duct install started at same time - John Barnes (aka 'B4RNY') for mole ploughing and Jim with mini digger. Tony Swidenbank did the moles under lanes and walls, and the B4RN civils team did the road crossings.

David adds: "This joint 'two villages' B4RN project brought both sets of villagers closer together with a common aim. Something that villagers have always done through time - JFDI ."



Roger and Stephen digging the 80 metre spur to Ullathorns.



Graham from TS Trenching with the DitchWitch.



Liam from TS Trenching with the mole to go under walls and lanes.



Will with the cobra getting through a duct.



A very neat dig to a chamber and the reinstatement.



A dig round the bog.



Barbon road crossings with the civils team.



Road crossing ready to join the core dig with subduct.



Frank Brown and Bruce blowing core fibre.



Tony Middleton moleing.



Tony Swidenbank and Graham.



Rob Staveley, one of the B4RN core team, fusing a bullet.

From David:

'In just over two years our group of volunteers and the community spirit in both villages had dug and installed over 32 km (20 miles) of B4RN fibre optic duct from Casterton to Middleton with many volunteers employed in different ways. They planned for and installed duct to nearly all 219 property boundaries in both villages (a few buildings are 'future conversions' so not being fibre connected yet). Both villages raised £150,000+ by residents investing in B4RN

In June 2018 we were approaching project completion for nearly all 219 properties: 74% (161) 'in service / connected / awaiting final splicing'; remainder to/near boundary

813 days From when they started 11 March 2016 until 2 June 2018 - 2 Years and 3 Months ''

Barbon and Middleton dug over 40 kilometres of trenches.

Will and his cohorts then took the duct further up the valley to Sedbergh and Firbank, with Frank and Bruce bringing the blowing kit when needed.

By this time Will had learnt to fuse, as he had got the bug - seeing the customer light up in the cabinet. He had also learned how to patch them in.

Will, like Bruce, had become a 'one stop shop' and could do every single part of installation, from digging to the final patching. He is a JFDI hero.

Like Bruce and Frank, Will appears many times throughout this book, including the next story from Merlin Hibbs.

Merlin Hibbs, one of the Activists, tells the Barbon story:

Coming from an engineering and computing background, I was always interested in anything that improved internet connectivity. Being very practical, I would always be happy putting a spade in the ground or drilling a hole through someone's wall, so they could take a fibre optic service with its enormous growth potential for data transfer. So when B4RN was working its way up the Lune Valley, I could not wait to be involved! In fact the early times were very frustrating because I wanted to get on and the plans were not yet in place.

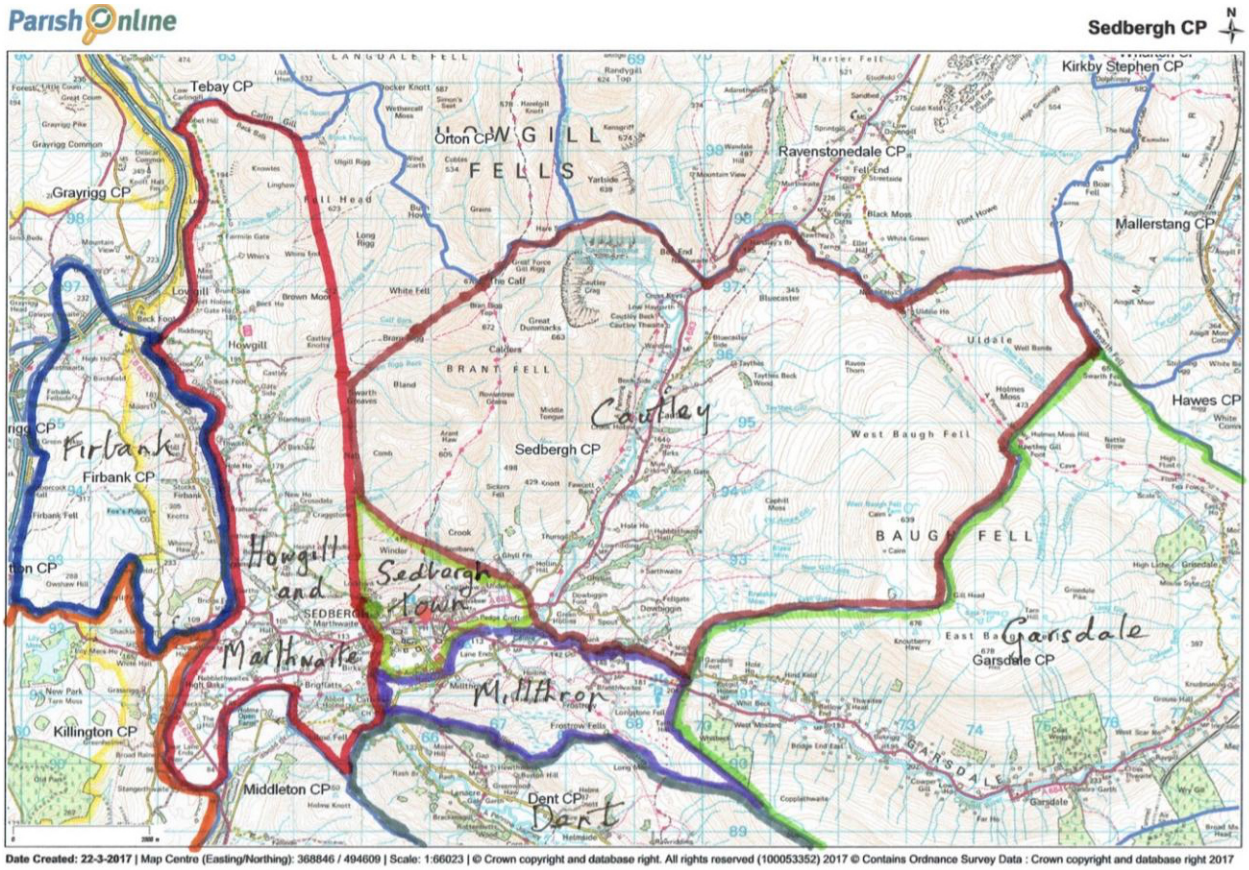
Eventually we did get plans and costings and very quickly organised the share capital to fund B4RN to Barbon. David Stamp led on the publicity and public relations side. My Dad, Helier, was kept busy organising the meetings and writing up the minutes and, although, he was not able to dig, he was always there supporting the work. Mike Openshaw did a great job in sorting out the wayleaves. Mike Kingsbury ran the bank account for all the extras we needed - particularly blue alkathene water pipe. Will Dehany kept us all on track, particularly in planning the work. The main routes were dug and we organised working parties for Saturday mornings to put in chambers, dig up gardens and fit house kits. I do not remember the garden digging as particularly exciting but when there were two of us, we just got on with it and got it done. I do remember digging with Will Dehany and with Jem Kiernan. I should also mention Peter Anstiss, Ian Dodd, Ian Hall and Kevin Taylor who also supported us in many ways including fund raising.

Will Dehany and I fitted the majority of the house kits in Barbon and then Middleton. When you do a job in any unfamiliar setting you always want to start slowly whilst you understand where you are working but with house kits you cannot do that. Once you have decided where you are mounting the kit, the very next thing you have to do is drill a hole right through the wall of someone else's house - easily the most stressful part of the job. Am I sure that there are no cables or pipes? Am I going to burst through the plaster or render and knock a big chunk off? Is the wall full of loose stone and my hole is going to be blocked as soon as I take the bit out? All very worrying things! It was comforting to know that B4RN did provide insurance cover for its volunteers. Once the hole in the wall was done, the rest of the job was always straight forward.

B4RN has been wonderful for us as a family. We already had the house wired for ethernet (we have a 48 way patch panel) and bringing B4RN into that gave us fantastic connectivity. I never cease to be amazed how quickly large video files (400 MB) for online Church services can be uploaded.

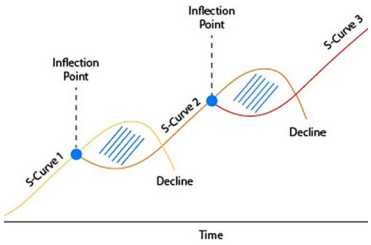
I have also been heavily involved with getting B4RN to the north and west of Kirkby Lonsdale including to St Mary's Church and to the Fairbank Society. It has provided a fantastic service to both of them.

Sedbergh, and the surrounding area of Killington, Firbank, Marthwaite, Howgill, Lowgill, Cautley, and Mallerstang come next on this branch of the B4RN tree.



Casterton, Barbon and Middleton geographically led north to the Sedbergh parishes. You can see from the map above that they also led to Dent, with a secondary route into Dent from Milthrop and Garsdale. The branches of the tree were starting to interlock and provide more resilience in the network. It would be easier if the branches grew in straight lines and in order of planned phases in a systematic way, but that was not typical of trees that grow naturally of their own accord.

In the years between 2015 and the present (2025), B4RN was morphing from a JFDI community enterprise into a professional Internet Service Provider (ISP). A bit like climbing a mountain or multiple sigmoid curves, you climb one peak and are faced with another. Digging to Dent was the physical example in the previous chapter, but as a business, we had to be ready to scale again and face a new challenge. At this point in history great changes were happening, new premises, more staff, code powers, new management systems for planning and still the ever-present bureaucracy. No more EIS benefits. Vouchers, then no vouchers. Dig grants to householders, then no dig grants when vouchers stopped. Then even more staff. Even more communities needing our help. Community dig pots started, enabling payback for volunteering, benefitting the community resources (think landscaping, defibrillators, etc.). During this period it is fair to say we had at least three such curves, having climbed multiple ones previously, and the reasons become apparent when reading about the communities and their amazing achievements and their inspiration, which all nourished the tree and made it stronger.







Steph and Stuart Lefrak.



The view from Steph's house.



Sara interviewing Steph and Stuart and Will Dehany installing fibre.

Killington

Killington was part of the Mansergh project, but because it led on to Firbank, it is in this chapter.

There were quite a few businesses and families in Killington that were suffering from very poor internet access and they were brought together to do their own project inspired by what they had seen in Middleton, just across the river, and talking to Will Dehany.

Steph Lefrak and Linda Allen agreed to speak to Sara Smyth from the Daily Mail and help raise awareness of the problems they had. Sara visited on the day the houses were due to come live and Will was there helping Frank to blow the fibre in. The B4RN fusers were there to fuse it, and the whole day was amazing,

Sara saw the job from start to finish, apart from the digging! We did tell her all about that though, and the reason communities had to do it for themselves..

Article from the Daily Mail by Sara Smyth © November 2017.

Like thousands of families in rural Britain, Steph and Stuart Lefrak have been shelling out £85 a month for a miserably slow broadband connection that gives them only a limited amount of internet usage each month.

When they moved to Drybeck Farm in rural Cumbria last April, they were forced to get this expensive connection - via a satellite dish - because BT said their farm was too remote for normal broadband. No other supplier serviced their area. Their connection was so limited that Steph, who works from home as an IT adviser, was on the verge of losing her job.

Just 100 yards on from Drybeck, the Allen family at Beck House hope the B4RN technicians manage to finish the job today. They just about have a BT



Stuart and Steph being interviewed by Sara.



Linda Allen being interviewed by Sara.



Sara looks at Linda's work and products.



A bonny family.

broadband connection. But with snail-like speeds of 1Mgb, (sic) it's negligible.

Sheep farmer Neil, 41, is out in the yard while his wife Linda, 44, works on a laptop by a roaring fire in the kitchen.

She runs a photography business from home and regularly uploads content onto her website.

The Allens pay £80 a month for their BT service and £22 for an EE internet dongle. But putting 20 pictures online can take Linda up to eight hours.

'I often leave it running overnight. But the connection drops out so when I come to check in the morning, it's stalled and I have to start again.

'We do not expect a perfect service but there is no discount for rural people. BT know we do not get anywhere near the advertised speed, yet pay the same as in London. It does not seem fair.'

Steph and Linda both helped galvanise the menfolk to dig. At the time of the interview Will Dehany had gotten a connection to Middleton Church, which was across the valley, and Linda used to drive over to it with her laptop and upload work from there. She also said that the children knew exactly how much data a film used up and self-rationed themselves so the dongle would not run out of data. They really struggled with schoolwork and research. The farm struggled if the kids had used the data or the line was down. Garry, her brother-in-law, dug from Killington to Mansergh, which was their nearest cabinet, and would be part of the route that reached Firbank, which was where the majority of the Killington customers would feed off. The join would take a while, so Steph and Linda pushed to get a temporary connection to the Mansergh cabinet.

Steph and Stuart had relocated from London to have a new life with their family in a beautiful area. Stuart was a policeman and wanted out from city crime, and



Andy Newbold got his B4RN spade when the fibre reached him.



The family farm.



The view from the farm office.



Frank and Will blowing the house fibres.

Steph could continue her work from home. They had not reckoned on the scarcity of rural broadband, and with the way the world was going, Steph knew they had to Do Something.

Andy Newbold, who ran a business and magazine company (and a small farm) had heard about B4RN a few years earlier when it was just starting up, but it was too far away to dream it could help him. His company had been contacted by B4RN when they started up regarding Health and Safety procedures, and he was impressed. Then he heard it was getting closer and had gone off piste, so to speak, by heading to Hutton Roof and Mansergh, so it was getting closer and becoming a possibility.

He and Ian Dawson, the chair of the Parish Council, approached B4RN and the plan to reach Firbank was drawn up. They both agreed to 'get stuck in'. The whole of Killington could not be fed from Mansergh, so their first quote was quite reasonable and just for duct and fibre etc., but they knew they should share the cost of the Firbank cabinet as most of them would be fed from it, so they got busy getting wayleaves, planning the best routes and raising shares.

They held a village meeting in the village hall. They knocked on every door to let people know what was going on, and got the help of several splendid farmers.

Garry, John, and Peter had moles and diggers, and Matt, Steph, John, Tricia, Andy and Oliver mucked in to help too. They laid about 10,000 metres of duct. Will Dehany 'kept an eye on them' and advised them on different tips and tricks for getting the duct in safely. Unlike all the BT cables lying across fields or in hedge bottoms, they wanted their network done properly.

Their worst problem was the weather, but it helped bond them into a group who 'all got mucky together'. The householders who could not dig looked after them, bringing warm cups of tea to keep



Frank showing how the fibre feeds through the machine.



Frank asking Will if he's got the fibre yet…



All the fibre in the chambers so the fusers get going.



Paul still working to complete the connection.

them going. On working days they had Jacob's Join and partied as well as working. Steph says they were 'lovely days out, meeting all sorts of people and making friends'.

Andy, Ian and Will did most of the house installs, and 'Frank the Blow' was summoned to blow the first few houses who could be fed from Mansergh. The first five came live, and that got everyone higher up the valley motivated to dig further.

Steph, who worked in IT, helped all the older folk convert to VoIP and also helped them set up meshes in their old houses so the wifi was in every room. She also did newsletters and kept everyone updated on progress. Andy and the team dug all the house connections in the village and got the duct through to Firbank.

Steph and Linda got their connections to Mansergh in November 2017, once the bullets were fused, and Sara from the Daily Mail patched them in, with Will showing her what to do at the cabinet.

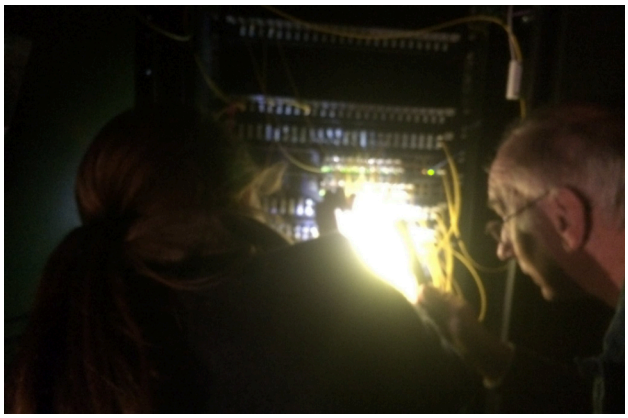
Andy says he has watched B4RN through a natural progression, from a small JFDI startup into a professional telecoms company and he says B4RN is the greatest. He never has to give it a thought, 'it just works'. He was interviewed by the BBC and there is a link to the video in the blue 'Beyond the book' box, as well as a link to Linda's 'Bonny' website.



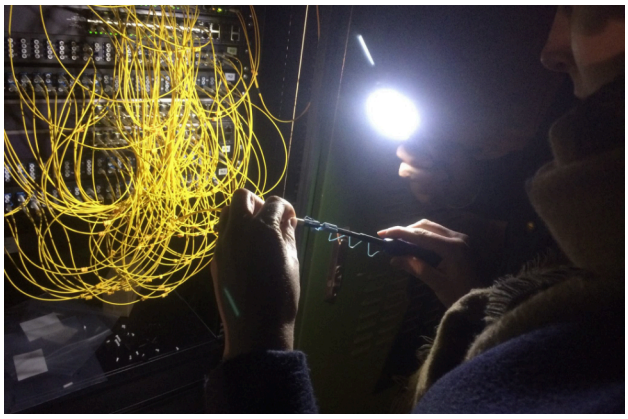
James Taylor and Will Dehany sorting out a blockage in a duct.



Fusing Steph's bullet, Paul Parsons and Matt Mercer.



Sara patching the houses at Mansergh cabinet with Will.



Cleaning a patch lead.



Paul nearly finished fusing, very cold night.

Steph says: In today's world, access to reliable broadband internet is more than just a luxury; it's a necessity, especially in a remote area.

Working from home – as an IT consultant and an admin assistant, having rural broadband, has made this easy and reliable. With data being in the cloud, along with phone systems this has been essential to work.

The COVID-19 pandemic fundamentally changed how children experience education and daily life. At the time our children were in Year 1 and Yr 5. With schools closing and social distancing measures in place, the internet became a lifeline, providing them with the ability to continue their studies, engage with peers, and access essential services.

Also during this period my work changed dramatically as people became remote workers quickly, embracing virtual offices and digital communication tools. Having B4RN made this easy. The family became dependent on this and it never failed us. We could all work at the same time.

In an increasingly connected world, remote living has become more feasible and appealing, thanks in large part to the internet and the rise of online shopping. Living in a rural area has been made simple, the ability to shop online has made it easier to access goods and services that would otherwise be difficult to obtain.'

Beyond the book

Killington BBC interview

Bonny sheep website



The road sign at Firbank.



Firbank is one of our very rural parishes.



Photo from the *SundayTimes*. Will Dehany, Tanya Hoare, Brian Hoggarth, Edmund Hoare, Elaine Horne and Tim Moore - the Firbank team.



Digging near Moss Foot, looking towards Barbon.

Firbank

Firbank lies to the west of Sedbergh and was mostly a locally led project. Initially the plan was to use the Sedbergh cabinet, but an opportunity to use a more southern route became available. Nevertheless the link to the Sedbergh cabinet gave useful security to the network. (We like at least two feeds into each cabinet for resilience).

The Firbank area itself did not get any vouchers and they self-funded it all, but then vouchers came in and Howgill, Marthwaite and Lowgill came on board and fed into the west end of Sedbergh parish. They worked for two years on their project, with the services going live in 2019.

Ed Key did a lot of the mapping for the area, and he recalls that: 'Alan Tattershall was the lead volunteer for our parish - i.e.Round the cabinet, route 2 and route 3. Gordon Chivers and Elaine Horne were the other main people (also parish councillors). Tanya and Edmund Hoare hosted a lot of meetings. John Armistead did a lot of digging (local farmer) and Mike Robinson did a lot of digging for shares.'

Ed subsequently was employed by B4RN and is now a senior planner, helping other communities benefit from his 'hands on' experience.

There was a lot of hand digging with the volunteers between the church and the Firbank cabinet to join onto the mole plough trench in the fields.

'Tidy' Mike Robinson and the volunteers did the digging near Birchfield, using a sub duct in heavily trafficked gateways.

Firbank cabinet now feeds Firbank itself, and other villages and dales in the area. They came live in 2017, and the Killington project was fed back from it once it came live. Its position to the south of



John Armistead digging and Ed labouring.



'Tidy' Mike Robinson and the volunteers digging near Birchfield.



Hand digging with the volunteers between the church and the Firbank cabinet to join onto the mole plough.



'Tidy' Mike Robinson.

.



Elaine helps John with the mole.

Sedbergh at Firbank was the perfect place for a feed from the Barbon end of the network, and the spider's web was growing. The Killington and Firbank projects were driven by determined individuals, without any help from government.

Then vouchers appeared. Vouchers are definitely a good thing, but have mixed blessings. Because the community does not have to raise as much money, the team spirit is not often as high, and a lot of people expect the job done for them.

More staff were taken on to help the communities and more contractors employed to do the digging. If a community could get vouchers, it was a lot easier to fund but a lot harder to administrate. Extra staff were taken on to cope with the vouchers and the complexity of it all.



Will showing a new employee, James Clapham, how to patch in the new cabinet at Firbank.



Property connection fused in the farm office.



Stef Masztalir.



Michael Jordon.



Getting the duct under the fence from the field dig.

Howgill and Lowgill

Stef Masztalir and Michael Jordon galvanised their communities into action and installed most of their homes where the householders could not do them. Stef says 'we are so lucky to have got it when we did'. Getting the cabinet into Firbank meant that many other rural areas like theirs could be helped.

Howgill and Lowgill were also part of the Sedbergh area joining to Firbank, and these outlying communities could eventually join the Sedbergh cabinet to give resilience to both.

Stef says: 'The act of running a community project brought out the best in people. As examples, you know there are many older people here and typically these are not heavy internet users, yet they enrolled to ensure the community had enough interest'.

'The same was true of investments. The better off bought more than the minimum number of shares, and our impression was that this was in part for community reasons, not just personal financial ones'.

'Marika and I worked closely with our neighbours to do the final part of the dig where the fibre would cross our joint lands. It was a lovely bonding thing and we turned it into an event: any excuse for drinks. I'm sure we were not the only ones.

'On a personal level, both Mike and I were new to the



Digging the house ducts through the garden.



Placing the duct in the trench and back-filling.



Martin Stockdale (pictured with Underwinder in the background).



They had lots of meetings.

area when this started. Being involved with B4RN, and having to go door to door, allowed us to meet everyone in the valley, and for them to meet us. And the fact it was on an enterprise that everyone was supportive of, helped.

'It turned out that the skills that were useful for this were ones that Mike and I already had, gained from our previous professional lives. Mike had worked on route planning for the National Grid, so was perfectly suited to doing the same here. I had worked on data processing (also for the National Grid, amongst others) so collecting and collating information was familiar. It meant that we were both comfortable with our tasks, which resulted in it being more relaxed and enjoyable. And led to a lasting friendship.

For me it was important to have a local champion like Martin Stockdale. He was so enthusiastic and knowledgeable. I did not have to understand every last technical issue, he had already done that. And if he was happy, then I could feel confident that the project was worthwhile, and in selling it to others'.

Mike was pleasantly surprised that landowners were happy for their land to be used for cabling, even though there was no payment.

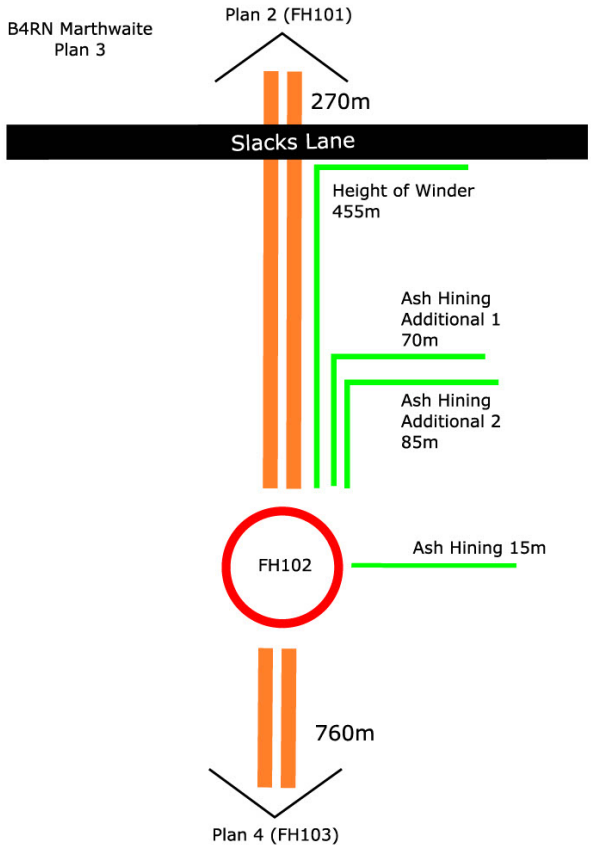
Marthwaite

Martin Stockdale had been trying for a couple of years to get his community engaged, but the cost was so great for such a rural area, and a few had resigned themselves to the fact that the digital revolution was not for them. He, too, had lost heart that it would ever happen. The Marthwaite project had died.

Marthwaite at the time had an 'adequate' service from Openreach, but Martin knew it would not be adequate for long. This was an area with many people who were commuters or very elderly or holiday homes. Then with the advent of the business vouchers in 2019 it became a possibility. They had



Martin making plans.



Martin's duct maps.

several farmers and businesses who would qualify for the vouchers. With this iteration of the vouchers it allowed 10 properties per business voucher, to claim the property voucher. There was no enthusiasm to do the work, everyone was too busy, but Martin started all the pre-planning and figured out ways of making it happen.

They were eventually accepted by B4RN once they got enough vouchers and started their campaign.

They employed contractors instead of using volunteers. The reason for this is because there were not enough of them, none were skilled, and the dig grants from B4RN had appeared by now, so people could pay someone to do it for them.

Martin studied the B4RN plans, re-routed where landowners advised, and drew detailed route maps for the contractors and volunteers. Each chamber had its own plan so that the right ducts would go into the trenches as they were dug.

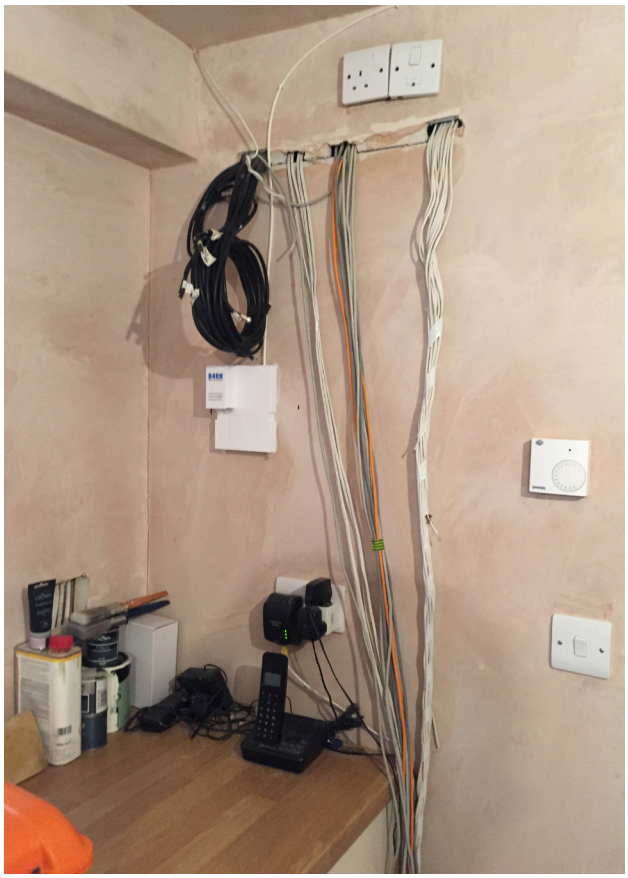
Martin arranged for a contractor, Richard Hoggarth, to do the house fittings.

Martin Dawson, a business owner, was a tremendous help. He was planning for the future and was in the process of expanding his coal yard into industrial units. He laid ducting in the trenches he was digging so the B4RN duct could be pushed through.

Martin got Tony Middleton, a contractor, to do the main core dig which was mainly mole ploughed, and he drew all the duct maps for him. The farmers had been reluctant to have 'any old digger person' on their land as they had heard stories from other areas where mess had been made, especially in bad weather, but once they saw Tony's equipment they agreed to let the digs through. Martin visited all 100 properties himself and explained what was happening, and reckons about 50% came on board straight away.

He made sure the duct was left for those who did not want a connection and got it as close to the house as he could, warning people that now was the time to do it or 'do not come to me later'. He got them all to sign up for vouchers. A lot of SMEs and farmers meant the business vouchers covered the residential properties, and he had no need to push for more investments, though some did subscribe to shares. He did not do newsletters but made appointments via email and organised everyone that way.

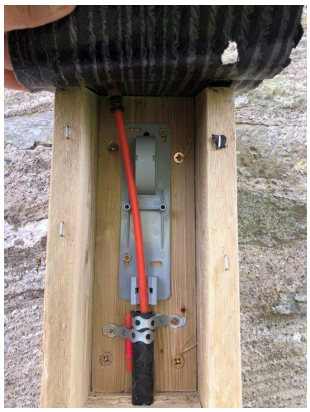




High tech cable network ready to plug into a hub next to the install.



Outside of the house install.



Under the lid of the install.

Marthwaite was key to joining Firbank to Sedbergh, and its network was split between the two cabinets. The North and West parishes in this chapter are fed from Sedbergh and Underwinder is fed from Firbank.

There was the River Lune to cross, and this crossing was done on a private bridge with full permission. Special duct was attached to the bridges by the B4RN caving expert, Dave Ryall.

When the fusers came they were amazed by a couple of things; the views, which as usual were stunning, and the level of tech that was being built into some of the homes and businesses in readiness for B4RN.

B4RN had decided to do 'dig grants' about this time. This meant that £150 of the voucher was returned to the customer after they went live, to use to pay for whoever had dug their garden or installed the boxes on their houses. In theory, this seemed like a good plan. However, as with most plans they do not always go 'as planned'. Some people did their own installs and did them very well. But some did not, and they had to be done again.

The photos show a 'non standard' install. Basically there is nothing wrong with it. It is super protected and robust. The duct was encased in armour-plated electrical conduit and firmly secured, but then it went into further conduit into the property with the normal gas block. Technically it was ok, safety wise it was ok, but it confused the blowers, whose job it was to close the gas block after blowing the fibre.

This sort of thing had to be coped with. Training for volunteers was undertaken, but that did not always work either. Specialist staff were recruited from the existing volunteers to provide better training for the new ones.

This was another learning curve, and very important for later when the gigabit vouchers enabled a more professional approach to installations.



Walter Willcox assists with house router installs.



A cup of tea with a view.



The view from the office whilst house fusing.

Walter from Surrey was visiting at the time and assisted with the house installs and photographed the views.

The customers started coming on line in 2019. Some people ignored the voucher verification emails from BDUK to say they had gone live, so did not get the vouchers, and then they expired, so the project funding decreased. Volunteers and staff helped the elderly with the forms, though some slipped through the net. B4RN took on extra staff to cope. Another 'S' curve.

Getting an area authorised for vouchers was quite difficult, too, and BDUK came to visit B4RN to try to figure out how to make it better, but by the time they understood, they changed jobs and another group of civil servants had to learn how it all worked. This process is still ongoing. Three different changes in the last 6 years has meant that the best intentions of the government have often failed the groups they wanted to help. They obviously have their own Sigmoid Curves, too?

As the first voucher scheme ended, they announced 'Project Gigabit' but with the procurement process, it stopped quite a few communities joining on, as bigger infrastructure companies took all the low-lying fruit, leaving uneconomic areas to languish.

B4RN could help these communities as they have the skill to do it, but it would be so much easier if there was funding available. Some chose to go with the bigger companies, only to find their monthly rental is much higher, and the customer support is not as 'local'. Also, the bigger telcos do not get to the farmers, as they often live too far from the villages, so they are told to 'use satellite or mobile', which really is putting everything back to square one.

The Sedbergh rural project for Marthwaite, Lowgill, Firbank and Howgill, leading on to the Sedbergh urban area, was done in the transition period as B4RN was morphing into a staff-led, professional telco. It makes clear the Good, the Bad and the Ugly side of government intervention.

In total, over 41 kilometres of duct was dug in the Firbank area, including Marthwaite, Howgill, and Killington.



Meetings galore.



More meetings.



After Covid lockdown, meetings in the sunshine. Still socially distanced.



Another sunny meeting.

Sedbergh 1

The Sedbergh Town development is best viewed in two instalments. The first was bringing the fibre up to the cabinet in Sedbergh School's estate in the south of the town.

There was then a pause in the town while the installations went out in the rural areas around the town.

Later, a third of Sedbergh was connected.

Douglas Thomson was the organiser for Sedbergh. He had heard about it getting closer and approached the school to see if they wanted it and would host a cabinet. He says his main help was from Robert Lindsay, Mike Clarke and Martin Stockdale.

The Yorkshire Dales National Park gave Sedbergh a loan of £10k to help pay for the cabinet.

'Like all projects, meetings were essential if at times too many! Some inside and some outside

Will Dehany, helped by us and his friends, brought the ducting up to Jackdaw Bridge where we had a simple handover of the duct ceremony and a celebration.

British Gas claimed they owned this old railway bridge. They said they would consider us using it but needed many surveys done first. Hence we turned right and came through the golf course and up and over Plank Bridge (so called because in days of old it was just planks). We had permission to use this bridge for our duct. Dave Ryall, an expert climber, again used his special skills and fixed the special duct to the bridge for us.

Actually the route through the golf course was very helpful as from the course there was an easy connection to Millthrop. Douglas then contracted Tony Middleton to get it up to just south of the sports centre (Hirst Centre) at Sedbergh School.



Digging to Sedbergh.



Will Dehany and the Cobra in action.



David Ryall, the B4RN climbing expert.



Sedbergh tea and cakes meeting at Birks.



Douglas's meals on wheels Volvo.



Another site meeting with refreshments.



Douglas and the team celebrating another section completed.



Will Dehany hands over the dig from Middleton to Sedbergh.



Tony, Robert and Douglas planning the last stretch to Sedbergh cabinet.



The cabinet arrives.



Moving the cabinet to the plinth.



Putting the cabinet on the plinth.

Tea and cake was always welcome from the back of Douglas's Volvo whether in a field or hiding from the wind behind a wall. Once we had a nice break inside for tea and cake at Birks, and once we had champagne provided by Ann Dehany to celebrate another section completed.

The cabinet arrived at Dawson's yard with no means of getting it off, so Douglas called Martin Dawson from the coal-yard who arranged a team to get it sorted.

The cabinet would later provide a route back to Garsdale and Dent, with Milthrop and Frostrow on the way. Also routes to Marthwaite, Howgill and back to Firbank. The cabinet also brought other local areas on board, Cautley, and Lunds and Mallerstang via Garsdale. The cabinet came live in April 2019.

They had 32 volunteers helping, and they held many meetings at Douglas's house, and they went out canvassing and giving leaflets out.

All the properties on the way to Sedbergh got the connection, and they made inroads to the more populated area. They attended training sessions at Melling to learn about house kit fitting.

Douglas says: 'The Dent people, the first in the area, raised considerable money to install in Dent, Millthrop and Garsdale. Dent was supplied from Barbon through Barbondale. This was at a time when much work was done by volunteers. The plan was to come to the west end of Dentdale and then swing back through Millthrop and down Garsdale. In fact by the time they had got to the west end of Dentdale the Sedbergh cabinet was installed in the school in the south of Sedbergh and B4RN 'central' had taken over the command of the whole Sedbergh area. Hence Millthrop and Garsdale were run from Melling and they were fed from Sedbergh'.



The cabinet in its new home.



Jim Atkins, the chairman of the parish council, helps out.



Will Dehany sorting ducts to go in the chamber.



Martin and Robert searching for a broken duct.



Spreading the word.



Robert Lindsay instructed their latest recruit on HSE matters.



Publicity event.



Training session for fitting house kits for the A Team.



Peter Apps and his MBE JFDI spade award.



A Milthrop meeting.



Duct store.



A very well protected trench.

Milthrop and Frostrow

Peter Apps, Keith Birbeck and Dave Wilson were the activists at Milthrop and coordinated the area. They got all the hamlets on and the fibre to Farfield Mill, which is an artisan craft centre. The manager of the mill said to Peter 'when are you doing it' meaning the car park which leads to the mill and several houses, and Peter told him 'tomorrow'. But in actual fact they did it that day, working well into darkness, and the next day came and the manager said 'I thought you were coming to do the car park today, I cannot see it' and Peter said 'you are not supposed to see it' - they had already done it! The manager was very impressed with the tidiness of their work.

Peter and the team of volunteers took on the Milthrop project when the main activist who had started it all fell ill. He got the landowners in Milthrop on board and Keith Birbeck talked to some he knew and got Frostrow sorted.

They had vouchers to sort out, which necessitated many visits and phone calls, and Peter and his team of about 15 did all the house installs and garden digs. Ross and Matt were a great asset for house digs, and they all volunteered to help their community. Peter did most of the house installs though.

Out of about 100 properties they brought 50 live within 6 months. He said 'we worked hard and fast'.

He says it was a combined effort and they took the duct from the boundary wall at Sedbergh Golf course to the base of the fell at Hallbank farm, where the route split off for Dent in one direction and Cautley in the other.

Tony Middleton did most of the core network routes and they helped him. 'The map is not the territory' as Peter's wife says, and they had to modify some of the routes to fit the multiple gullies and streams, but they made it work.



Volunteers getting the house ducts in.



Doing the house installs.

Dave Wilson was friendly with a lot of landowners and they suggested better routes, and Derek Hartley did the mapping. Dan Garner walked the whole route to GPS track it.

The project was completed within a year.

The blowers and fusers arrived, and the houses came live very quickly.

His only regret was the fact that he let the householders decide where they wanted the routers, and with the knowledge he has now, he thinks he could have advised them better. A very small regret after such a marathon of great planning and work. Well done to the men of grit in Frostrow and Millthrop.

From the last houses in Frostrow the route was picked up by the people of Garsdale, who took it over the fell to their valley. 'The project galvanised local people to work together'. Peter said.



A hard dig.



Cherry Hall fibre blow.



Dan Garner.



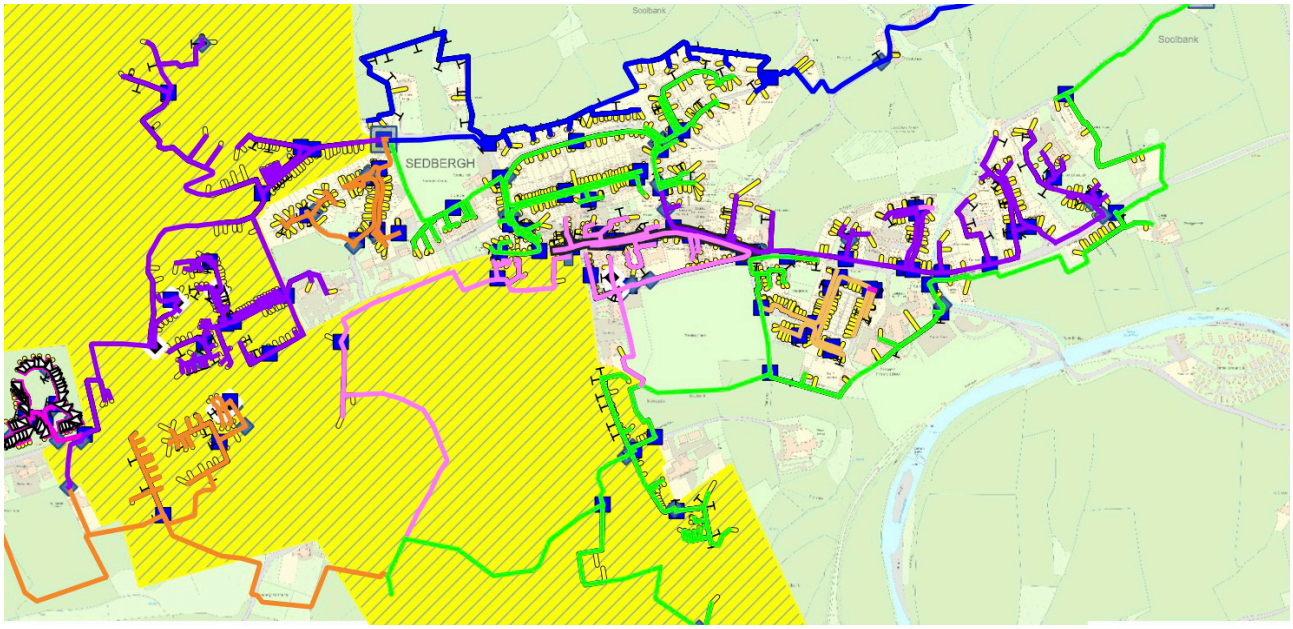
Keith Birbeck.



Dave Wilson.

Once the Sedbergh cabinet was in, it became much easier to go East and West around Sedbergh, linking to Garsdale, Dent, Cautley and Firbank. All good to see happen except that Sedbergh was always to be 'done later'.

Sedbergh 2 - into the town



Douglas's map showing the different phases/routes for Sedbergh.

After a long pause work began to bring B4RN's service into the town itself.

Douglas Thompson recalls: 'Firstly a tad more on funding. As you know Dent (and Garsdale) raised sufficient funds through share purchase to do the Dent, Millthrop and Garsdale area. What actually happened was that the routes out from the Sedbergh cabinet to Millthrop and Marthwaite were labelled as SB (part of Sedbergh). This led to some of Sedbergh's investment being devoted to these areas. We, in Sedbergh, were not amused but these things happen. I suspect vouchers were also used in Millthrop and Garsdale.

'In Cautley, Gina almost raised sufficient funds for the installation to go ahead. Then vouchers came in and there was then plenty of money for installation. Marthwaite was nowhere near raising sufficient money and Martin had almost given up when vouchers arrived and with so many farming businesses he could suddenly go ahead. I do not know but I guess Firbank would also be a combination of share purchase and vouchers'.

Douglas concentrated on Sedbergh town, but B4RN had problems getting the vouchers so would not give the go-ahead to the project until it was sorted. Sedbergh also already had reasonable broadband, so they were not really at the 'desperate' stage and could rock along a while longer.

It took him 7 years to finally get some vouchers and get going on Phase 1. Vouchers for Sedbergh Phase 1 also helped considerably. He did not have any farmers to help him, so he bought a trailer for his car and collected the duct in it.

By now B4RN had a civils team to do the pavement work, and Douglas speaks very highly of their



B4RN UPS team doing house installations.



Tony Swidenbank and the directional mole.





B4RN civils team duct laying in pavements and ginnels.



B4RN's civils team on pavement and road cuts.

workmanship and manners. Everyone was very impressed with their efficiency. 'They worked in all weathers with cheerful vigour. They managed to do 30% of the town before the government in their wisdom gave the rest of the vouchers to another company, and B4RN could not do anything about it'.

The new B4RN connections team did all the house digs and installs, but some of Douglas's team put the routers on, as they found people were often only available for house access after working hours, so it all worked well.

'All the work in phase 1 was done by contractors, UPS or B4RN's civil team, sometimes in adverse weather conditions. However, frequent supplies of homemade Sedbergh cakes helped greatly to keep spirits up!

'The B4RN civils teams did some road crossings, and sometimes they used Tony Swidenbank's directional drill.

'B4RN also dug to some of the houses, and Tony dug through the fields'.

SB (i.e. school, Millthrop, Frostrow phase) = 26.4km of duct dug in.

Where they could use soft dig methods in the village, they did, and the project ran very smoothly until the vouchers ended. BDUK allocated the funding elsewhere. It may come back one day and Douglas and his team could complete the town build.

Douglas Thomson's report talks about B4RN benefitting businesses:

'Businesses around Sedbergh are now benefiting from Broadband for the Rural North's hyperfast broadband service.

'Wholesalers JMP who have been connected for a year now have staff working some of their time at home - a double benefit during the coronavirus



Tony Swidenbank and Graham mole ploughing.



B4RN civils team.



B4RN's remote-controlled mole plough at work in Douglas's wildflower meadow.





B4RN civils team on pavement cuts.

outbreak. Manager Shaun Atherton said, "As more of our business goes online, it is important to be able to update large amounts of images online and having a hyperfast broadband connection is vital to the smooth running of the company and B4RN provides us with what we need".

'At Dawson's the arrival of B4RN has provided them with development opportunities. The whole yard has been 'ducted' in readiness for fibre when required. Michael Dawson commented "B4RN's broadband has allowed us to develop the site with confidence about our future".'

The Roofbox Company sells mostly over the internet and hence is heavily dependent on a good fast broadband connection. At 1 gigabit (1000 Mbps) both upload and download speed B4RN provides what is needed. Owner Martin Gray said "B4RN has been something of a godsend for us, especially as many of our team are working from home during the coronavirus outbreak, and some of us also have B4RN at home. We can work on our office systems, from home, as fast as if we were in the office, e-mailing and talking to suppliers around the world, and e.g. giving FaceTime support to customers."

Cautley

Douglas recalls: 'Gina wanted to lay a duct through a SSSI. Her request was refused. She came to me and asked if we could put together a paper explaining the effects, if any, to the SSSI if the work was carried out. Together we put together a paper. She did the engineering bit and I explained any effect on the soil and vegetation. I could manage a couple of reasonable biological qualifications after my name. Gina's engineering qualifications stretched right across the page and onto the next line! Still, it did the trick. The reply came back "OK, do it". Gina did not need to be told twice!'



Gina's Lindsey spade.



Gina.



Frank and Gina.



Frank comes to blow the fibre.

When all the Dent and Sedbergh work was going on, Gina Barney at Cautley was laying duct and fixing house kits all through the valley, and Frank and Will worked non-stop to help everyone.

By the time Gina was ready, the snow came, but she still got her fibre blown, thanks to Will and Frank. Finding where Gina had put the chambers in the snow meant she was indispensable on the blows too!

Gina also helped make sure the caravan site got its own bespoke feed, and she organised the fusers when the fibre was blown. She guided the house install team to every single property, and she accomplished every house fusing connection in two days. 66 properties took the service, nearly 100% of her parish.

The Cautley cabinet came live in March 2019.

She carried on helping other groups, showing that even in their 80s, people can still play a part. Gina also took on the Lunds project, supervising duct-laying, chamber placement and house kit fitting. Lunds was on the route to Mallerstang, and she really helped their project get going. She was interviewed and filmed and became a local hero. (The story of Mallerstang is in a later chapter).

Gina told her story to a DCMS media team - click the 'Beyond the book' link to view it. She was amazing.

Gina passed away in July 2023, but her legacy lives on.

The core route to Mallerstang comes from Garsdale via Sedbergh, and hopefully one day the loop will be completed back to Cautley.

Gina's team dug 23 km of trench in Cautley (and a lot more for Lunds).

Beyond the Book

DCMS video with Gina



Gina, Will and Frank chamber hunting.



Will Dehany blowing house fibre for Gina.



'Over here Will',



Gina Barney.



Gina sorting a chamber for Lunds.

Chapter 7

Keasden / Clapham / Newby /

LEWFA (Lawkland, Eldroth, Wharfe, Feizor and Austwick)

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Keasden and Clapham

The area to the east of Lowgill was very poorly served by the long copper phone lines, and many farmers and businesses were suffering. Families were cut off from their social lives, and children from homework.

What became the Keasden and Clapham projects were initiated by parish councillor Nicola Saward in November 2013 through a call to arms in the local newsletter.

The project's first meeting was at the New Inn in February 2014 and comprised Sue Cowgill who was trying to run Open University lectures online, Keith Blondel who had just moved out of Clapham village to a property on the edge of the fell below Ingleborough, and Simon Peach who had recently moved from Berkshire to a converted barn in Keasden.

The objective of the project was getting super-fast broadband to the parish with three qualifications: the solution had to be available to every property in the parish, the solution had to be future-proof, and the provider had to be a viable business.

The project members undertook a survey to confirm that there was an appetite for better broadband in Clapham and that residents would be willing to invest to make it happen.

A number of possible solutions were considered but which were not feasible or not yet proven technologies. The most promising from an ease-of-implementation point of view was to extend the community wifi broadband network from the neighbouring parish of Austwick, but it soon became apparent after several meetings that the ongoing maintenance workload was not one the project members were willing to take on.

Keith Blondel stumbled across B4RN when doing his research and the first contact was made between him and B4RN volunteers in early June 2014. They suggested that the Clapham team attend one of the Emtelle 'show and tell' days. This they did in July 2014 when Keith, Simon and Ann Sheridan attended the day at the Lancaster House Hotel and were taken to the Dolphinholme project to see fibre being blown and to talk to the local volunteers. Ann had joined the project having been elected to the parish council in the May of that year.

The parish council were concerned, and Ann, Simon and Colin Price the chairman, were determined to join on to the network somehow, even though it was not part of B4RN network expansion plans at the time. They met local councillors and MPs.

Another branch of the tree started to grow and a new tribe formed.



Ann Sheridan.



The showtell day - the 'gigabus' which had an appropriate number plate.



Sarah Moorcroft from Bentham, Simon, Ann, and Julian Smith MP meet.



Colin Price did TV interviews on behalf of the farmers.

There is more about B4RN showtell days in a later chapter, but it was how B4RN was sharing its knowledge to other local groups and to the wider industry. It was sponsored by our suppliers, mainly Emtelle, who supplied our duct and fibre.

Simon and Ann had climbed aboard the 'gigabus' trip on the showtell day and cornered Barry. They explained their problem, and he told them that they were not included in our phased plan, and we were already overstretched, with limited staff, and many villages already digging. Duct, fibre, time and money were in very short supply. He agreed that if they managed their own project, and did all the work, and raised all the money, that B4RN could help them.

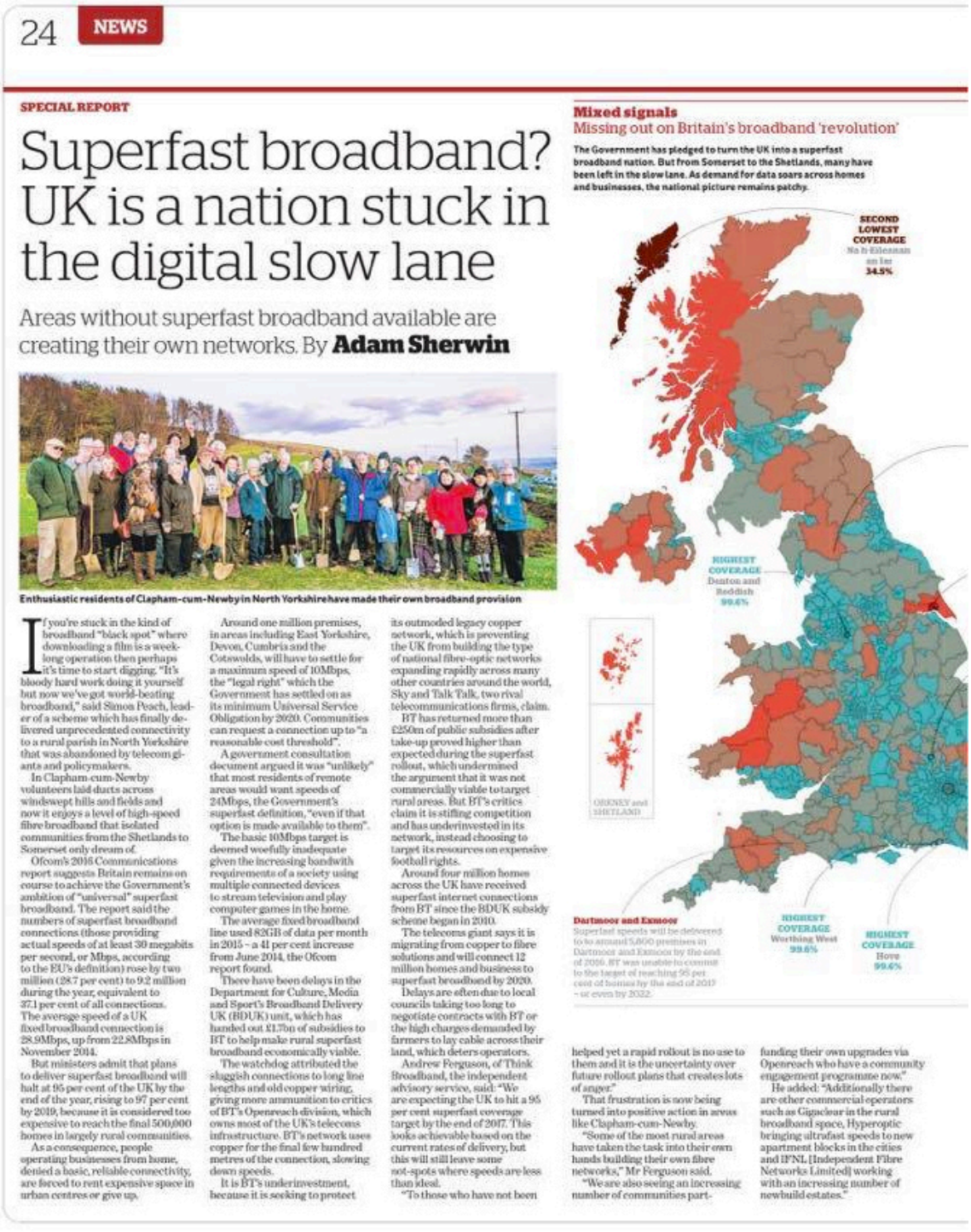
The initial quote was for joining the core at the east end of the Lowgill core at Fourstones, and to take it to Keasden to start the Clapham project. The quote was the standard £5 a metre, so £25k was needed for the core and the dig. What Simon had not realised was that this did not include all the spur digs to remote farms, nor the cabinet and equipment. But maybe that was a good thing, or the initial cost may have deterred them. In those days as with all the previous villages, there were no vouchers, nor help from government or councils. They started their own project, knowing they had to do it themselves.

Simon recalls: 'Immediately after the 'show and tell' day, Barry Ford supplied maps and information on how to build the network to Keith, and the serious thinking began. The project quickly evaluated the final options other than B4RN and by August had narrowed the choice down to B4RN itself.

It also turned out that a group of residents in the neighbouring parish of Bentham, who lived on the route that the Clapham project would need to dig, had already been in communication with B4RN during 2013. They swelled the numbers of the Clapham project team. Simon and Ian did all the route planning for the Keasden part of the project, including doing the fibre counts and chambers etc.

in the B4RN spreadsheet. Barry Forde scrutinised their work before digging could start and, in the main, it proved to be correct.

Ian Jones from Mewith got involved; he had been a project manager for a telecoms company so had a fair idea of what to do, and he knew all the farmers locally. This was the main core into Keasden and so they planned their routes to connect as many customers as they could on the way. They raised enough in shares and investments to get going.



24 NEWS

SPECIAL REPORT

Superfast broadband? UK is a nation stuck in the digital slow lane

Areas without superfast broadband available are creating their own networks. By **Adam Sherwin**

Enthusiastic residents of Clapham-cum-Newby in North Yorkshire have made their own broadband provision

If you're stuck in the kind of broadband "black spot" where downloading a film is a week-long operation then perhaps it's time to start digging. "It's bloody hard work doing it yourself but now we've got world-beating broadband," said Simon Peach, leader of a scheme which has finally delivered unprecedented connectivity to a rural parish in North Yorkshire that was abandoned by telecom giants and policymakers.

In Clapham-cum-Newby volunteers laid ducts across windswept hills and fields and now it enjoys a level of high-speed fibre broadband that isolated communities from the Shetlands to Somerset only dream of.

Ofcom's 2016 Communications report suggests Britain remains on course to achieve the Government's ambition of "universal" superfast broadband. The report said the numbers of superfast broadband connections (those providing actual speeds of at least 30 megabits per second, or Mbps, according to the EU's definition) rose by two million (28.7 per cent) to 9.2 million during the year, equivalent to 37.1 per cent of all connections. The average speed of a UK fixed broadband connection is 28.9Mbps, up from 22.8Mbps in November 2014.

But ministers admit that plans to deliver superfast broadband will halt at 95 per cent of the UK by the end of the year, rising to 97 per cent by 2019, because it is considered too expensive to reach the final 500,000 homes in largely rural communities.

As a consequence, people operating businesses from home, denied a basic, reliable connectivity, are forced to rent expensive space in urban centres or give up.

Around one million premises, in areas including East Yorkshire, Devon, Cumbria and the Cotswolds, will have to settle for a maximum speed of 10Mbps, the "legal right" which the Government has settled on as its minimum Universal Service Obligation by 2020. Communities can request a connection up to "a reasonable cost threshold".

A government consultation document argued it was "unlikely" that most residents of remote areas would want speeds of 24Mbps, the Government's superfast definition, "even if that option is made available to them".

The basic 10Mbps target is deemed woefully inadequate given the increasing bandwith requirements of a society using multiple connected devices to stream television and play computer games in the home.

The average fixed broadband line used 82GB of data per month in 2015 – a 41 per cent increase from June 2014, the Ofcom report found.

There have been delays in the Department for Culture, Media and Sport's Broadband Delivery UK (BDUK) unit, which has handed out £1.7bn of subsidies to BT to help make rural superfast broadband economically viable.

The watchdog attributed the sluggish connections to long line lengths and old copper wiring, giving more ammunition to critics of BT's Openreach division, which owns most of the UK's telecoms infrastructure. BT's network uses copper for the final few hundred metres of the connection, slowing down speeds.

It is BT's underinvestment, because it is seeking to protect its outmoded legacy copper network, which is preventing the UK from building the type of national fibre-optic networks expanding rapidly across many other countries around the world, Sky and Talk Talk, two rival telecommunications firms, claim.

BT has returned more than £250m of public subsidies after take-up proved higher than expected during the superfast rollout, which undermined the argument that it was not commercially viable to target rural areas. But BT's critics claim it is stifling competition and has underinvested in its network, instead choosing to target its resources on expensive football rights.

Around four million homes across the UK have received superfast internet connections from BT since the BDUK subsidy scheme began in 2010.

The telecoms giant says it is migrating from copper to fibre solutions and will connect 12 million homes and business to superfast broadband by 2020.

Delays are often due to local councils taking too long to negotiate contracts with BT or the high charges demanded by farmers to lay cable across their land, which deters operators.

Andrew Ferguson, of Think Broadband, the independent advisory service, said: "We are expecting the UK to hit a 95 per cent superfast coverage target by the end of 2017. This looks achievable based on the current rates of delivery, but this will still leave some not-spots where speeds are less than ideal.

"To those who have not been helped yet a rapid rollout is no use to them and it is the uncertainty over future rollout plans that creates lots of anger."

That frustration is now being turned into positive action in areas like Clapham-cum-Newby.

"Some of the most rural areas have taken the task into their own hands building their own fibre networks," Mr Ferguson said.

"We are also seeing an increasing number of communities part-funding their own upgrades via Openreach who have a community engagement programme now."

He added: "Additionally there are other commercial operators such as Gigaclear in the rural broadband space, Hyperoptic bringing ultrafast speeds to new apartment blocks in the cities and IFNL [Independent Fibre Networks Limited] working with an increasing number of newbuild estates."

Mixed signals

Missing out on Britain's broadband 'revolution'

The Government has pledged to turn the UK into a superfast broadband nation. But from Somerset to the Shetlands, many have been left in the slow lane. As demand for data soars across homes and businesses, the national picture remains patchy.

The Examiner, Yorkshire Post, and Saga magazines carried their story.



Ann reeling out lengths of duct for a dig with her quad bike.



The quad bike gets the duct to where it is needed on a dig.



The start of the route from Fourstones to Keasden.



CAT scanning for utilities before digging.

They met their MP Julian Smith, and went on TV and did magazine interviews to raise awareness.

Ann bought herself a quad bike to help pull out the duct and get it to remote moors, and she collected duct with her 4x4.

Ian Jones' part of the project was from the connection with the existing network near Fourstones, through to the new cabinet at Keasden Church, including the connections to the various



Ann and the volunteers collecting duct from the farm.

properties along the route. This was known as the Keasden Mewith Route KM1.

The KM1 build was split over two years, with the first year concentrating on the core route connecting the new cabinet to the existing network, and the second year installing the spur connections that had not been installed alongside the core route.

The first year of digging also saw the completion of the core routes and spurs from the Keasden cabinet heading south and east, KM3 and KM4 respectively. These digs were led by Simon and Ann using Michael Johnson as the contractor. Michael had been working for Ian on KM1.

They employed contractors to do the main digs, and sorted out digging shares to pay them. Utilities were located, and the routes decided upon by Ian and the local farmers.





Ian Jones helping with digging and moleing, April 2015.



The dig from Lowgill to Keasden.



A map of the area. Lowgill to Keasden by road is 10.2 miles.



Ann Stewart in a trench to the community shop.



Simon guiding Brad through a gap.

Ian used two contractors, Steven Foster and Colin Price. Steven did any preparation work, including access points, chambers, wall, beck, hedge and road crossings, together with any short lengths of open cut that were required. Steven was paid on a day rate for all work except road crossings, for which he received two rates, one for minor crossings and side roads, and a slightly higher rate for major crossings and highways. Colin carried out the ploughing ops. and was paid at an hourly rate.

Ian had spoken to other villages, notably the Lowgill team, and figured out that it would be more efficient to pay contractors rather than try to get each farmer to dig their own. He told B4RN and his group that he could bring it in more quickly and on budget if he did it this way.

In total they installed 9kms of core route, including 0.5km of the Lowgill project, 6kms of spur route not in a shared trench, and a further 2.5kms of Routes 2 and 3 which were done out of sequence. Ian estimated that no more than 1km was open cut.

Excluding household properties, they received wayleaves from 24 landowners. They received only one refusal. They avoided one known awkward landowner and diverted around another, who had a string of requests that made it easier to find a different route.

Many times they were held up with the weather, or with timings for crops, but Ian used the time to install the houses with John Hibbert, or helped the householders do their own to the B4RN spec. He had his own drill so he helped a lot of people. They also did all the installs for the elderly folk. They did not charge anyone.

Mike Johnson, a contractor, was taken on by the group to do the majority of the installs for the businesses. This eased the workload of the volunteers.



B4RN contractors doing a road crossing. Late 2015.



B4RN civils team in Clapham.



They bought their own cable reeler.



Colin bought a mole plough.

The biggest obstacle, apart from sod and rocks, was the North Yorkshire Highways. The route went through many little roads, and they were hounded all the time by a 'man in a little white van' who always turned up when they were digging. This turned into a 'Lesson Learnt' for B4RN HQ, so it was not necessarily a 'Bad Thing' in the long run. What it meant for the Clapham project was that they needed a streetworks licence, and a streetworks supervisor. Two of the group went off to get qualified... Ann sent George, her husband... and even though the authority had slowed the project down, so it ended up with winter digging and blowing, they finally triumphed and got the duct through to Keasden Church where the cabinet was sited.

Shortly afterwards B4RN got code powers and its own streetworks staff. The roadworks were done and the core got through. This also helped the Clapham project move forward.

The business voucher scheme started up during this project. Thanks to their tenacity and Amy Lis, a new B4RN employee, they managed to get business vouchers which greatly helped their finances.

They bought a cable reeler as the B4RN ones were always somewhere else.

Simon and his team reeled out the duct ready for the trenches. And the digs commenced. Ian supervised all the volunteers on the first route to Keasden, and they all turned out to deliver the duct, reel it out, and get it in the trenches Ian had planned out.

Phil and Geoff from the Lowgill project advised them about all the snags they had encountered and they took it all on board. They had also 'buddied up' with John Hamlett from Gressingham who taught and advised them and was always available for advice. The 'buddy up' idea was also part of the ethos of B4RN at that time, sharing the apples, the fruits of experience.



George walked many miles behind the plough



Moleing in the duct.



One of the reasons to keep a digger handy.



Colin Price on a moor mole issue.



Simon reeling out duct for the trenches



Cable reeler with more supplies.



Simon working in a trench.



Laying duct in a very wet trench.



Two residents being helped by Simon.



Brad Tooke joined the contracting team.



Simon laying duct in the trench.



Clapdale farm dig

The route was beset with farm tracks and lanes, and Ian talked Stephen Foster the contractor into buying a mole that would go under the tracks without digging them up and having to reinstate them. It could also be used under the little streams.

Sometimes the going was easy, through meadows, but often it was through the moors, and the diggers had to be used to get past obstacles.

The diggers often had to help the moleplough which could struggle on the tough moor grass as well as the rocks. A digger could make holes under the stone walls and fences so the mole could carry on without cutting the duct and using a joiner, as they were expensive and often the fibre could stick on them.

Simon had enjoyed working with the diggers, but paperwork and organising took over most of his time. He remembers the camaraderie the most, the team working together to build something useful. 'A bunch of amateurs having fun, and getting the best



Route to more farms.



Walter comes to help on the route to Clapham.



A neat mole plough.



The duct in the bottom of the mole trench.



More farms to reach on the way to Clapham.



Working late to get the job done.

broadband in the world'. He involved the householders in the whole process. He also remembers the sense of achievement when people finally got connected, and being 'able to stick two fingers up to the system'.

On the way from Lowgill to Keasden they connected the farms.

In the meantime Ann and Simon were starting more core subroutes in Keasden including to Newby. They started the other routes to Clapham, using the mole when they could.

Simon, Ann, and Michael Stephenson carried on raising shares. The costs were escalating. It dawned on them that eventually they would rise to £300k. They were determined not to leave anyone out, but no matter how they tried no funding was available. The government vouchers for businesses helped, but it was an enormous administrative burden that B4RN and the project team had to learn to cope with.

The Ingleborough Estate in Clapham was marvellous.

First they had to get it to Keasden though. They did presentations in the village halls to raise awareness and shares/investments.

Simon's downsides of the project were similar to Ian's and other parishes. They had been sure they could take on the project themselves and succeed, which indeed they did, but it was a lot harder than they had anticipated. The delays were down to the weather, the farmers' crop rotations. and the North Yorkshire Highways department. None of these could be ignored and had to be accommodated. Simon got savvy as to which field was meadow and which was pasture, and got routes diverted into pasture land which is not cropped, but is grazed.

In 2016 they concentrated on getting the core routes on the go to Ingleton and Newby, and



Carl Lis presented Simon with the YDNPA cheque.



The tea and cake team on a Keasden blowing day.



Famous for its 'hot boot' food at Keasden.



Bruce fusing customer connections into a bullet, despite his bad leg.

returned to the main Clapham installs in 2017 to complete their massive project.

The final hold-up he remembers is the fact that B4RN took on the Dent project. This caused a lack of resources, both materials and staff. Clapham worked around that too, even though B4RN was seriously overstretched, with so many villages digging at once.

Bruce pulled out all the stops to get the fibre blown for them, and by then he had Paul Parsons helping. He had been taken on as staff, after volunteering at Yealand, another village busy with their network.

B4RN learned a lot from this project, and were amazed at the determination of this group of people. Digging on through the rough and the smooth took real grit.

The loan from YDNPA (Yorkshire Dales National Park Authority) was to partially fund the core route around Clapham village and came right at the end of the project.

Eventually enough money was raised for the fibre, and the blows commenced, some of them in very bad weather. But the crews turned up, and the volunteers and blowers regularly were treated to hot snacks from the boot of various vehicles.

By now Bruce had his own 'B4RNmobile', to get his trailer into difficult places. So he tested it to the hilt. A lot of fleeting was done on the long routes, and volunteers helped Bruce and Paul with that.

The B4RN civils team also did some of the core blows on the sub-routes to the other villages on the project once Bruce, Paul and the volunteers had got it over the moors. This freed Bruce up to do house blows.

Even when Bruce bust his leg it did not stop him coming to Clapham to help with the blowing and fusing!



Robert Staveley splicing at sundown.



Paul Parsons splicing Simon's bullet.



Cabinet arrives at Keasden.

Cabinet on its plinth.



Tom Rigg working on a bullet.



Keasden cabinet came live on 16th December 2015.

George and Bruce did a lot of house blow days. It is easier with one person at each end of the blow. Bruce often managed on his own, but some of the blows in Keasden were very long, so one person at each end with a radio was best.

Paul and Alistair had by now trained another employee, Robert Staveley. He became a core fuser too, and he came to do bullets to get the whole network live.

By the time all the street works were done it was winter, so many of the fibre blows and bullets were done in very bad weather. Work was often done in darkness as the days got shorter. Tom Rigg, who was the new B4RN COO at the time, came out to help clear the backlog of fusing. Simon says:

'The first property came live just before Christmas 2015 and was Clapham Woods Farm, ironically the former home of Nicola Saward who had instigated the project.'

Keasden dug 35 kilometres of trench.

Beyond the Book

The Hyperfast Clapham Facebook page.

News report in the Examiner

The Conversation. Article.

From Fourstones to Keasden Head video

Blowing days, spring, summer and winter – a photo gallery *by Ann Sheridan*



A fine blowing day.



Blowing to Newby.



Fleeting in Keasden.



Keasden blow.



James Taylor and Nick Hall blowing core from Keasden to Clapham.



Bruce' s new 'B4RNmobile' could get the trailer almost anywhere.



James Taylor and Sam Brown blowing fibre to Clapham cabinet.



Paul Parsons fusing the fibre.

This is just one story from the Clapham Hyperfast ″project″ on Facebook:

A remote farmhouse in the Forest of Bowland, built in the 1660s and now lived in by a wonderful farming family′s grandmother. A mile long track reaches the farmhouse and the broadband really is not very good. In fact it is very poor.

The state of the broadband is not a surprise. It comes along copper wires from a cabinet that is about three miles away. We have seen the wire several times during the summer. Sometimes when we have had to carefully dig around it, twice where the cable is on the surface by farm tracks and once where it lies on the ground near another farmhouse, its coating frayed, about three yards from where they are having their bonfire.

The farmhouse, and the grandmother, deserves and wants better. So a gang of volunteers, helped by a contract digger, have spent five days this week taking fibre duct to her doorstep.

It has been tough: long, steep slopes on either side of the dale, heavy rain swelling the river, curious sheep trying to chew the duct as soon as we laid it out, an emergency call to fix a water pipe the mole had knocked - at nine o′clock at night, in the rain - ground near the river that was full of boulders and sharp, Bowland shale meaning we needed a long pipe to protect the duct.

But the volunteers never moaned, kept laughing and were delighted to see the keen anticipation of the grandmother now awaiting her world class, fibre, internet.

So, Prime Minister (David Cameron at the time), superfast broadband is not a human right, to be enacted in law, it is something you get off your backside and make happen. Come up to Clapham and we will show you a community just flipping well doing it. If you have to pass a law, place a statutory duty on public bodies to support, not hinder, community broadband. It used to be called the Big Society, remember?



The long dig across the valley to Keasden Head - photo is Mike, digging through Bowland shale.

The Keasden Head job.



Entrance to the long road to Keasden Head.



George looking after the compressor on the Keasden blow.



The chamber at the half way point, where others connect as well.



The fibre being blown from house, down to the intermediate chamber.

An extremely difficult and long blow was undertaken, up to the very remote Keasden Head, where a special learning centre is located. The fibre arrives inside the property, and then the fusers take over. They fuse one end at the house, and the other in a chamber. Simon Peach mades a little video that was shown on the day, a flyover from Fourstones to Keasden head. Click the link on the blue box to see it.(on page 316)

Julian Smith the MP came to see it for himself and make the final connection to the school area. He tested the wifi on his phone and said it was faster than he had in Westminster.



Julian Smith MP and Sheila bringing the school room live.



The start of LEWFA, John Elphinstone (right) joins the tribe.



The duct threaded into the old water pipe.



Colin Price and George getting the duct to go under the railway.



Steve Foster getting messy.

The focus of the group then moved to finishing the routes to Clapham, and beyond, with Newby included. The two projects ran in tandem, but the Keasden one was vital in the route to Clapham so that was completed first.

More digs, and big fibre blows started.

Getting from Keasden to Clapham meant crossing a railway and a river. Railways have proved to be very unhelpful. In reality they could easily provide the link to all the villages, as fibre already runs down the tracks for signalling, but they can not or will not help. The railway was crossed by having a road cut under the bridge that avoided Network Rail land and assets. (At great expense to the project)

Colin Price then had a brainwave. They were all members of the Keasden Historical Society. They knew that many years before the water main had gone under the river, and this pipe was redundant. They spoke to Yorkshire Water, who said that if they could find the ends in the fields they could use it, as they did not want it and could not remove it. With no more ado they found the ends a long distance from the railway and fed the B4RN duct through it. This saved them paying for an expensive directional drill under the river.

The join from Keasden to Clapham, LEWFA and beyond was done. It got a bit messy as water was still in it...



The Keasden to Clapham join. Love from Keasden to Clapham.



The joiner on the duct.



Simon demonstrates the join done.



George and Ann carry on helping Colin with the mole ploughing.



Sometimes a mole just can't get past some rocks. Bring on the digger.

Simon, George and Ann carried on helping and organising the routes from Keasden into Newby and Clapham. John Elphinstone from Newby joined them, to help out and learn the ropes; it would be his turn next.

Special care was taken when joining the reels of ducting, to make sure they were done properly. If the edge of the duct was not cut cleanly it would leave an edge, and this could stop the fibre blowing through. Simple enough to sort if you had not buried it, but sometimes a route had been dug weeks in advance, and the ground had healed up. It was quite a job to dig down and find a bad join.

They had learned their lessons well in Keasden and most Clapham routes blew well.

As they finished each route they rang Bruce, who sorted out a team to come and blow the fibre.

By this time we had recruited the Cantsfield champion (Frank Brown) as a blowing contractor who was happy to work for shares.

We had also taken on more staff, both on the civils team and the fusing team and they came in turn to get the fibre through to Clapham.

Frank and Rob blew a lot of it, with help from civils when there was a really big blow to do.



Robert Staveley and Frank Brown blowing to Clapham.



Frank delivers the cabinet to Clapham.



Walter taking photos at the Hearse House, the cabinet's new home.



The cabinet has landed and is getting coupled up.



Simon celebrates with champers.

Once the fibre got to Clapham it was all systems 'go'.

Frank delivered the cabinet to the Hearse House in Clapham where it was installed to serve the community.

Walter had been helping out on the project and was busy taking photos of everything, including the chamber outside the Hearse house.

Duct for the project was also stored there.

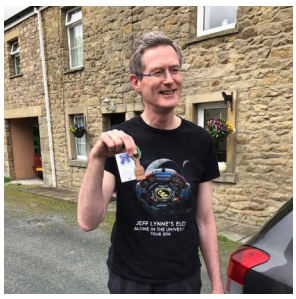
Simon and the team installed all the Clapham houses and businesses who wanted a connection, and left duct ready for the rest.

The houses and businesses on the route to Clapham all got installed, with many of them volunteering and helping Simon get them connected.

They had to wait until the cabinet came live, but they were done as the route went past them. Caravan sites were amongst these, and were very grateful to have a good internet service to help keep their customers happy.

Spades were awarded to very helpful volunteers.





Simon and the team celebrated with champagne instead of the usual tea.

They were interviewed by an Oxford University researcher who wrote an article about them. (link on the blue box, 'Beyond the Book'.)



Simon and some of his team.



George Sheridan, Simon Peach and John Elphinstone.



Wayne with Brutus.



Colin Price and his MBE spade award.

Simon, George and John received a Craven Digital Innovation award, on behalf of all their community's work on the Clapham project.

One of the first repair call outs B4RN received from Clapham was to a property whose connection had gone down. Investigation by the engineers found that the fibre was broken right next to the property.

By this time we could measure the fibre light to where it stopped, so we knew within a metre of where the damage was. The house was very old, it was actually mentioned in the Domesday book, which was completed in 1086. There was no sign of any damage inside the house, so we checked outside. Where the fibre enters the house there is a little grey plastic box. The house holder wanted to hide this box on his ancient property, so had carefully covered it with stones. This looked great.

But.

Brutus the Jack Russell had other ideas.

The mice had other ideas.

The mice thought it was a lovely cosy place to make their home, but they held too many parties and Brutus heard them. He dismantled all the stones so carefully placed, and tore into the ground to find the party. In the way was a harmless little bit of black 7mm plastic. He tore it apart. He wasn't even sorry when his crime was exposed. The engineer repaired the damage and all was well.

But Brutus bit back and got the engineer's leg, meaning the second entry in the B4RN accident book was logged, as a tetanus shot was needed. The only other person recorded as a Brutus victim was Simon Peach, but he is quoted as saying he enjoyed every day of the project, adding 'once a volunteer, always a volunteer'. He is currently volunteering as a chair of governors at a local school. Ann still volunteers at the B4RN user group club.

Newby

Diane and John Elphinstone remember being at a parish council meeting where everyone was complaining about the state of their broadband. They had a man from Craven district council there who told them basically that there was nothing that could be done, only people near FTTC cabinets could rely on a service.

They looked at satellite solutions but didn't like the idea. Then Simon Peach talked about B4RN and sold it to the Clapham and Newby areas.

A bad few winters had convinced them that something had to be done about their poor broadband. Simon and Ann had their hands full and had already done miles of duct work. They needed someone to take over the Newby run. John says he is not practical or technical, but he and Diane were pressganged into taking it up, when Simon came round to their house and laid it on the line.

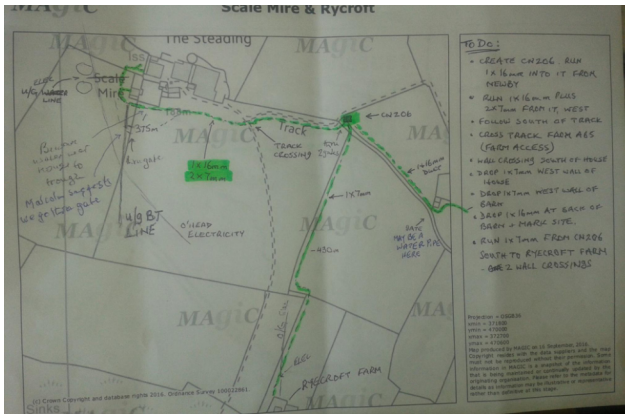
Diane sprung into action with Angela (Simon's wife), Ann, Rachel, Sarah and Lorraine and they did the Clapham Hyperfast Facebook page with Simon and Ann keeping it updated (click on the blue box for the link). The Clapham Hyperfast website and Facebook pages were implemented at the start of the Keasden phase but served Newby as well.

Pre-GDPR Ann had an email list to keep everyone updated. Diane is also an information gatherer, and she heard and saved the stories from Keasden to tell John.

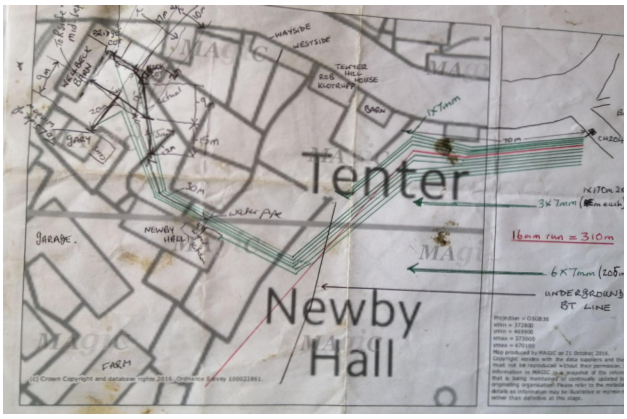
John and Simon went round all the landowners to plan the routes and get wayleaves. John kept maps updated for B4RN and the landowners. Most farmers were okay with the project, because John Dawson (of TV fame), at Bleak Bank, was desperate to get it and they trusted him.

John remembers one landowner going ballistic when they called to discuss the B4RN project. John said he was quaking in his boots, but Simon just spoke calmly to him and eventually he realised they were not Jehovah's Witnesses or snake oil salesmen and he came on board. They also encouraged people to take shares if they could afford it.

Keasden passed on contractor information, and Mike Johnson, Colin Price, Ian Witherspoon (also known as Tog) and Steve Foster did most of the work, and John did most of the duct laying with them right up to the remote houses and farms.



John's plans.



Sorting out who owns what.



Mike's mole - a hole starts a mole trench.



Mike Johnson, Colin Price, Rachelle Blondel, John Elphinstone.



Tea break.



Mike Johnson.

John had helped out at Keasden to learn the ropes. He remembers a lot of mud and wet days.

Diane says when he came home after dark each night she would strip him off in the kitchen as he was so muddy.

They started the Newby dig in the field next to the Hearse House in Clapham, and continued it to where it joined on to Ingleton, connecting all the properties on the way, with 95% take-up.

John also kept the maps right, and supplied copies to all the landowners as well as back to B4RN. His route maps contain comments like '5 metres from holly tree' and '2 metres from wall'

He kept records, and labelled the ducts for Frank and Bruce, the blowers. John invented the bike pump and wine glass method of testing for air, and Diane assisted him in making sure he got the right ducts. Diane held a container of water and he coupled a bike pump to the customer duct and if bubbles of air came out they would know which way each duct went.



John sorting out the ducts and labelling them.



The Newby spade.



John Elphinstone and Ian Witherspoon (Tog) get their spade awards.



Newby village green with the village's spade firmly fixed to the pole.



John and Diane's spades.

Simon continued to collect money for it all, and also reported back to the parish council at their monthly meetings.

Mike and Tog continued digging virtually the whole of Newby. Often they dug right up to the house but some people did their own gardens.

Most of the house kits were fitted by Mike Johnson and the people paid him individually. There were not many handymen volunteers available in this neck of the woods, so contractors were essential.

It was not all mud though. On rare sunny digging days they all stopped for tea and cake, although John says his feet by this time were webbed. He says B4RN is 'an earthy project that got into our veins'. He still walks his dogs every day round the routes and checks they are okay. Everyone knows him and waves. He gets to know new people and makes more friends on his walks.

John and Tog got their spade awards for all their hard work.

The large circle of people they met whilst building B4RN turned into a support group during Covid and are now also part of the community emergency plan.

The networks they built will survive for a very long time.

Newby village came live in January 2017 thanks to all their hard work. There were no vouchers available for these projects, the community funded it all.

They reaped the benefits during Covid, with online church services, and a Facebook support group, Clapham Cobra.

Clapham laid 39km of trench including Newby.

Keasden did 35km.

Beyond the book

Clapham Cobra

LEWFA

(Lawkland, Eldroth, Wharfe, Feizor and Austwick)

This community is a cluster of small villages/hamlets which share a vicar with Keasden, and very poor internet access. Austwick ran a community network using a satellite feed, but it was run by volunteers and had insufficient capacity for their needs. The other villages had nothing, apart from Keasden which now had gigabit B4RN and a free service to the church.

This is their story:

PREAMBLE By Michael:

In 2004 the Austwick Community Broadband Association (ACBA) was founded by a far-sighted Austwick resident, Barry Brooke. The system worked by radio signal, originally from a satellite dish on the village school, through 'line of sight' to residences in the area. The capital cost of this system came from government which was providing money to rural communities which had suffered with the foot and mouth outbreak in 2000. The system was set up, and run, by two 'techies' in the community who ran it free of charge. The cost to users was a remarkable £8 a year! After 11 years of running this service, we had about 120 members (some in far flung places), the techies were running out of puff and we were hunting around for how we could proceed for the future.

It was at this time that we heard about B4RN and, in particular, that the B4RN network was being extended to the parish of Clapham. It did not take us long to realise that once B4RN reached Clapham we could hook up to the network and use it to replace our existing system.

LEWFA

The ACBA committee (of which I was chairman at the time) quickly decided that we should explore the implications of joining B4RN and we invited Barry Forde and Simon Peach (who was the driver for B4RN in Clapham) to come and talk to us. We were easily convinced that this was the way forward for us.

ACBA was therefore wound up and a new group formed, to be known as LEWFA, to cover the areas embraced by the villages/hamlets of Lawkland, Eldroth, Wharfe, Feizor and Austwick.

It was clear that to get the project off the ground we needed a planning group to drive it forward and a committee of enthusiasts (about 6 in number) was established in the summer of 2015.

We were already off to a running start in the sense that the existing ACBA membership recognised the need for change and were ready to switch to fibre broadband to their homes.

FUNDING

B4RN provided us with an estimate of how much money we would need to raise to fund the work involved (for materials and contractors for specialist operations, like crossing rivers and roads). I think the budget

they came up with was £180K. We initially approached all our ACBA members and asked them whether they could commit to raising the money by buying shares in B4RN or making loans. We quickly reached our target of £180K, and indeed ended up with about £215K committed. The funds were provided by about 63% of the households who said they wanted a B4RN connection, and ranged in size from £500 to £10,000. About 40% of those households providing the cash opted to invest £1,500 for which they received a free house connection.

BUILDING THE NETWORK

It took us just under 2 years to build the network – starting in early summer 2016 and finishing digging in 2018. We appointed project leaders for each discrete area and these guys organised everything from getting wayleaves from landowners to supplies of materials from B4RN to arranging for contractors with mole ploughs etc. The project leaders were key components of the successful roll-out of the network. The work was coordinated by periodic meetings of these guys, which I would generally chair.

Some of the most difficult work was actually in the village of Austwick itself where it was sometimes difficult to get access to all the properties wanting a connection. I think, in the end, there was only one property which we could not reach because we could not persuade a landowner to grant a wayleave. In many instances we would run a duct to a property boundary, even though they had not requested fibre, in case a future owner decided they wanted a connection. We made connections to many remote properties, perhaps one of the furthest being the farm at the head of Crummackdale – quite a challenge as the terrain up the valley is extremely rocky in places.



The LEWFA project leaders and contractors.

THE PEOPLE

The success of the project is a testament to the commitment and skills of perhaps a dozen or more people, along with help from many more willing volunteers. The skill base ranged from fundraising capability, to communication skills (we kept everyone advised by newsletters and periodic open meetings), to project management to practical skills (mole ploughing, burrowing under walls and rivers). It was a real team effort and in many ways brought people and communities together which otherwise would have little contact with each other.



Michael with his MBE spade award.

IN CONCLUSION

There is no doubt in my mind that the B4RN Project for LEWFA will be a lasting legacy for the future residents of the area and is a classic example of how the 'impossible' can be achieved by ordinary people when they set their minds to it.

Michael Southworth

Veronica Caperon and Mike Southworth had decided to 'Do Something' when they heard of the work going on in Clapham, and thought they may be able to join on. Mark and Steve, who ran the village wifi network, encouraged them to try. They all knew a fibre to home connection would be faster and more reliable than wifi, and people were becoming very dependent on internet access.

Simon Peach from the Keasden/Clapham project came to a meeting in the Eldroth village hall, and gave them the benefit of his knowledge, and they decided to get going. (Simon continued to give them help and tips throughout the project).

They formed a committee, which took up the challenge. Lawkland, Eldroth, Wharfe, Feizor and Austwick each had their own coordinator, and Michael took the chair to organise funding etc. Mike explained that the reason each area had to have its own leader, was because they knew their landowners and farmers, and the geography of the routes the duct would have to take. He regarded this as crucial to the project succeeding.

Chair - Michael Southworth

Area Digging Coordinators were: Lawkland - James Hickson; Eldroth - Julian Cairns; Wharfe - Geoff Hall; Feizor - Dean Stockwell; and Austwick - Alec Rigby & Stephen Wright.

Veronica did all the publicity and Facebook accounts to keep the community up to date. They also used a TinyLetter to communicate and update.They also inspired Rathmell at a public meeting they held.

Below are the key points Rathmell and Wigglesworth BroadBand published to their community. (more about them later):

LEWFA expect the whole project to take 2 years, from start to finish. They identified three key ongoing tasks, and allocated each one to a member of the LEWFA team, so that the workload would be manageable. The tasks were:

1. promotion of the project and communication of progress within the community
2. route and network planning
3. fundraising and finance

All three of those tasks, running in parallel, were essential to get the project with B4RN started. Local enthusiasm was raised, and gauged, by talking to households and neighbours about the idea; those interested were then asked how much they might roughly be willing to invest in the project (for more on why this community investment is key to all B4RN projects, see here); an initial network map covering all properties in the 5 villages allowed B4RN to calculate an approximate cost for the LEWFA project, to check that the cost wasn't likely to be in excess of what the community was prepared to pay for it.

Money was only asked for when LEWFA were sure that the cost was within the community's reach. When enough money had come in for LEWFA to be sure that the project would be successfully funded, they gave the go-ahead and work started in earnest... i.e. material was ordered and digging started.

Members of the community signed up for smaller or shorter roles in the project, such as talking to landowners to agree wayleaves for the cable to go under their fields, or co-ordinating the digging with landowners, farmers, contractors and volunteers, or helping on dig days (whether with preparation, digging under walls, feeding cable through the mole plough and so on... or with sandwiches, tea and moral support).

Almost all landowners in the LEWFA area have been extremely supportive of the project, and getting their permission for cable to run under their land has been relatively straightforward, with few exceptions. This is a key factor in the success (and in limiting the cost) of a B4RN project; landowners need to see and be sympathetic to the benefits of bringing broadband to their wider community, since they aren't paid for cable crossing their land (though they can be "paid" in shares for digging in the cables themselves).

In summary, LEWFA were enthusiastic about their project, and are happy with their experience with B4RN so far. Their advice and experience (which they were very willing to share with us, and which we were very grateful to receive) gave those of us from Rathmell and Wigglesworth considerable hope that a similar project could work well in our villages.

Thanks again to LEWFA for their hospitality and openness. Facebook page here.

Author *ribblebroad* Posted on July 6, 2016 Categories B4RN, Lawkland and Eldroth, updates and news

They kept having local meetings and worked together to get the project started. Michael took on the job of raising the investment as there was still no government support at this time. The Clapham project was a success, and all the locals were hearing about it, and Michael says there was not a problem getting the shares and loans they needed. They had met Barry, who had told them what they had to raise, and they did it and were off.

Michael says they had a very skilled community. The idea of putting a duct from A to B across fields, rivers, roads etc completely baffled him, but the contractors and farmers insisted it was 'not a problem' and they sallied forth to do it. Two of the main contractors from the Clapham project, Brad Tooke and Colin Price did a lot of the work. The volunteers helped tremendously and fitted all the houseboxes for free. They did not bother with a 'community pot' as Michael recalls, they all just mucked in and did their own patches. He says they had a broad range of skills, good movers and shakers both for spreading the word and also practical capabilities. They had house kit training and a few of them learned how to do it.



House kit fitting.



Stephen and the team at the training day.

He says it was a brilliant project to be involved in, and it was so very socially rewarding, meeting all sorts of people across the hills and dales, and all the time he was aware that the community appreciated what they were doing. 'To get a project like this up and running you needed the spirit and skillset of the community, and we had this. To get under 200 metres of concrete farm track, the farmer knew of a massive tunnel. We tried to get terriers to go through with string, but that did not work, but the local caving community stepped in and got it through for us so we could get the fibre to the farm. It was all such fun.'

Austwick

Stephen moved to Austwick in 2014, and as he worked in IT he needed a good internet connection. At the time, Austwick was part of a community satellite network. This had worked fine, and had got a community of its own. Alec Rigby was involved in getting B4RN, and he and Stephen got chatting, and wanted to get involved. Michael Southworth was negotiating with B4RN and Stephen, Alec and Graham Cleverly, became the team connecting Austwick. They had regular meetings with the other elements of the LEWFA project, and shared information, equipment and supplies. Michael managed to get £180k in shares/investment fairly quickly.





Fixing up the house installs.



Stephen and Graham get their spade awards.



Brad gets his spade award at last.



Stephen doing a training day for the group on house installs.

The LEWFA digging team got going. James Hickson in Lawkland, Julian Cairns in Eldroth and Dean in Feizor had regular meetings.

Colin Price and Brad Tooke did the digging of the cores. Steve Foster did the crossings and walls, and Tony Swidenbank did the directional drills under the main roads.

Stephen helped people dig through their gardens and either helped them fit house kits or did it for them. At that time Vonage were doing an offer where you got £50 for a referral and Stephen told the householders that if they used his link he would do their installation. The ones who wanted a VoIP phone service took the offer, and that helped Stephen pay for his drills.

He also had Rob, a local landscape gardener who did some of the harder house digs, or Brad with his mini digger if it was heavy work. Brad was only 18 at the time, but on the back of all this experience he now runs his own business landscaping gardens etc.

If the house holder did not need a landline phone service, Stephen asked for a donation and the Local Rotary group donated £150. This meant they could buy a really good SD drill.

Stephen says they did it all 'on a shoestring' but they did it, and they are very proud of what they accomplished. He says the service is second to none, and his work is now so easy with such a good connection.

Graham and Stephen from Austwick got their spades when they went live. They also trained other groups in house kit fitting.



Eldroth sign.


Julian with his JFDI spade.


Gordon with his JFDI spade.


Digging to go under a wall.

Eldroth and Lawkland

The LEWFA project is pretty unique in the way the five communities worked together and yet are separate.

Michael managed to get a coordinator for each area. Julian Cairns has always been a sitting target for community volunteering and parish council work, but he did not really want to take on such a big project. He had been the secretary of the ABCA wifi network and they couldn't find anyone else to run Eldroth so eventually he gave in as he 'couldn't say No'.

Mike had already sorted the funding, but Julian's first job was to organise the wayleaves and visit all the properties, and he got to know everyone in the area. Pretty near every property signed up for it. He had a marvellous team mate, Gordon Higginson; together they organised supplies and contractors.

They used Mike Johnson and Brad Tooke as contractors, and had Steve Foster for road crossings. They laboured for them and got very good at repairing old stone drains and occasionally a water pipe...

They were given an extra bit of Lawkland to finish when the coordinator there had to go back to work and travel, and they worked with Colin Price on that bit.

Steep banks where contractors could not work like Kettlesbeck they dug by hand. They had little pockets where other volunteers helped each other, but he and Gordon found it easier just to do most of it themselves rather than organise people. They just 'got on with it'.

They worked from 2017 when it all started, and through the summers of 2018/19.



Brad at work.



Labouring for Steve Foster.



Hand-diggers tea break.



During the dig.

The terrain in the area was heavy boulder clay, and they could not work on the land when it was wet.

A few of the spurs did not get connected until during Covid, and the ACBA network helped to get very remote places connected by putting a router for them in a property across a valley and using their own wireless equipment to 'beam it across the valley to them' until they could get a dig to them. After that their router was popped in their own house in a seamless transfer. Steve Ward helped them 'beam a service' . He also did some house kit fitting for them. Julian and Gordon did most of the house kits though, as they wanted to 'get it done' and then move on.

If they missed the opportunity to dig a field due to cropping then it could be another 6 months before they got another chance.

Julian kept records of the stages every property was up to and ticked them off as they got completed. He updated Ed Wilman at B4RN planning who was very supportive and adapted routes to reach everyone.

Once the service came live, there were not many problems that folk had not encountered with the ACBA network. They had also learned to understand a lot of technical things, but he was often the first port of call, but he coped okay with that too.



After the dig.



Yay, it is working!



Downloading their game, at last.



Trench ready for duct to go in.



Stephen Ward with his B4RN spade award.



The LEWFA Tribe and contractors.

Thanks to mainly senior citizens a little family is very happy.

These boys had waited for two years to update their Xbox! Now with B4RN there is no problem.

Lawkland

James Hickson was a sitting duck when Veronica got him on board with the project. A farmer with a lot of contacts, he 'volunteered' at the Eldroth meeting which Veronica had organised. He thought the whole thing was a brilliant idea, and he knew most of the farmers in the area. He did not need a lot of persuading and ended up as the area coordinator. The connection they had in the area through the old phone lines 'was crap', and he and the farmers liked the idea of 'being in control of their own destiny'.

He organised the wayleaves and the diggers and the project gained momentum. Brad was the main mole plough contractor, and James helped him with the

ducting and maps. Stephen Wright from Austwick and Stephen Ward came to help with the house installs. James thought of the other villages as 'separate but together' and says it was the best thing they ever did, especially when Covid appeared and proved they had been right to do it. He is grateful to Julian from Eldroth, who completed most of James's routes for him when business took him out of the area for a while. The power of the Tribe. One community helping another. Five communities working together.

Julian says: 'As you probably know, the Lawkland and Eldroth area is very rural; the houses are mainly former or working farmhouses and barn conversions. The local ground is largely heavy boulder clay with one small area of thin subsoil above limestone. I have had a look at my project management database and the stats are as follows:

- 140 properties listed of which:
- 8 owners said they didn't want a connection
- 2 (former ACBA members) were outside the Lawkland / Eldroth boundary so we passed them on to the Giggleswick project when that started.
- 20 owners asked us to get ducting to them pending a decision to develop the property in the future

When we finally wound up the Lawkland and Eldroth area of LEWFA in late 2022 we had completed all of the work apart from two landlocked houses where I had not managed to agree a workable route with the local landowner.

Quite an achievement looking back!'

Wharfe

Geoff Hall was nabbed by Michael, and set about building a team out of people he knew. He had also been targeted by Veronica at the first meeting in Eldroth. He volunteered to be on the digging team. He ended up being the coordinator.



Bill Smith and Geoff Hall from Wharfe get their spade awards. Feb 2017

His main issue he recalls were the conditions at the time, due to bad weather and the terrain. They had very heavy clay and farmers were reluctant to let them through in the winter months, and the summer months were busy with cropping, so they tried to stick to pastureland. He encouraged one of the contractors he knew to buy his first vibrating mole plough, and Stephen Foster must be very glad he did, because he has ploughed hundreds of miles with it now.



Steve Foster and his vibrating mole plough.

They tested it out in Wharfe, and the farmers were all very impressed by the low impact on their land. Geoff and Stephen undertook a massive dig to Crummack that everyone had said was impossible to reach. Geoff walked the route several times looking for dead grass. This appears in hot weather. It showed him where rock was near the surface and was to be avoided if a mole was to be used. It took a long time to choose a good route to the farm, which was 4.5km away over terrible ground, but they moled it together in a week thanks to the forward planning.

In Wharfe itself they managed to use some disused water pipes in some places, and they dug to every home. Bill Smith and Geoff did all the house installs using their own little mini diggers.

They had no wayleave issues and had 100% take up over the 18 months they worked. Geoff walked all the routes prior to digging to find the best ways round obstacles. Most had to be redesigned to fit the terrain. There were delays to cope with cropping, and then the weather would always chip in to make it harder, but they coped with it all.

Geoff says the main thing they did wrong, which they would not do again, is leave too long a gap between chambers, but the blowers just dug in and fleeted and got the fibre through.

He continues to act as B4RN liaison for any issues in the area as he knows where everyone lives and where the routes are buried. Geoff and his team feel they are doing a job that is very important to do, and that a major telco could not do. It is People Power in action.

Feizor

Dean Stockwell had moved into the area in 2014 and did not know anyone. He had bought a large house and a thriving B&B business.His broadband was terrible and he was searching round for a better service when he heard about B4RN. He then found out that Veronica and Michael were already on the case, so he joined the LEWFA team as the coordinator for Feizor. There were only 20 scattered properties in his patch, but he got wayleaves sorted and installed all the houses himself. Samantha Hird from the farm had already done the maps, and Paul Watt-Wood and Chris McKenzie were on the team too. Jonathan Knowles helped with route planning. The main obstacle they had was a concrete path in Jonathan's yard. They had some help from the Clapham cavers who were brilliant and found a way under it, but in the end they re-routed it round the concrete.


Feizor. Photo by Ken Larkins



The concrete path.

Colin Price from Keasden and Steve Foster did all the contracting. Dean did not have anything to do with fundraising as Michael had sorted all that, he just sent the invoices to B4RN for the work the contractors did. He has very happy memories of the time spent on the project, all 5 communities working separately but helping each other, and he got to know everyone. He has since moved house, and misses his good broadband but he says the fact it was there was a major factor in getting a good price for it.



The caveman.

Route 5 went on to connect to Giggleswick, picking up Knight Stainforth on the way.

Knight Stainforth



Knight Stainforth's spade displayed.

For nearly 100 years Little Stainforth has hosted both local and national campers at Knight Stainforth Hall Camping and Caravan Park in the Yorkshire Dales. Knight Stainforth is one of the oldest sites still run by the same family - the Maudsleys.

Set in the Yorkshire Dales National Park, the park stands on the 45 acre estate of Knight Stainforth Hall, just two miles north of the market town of Settle. Nestled on the banks of the River Ribble, Knight Stainforth Hall is a 1672-dated manor house. A much earlier building here belonged in Norman times to the Knights Templar.



Kira watching Frank blow fibre to Will Dehany, way up the hill.



Frank Brown watched by Kira, blowing house and caravan fibre.



David Evans from Norfolk doing his first fuse at the Caravan office.



The Knight Stainforth spade.

The Maudsley family - a Ribble Valley farming family for more than six centuries - diversified into tourism in 1927 by accommodating a Scottish Scout group for their summer camp.

The park is now run by the third generation of Maudsleys involved in tourism - Chris and Paul, with help from their wives Linda and Gemma.

Kira, a research fellow from Oxford University was there to record the core blows to Knight Stainforth, done by Frank and Will. They blew the core from LEWFA and then blew the businesses, homes and caravans house connections.

Several farms on the route were also lucky to get a connection and wayleaves were not an issue.

David Evans from the newly-started Norfolk project was visiting and he learnt to blow and fuse on the job.

The LEWFA team also mentored the Rathmell group, attended their first meeting to give advice and support, and showed Roger Vincent the 'ropes' to give him a head start on the next village 7km away.

Rathmell

Roger Vincent had heard about B4RN when there was coverage about Prince Charles' visit in 2013. He thought it was too far away to attempt to join on to it, but he kept an eye on it. Wigglesworth were also looking into it too.

When it got to the LEWFA group he met up with them to find out more. At that point it was only 7 km away and he thought 'this is now in the realms of possibility'.

He contacted B4RN and talked to Barry and they



Richard Frankland, Mick Dugdale, Richard Maudsley, Adrian Procter, Ian Wright, and Nick Hall from B4RN explaining how chambers work.



Pneumatic mole plough.



Steve Foster's rig.



Digging and moleing,

looked at distances, and Barry said £50k should get it underway.

In 2015 he spent time looking at routes, and talking to landowners, to get an agreement in principle to dig through their land.

He could not get the final wayleave to join on to LEWFA because of one landlord, so had to plan a totally different route to avoid that land. Once he had a route that was approved by the farmers and B4RN, he called a public meeting, and the LEWFA guys came. B4RN sent David Ryall who did a presentation and they filled the Plough pub in Wigglesworth with interested people. Many were very keen, but it was a big area to cover.

At first they did training sessions, so the farmers who were very keen to get connected, could dig their own fields, but in the end they decided not to, and they were reassured that any contractor doing it would not make a mess, so they were happy to leave it in the hands of B4RN.

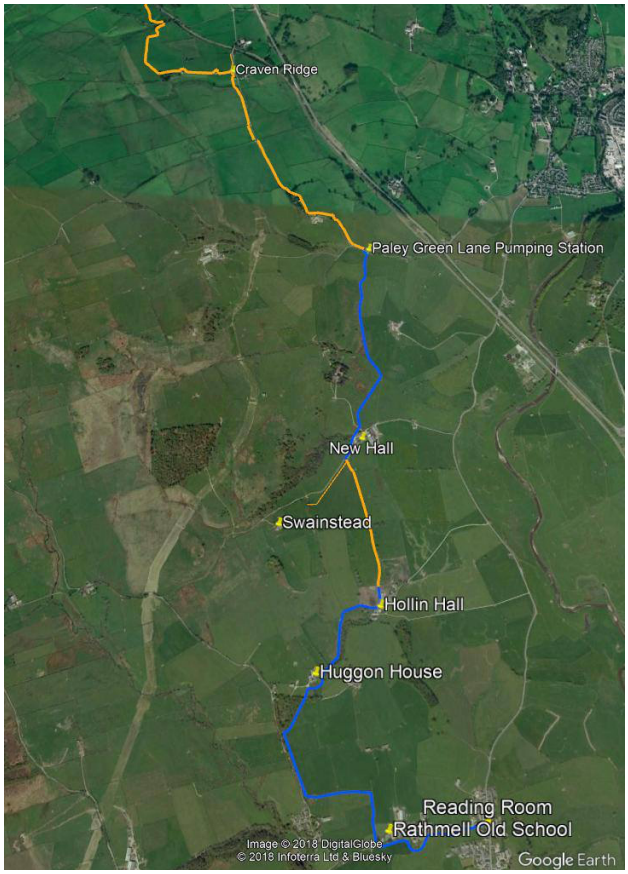
Roger started a campaign raising money and interest among the residents, and got his £50k so he went back to Barry, got the routes approved, and permission to start digging on the 24th April 2018.

He had by this time worked with Julian and the LEWFA group, so had learned how to do it. They joined on at Armistead Farm at the edge of the parish, and Mike Johnson carried on digging for them, right through Mike's aunt's land, so the first 2km were done that summer. Then it quietened off and they could not get a contractor to continue.

Eventually Steve Foster had a window in his work routine, and he was grabbed to continue the dig, route 1 into Rathmell village, in 2019.

Their Facebook page carries the updates:

RWBB - Rathmell, Wigglesworth and Giggleswick Broadband



The planned route to get to Rathmell from LEWFA.



Richard and Charles Frankland digging and moleing at Swainshead farm.



Holly Dene and New Hall work.

'A fantastic update from Roger and the RWBB digging team:

'We have made major progress in the last couple of weeks, and over half of the main trunk route has already been dug! We have also laid nearly 500m of duct to individual houses and properties'.

'In the image, what has been done so far is in orange and the remainder of the main route still to be dug is in blue. B4RN now need to do a few road crossings so we can link up sections.

'Many thanks to all who have been involved so far, especially considering the extremely hot temperatures out in the fields during this time'.

'Best regards,

Roger'

In Dec 2018 Roger reported:

'We are back underway with digging! Despite the occasional biblical downpour we have managed to get through a couple of tricky areas around the back of Holly Dene and New Hall during last week. Next week we are looking to plough ahead across the bottoms from New Hall to get joined up to the existing ducting at Paley Green Lane'.

'Many thanks to Steve Foster, our new B4RN contractor, and all those who have helped out during this week - Paul Baxter, Bryan Gorst, Anna & Steve Howarth, John Rushden, Chris & Richard Frankland'.

Farmers Richard and Chris Frankland moled and dug the duct in to Swainstead Farm, which is one of the Frankland farms, of which there are three on Route 1. The Franklands also now have four houses using the B4RN service.



A garden dig with step 1, remove sod.



Garden dig volunteers.



Step 2, dig out trench and place spoil on the groundsheet.



Step 3. The BDUK team having a go at trenching a garden with alkathene.

Four or five volunteers were involved at any one time, and Roger did most of the house installs for the elderly, as a volunteer, with Keith Mothersdale helping. They also had a couple of electricians, which some householders paid to install their equipment. He, Keith, and the others helped those who couldn't dig their own duct through their gardens, so that all would be ready when the main core got there. The routine sequence of events was:

Step 1, remove sod prior to trenching.

Step 2, place spoil on groundsheet.

Step 3, lay duct and use alkathene pipe to protect it if necessary.

Sep 4, backfill carefully and replace sod.

The BDUK team came to help with the trenching and see what was involved in a rural fibre installation. They came in time for step 3.

In April 2019 the RWBB tribe reported:

'As most neighbours will know from Roger's latest update emails, Trunk Route 1 is now all dug in, apart from road crossings scheduled for the coming weeks. The control node cabinet is in place at the Reading Room, and with good news in from the DCMS voucher application, fibre blowing along Route 1 will proceed as soon as possible. Digging also continues around Swainstead towards Sheepwash and Wham!'

In the village where the hub was, there were a lot of houses in a small space, and everyone came out to help that day, Keith said there were so many ducts to manage, and the more hands had hold of it the smoother it all went.

The cabinet came live on the 4th July 2019 (our BT independence day!), celebrated by a visit from BDUK on the day, to watch as the first customers came live. Jorj and Roger arranged a blowing, fusing



Robert Staveley and Kit Mackereth fusing a bullet, watched by BDUK.



Rob and Kit fusing another bullet to bring the cabinet live.



Jacky is overjoyed to get connected at last.



The first speed test at the old school in Rathmell. 940 Mbps symmetrical.

and speed testing day for them, and they watched how houses got fused, Roger demonstrated how the fibre was fused and wrapped and a router installed.

Rob and Kit from B4RN fused the bullet the fibres came from. They also fused core bullets, including Jacky's connection to her farm.

The BDUK team even got to lay their own duct in a trench to a customer. They all went back to the school for lunch. They also had a route walk, to see where the fibre had been laid.

They visited some of the main businesses in the village, and heard from them first hand, about the difference that fast broadband would make to them.

They watched blowing demonstrations and fusing the fibre, and then went into the old school, to watch it come live. They did a speed test in the school and Justin Leese, the head of BDUK, tweeted the photo.

Jacky Frankland was supposed to be sorting the buffet lunch for the visitors but she came to watch her long awaited service going live. She was very excited to see all their hard work paying off at last.

She watched the speed-test with the BDUK team and one of them said 'It is faster than what we get at Westminster.' He was repeating exactly what the MP said who visited Keasden. We are faster than our capital city.

Justin immediately used the connection to tweet a photo of the speed test to Westminster.

The BDUK team had a lot of information to take back with them.

Jacky runs the facilities in what used to be the school at Rathmell. This houses a community venue, with several small businesses having offices there. Her previous internet service was awful. Her family have three farms and all of them suffered. They could not upload files, do the VAT online or register cattle.

The BDUK visit to B4RNland



The BDUK team with the volunteers.



Jorj explains all about the ducts and labelling.



The BDUK team arrive at the Old School.



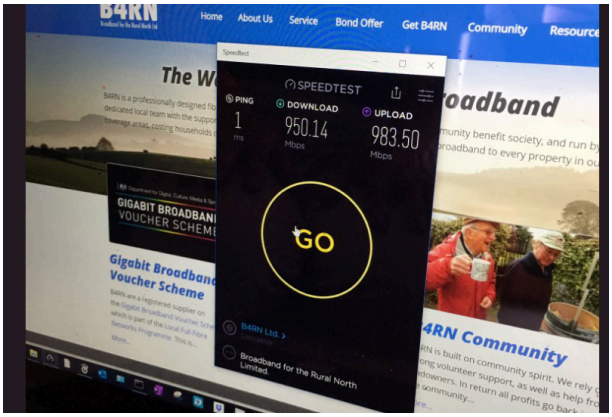
BDUK watch a house fibre blow supervised by Alistair.



Jorj and the B4RN team demonstrate house fibre blowing.



A route walk, through a meadow with hardly a scar.



A great speed test once the school came live.



Alistair putting the final patches in place to bring Rathmell cabinet live.



Roger Vincent and Jacky Frankland with their spade awards.



The BDUK team and Jorj, who gave them their spade awards.



The B4RN boys enjoyed their lunch outside.



Justin from BDUK has a closer look in the cabinet.

They could not do online shopping, socialise online or watch videos. Jacky says the coming of B4RN has been transformational and she takes it all for granted now.

Everything she wants to do now is accessible. whether it is moving large documents in her fight to stop the Church Commissioners taking the school off them, doing the farm records, or buying a toothbrush.

Roger and Jacky both got MBE spade awards for the work they had done to get the service to Rathmell.

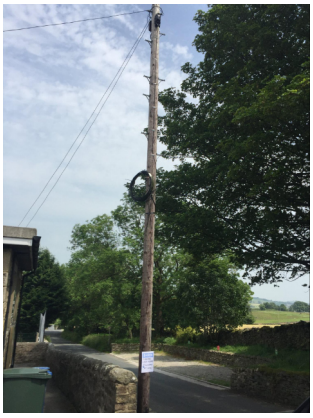
Jorj awarded the BDUK team honorary spades as a souvenir of their visit.

By this time Rathmell had overspent their budget, but luckily vouchers came back in 2019 (due in part to the impression the project had made on the BDUK team), and many of the small businesses managed to get them, and that really helped, as they had road crossings to pay for, as well as the cabinet and contractors.

Many parts of the project were affected by proposed projects from BT, which meant that vouchers were not generally available in some postcodes, including the main postcode which covered 90% of the village. It is worth noting that none of the proposed BT projects have ever got further than some fibre hung on some of the poles in the area. You could see the coil of fibre on the pole in 2018 and it was still there in January 2025 in an unused enclosure unconnected to any customers.

After the BDUK visit, Roger carried on installing and fusing the rest of the houses and properties around Rathmell.

Then came Covid, and Frank and Will carried on helping Roger get people connected, coming and blowing fibre for him each time he got an install done.





2018, BT fibre on pole outside the old school. 2025, still there.



2018, B4RN live at Old school.



The BT pole and its B4RN spade.



Roger about to fuse one of the village pubs.



Roger fusing the house fibre in the pub.

One lady worked for the National College of Policing, and was part of the Police's National Covid Silver Command team, and the Chief Constable of Cornwall wrote to Roger on the 25th March 2020, asking for her to be connected urgently. 'Please pull out all the stops to get her on'.

Roger obliged, and contacted Jorj and Tom at B4RN, to push things forward. He had already made sure duct was left at the boundary of every property, the garden dig was done, and the house kit was fitted, and fibre had been blown, and all that was needed was for the splicing to be done, and a router fitted. B4RN were quick to respond, and by the 9th April 2020 the property was live, along with a number of other neighbouring properties.

During Covid, Roger and Keith continued to work on a number of garden digs, and house kit installations, where residents were willing to be visited, whilst maintaining strict social distancing.

B4RN continued to bring properties live to provide good broadband coverage, at a time when it was a lifeline for many people. It was also during this period that the B4RN routers changed from Genexis to Zyxel. and a few properties waiting to come live had to be retrofitted with new style house kits.

One road crossing was booked, and at the last minute, the landowner changed his mind, and a new route had to be found round the top of the village, to get to another batch of residents and businesses. Luckily the landowner moved, and the road crossing was rebooked before any extra money was spent/ wasted. The new owners were more than happy to help B4RN and get the service.

Roger ran the project off Google Docs, keeping records of everything, and using the B4RN spreadsheets, to make sure the right amount of duct went in the trenches. As at 2025 they have dug nearly 27km of trench, with still more to do, but Wigglesworth has been ringed by BT fibre, with



Roger wrapping the fused fibre into the backplate.



Finished installation with the router on the backplate.



Keith Mothersdale.



Keith's amazing speed test. Over 9Gbps!

FTTC subsequently being installed. This has led to a significant drop in the level of interest there to get B4RN in, despite most of that route still being eligible for vouchers, under the current incarnation of the voucher scheme.

It is immensely frustrating that an area that has had FTTC installed is still eligible for vouchers whereas other areas in the project, where BT purport to have 'commercial plans' (which have never come to fruition), have been, and continue to be blighted by unavailability of vouchers.

B4RN's route 3 is planned to join Wigglesworth, and splits off to Tosside, which joins Slaidburn, to complete a resilient ring for them.

Route 2 splits off route 1, and goes to Wham, picking up the houses and businesses that should have been on the original route 1 out of LEWFA.

Route 1 also supplies the core feed to another project in Giggleswick, bringing a gigabit to the school there.

Route 2 has an issue with the main high pressure gas pipeline, as rules have changed and now the pipeline cannot be crossed except in highways, which adds more time, money and paperwork to a project, so can cause delays. The planned route to join to Tosside will now need to be re-routed via a longer route to reach a point where the gas pipeline crosses one of the few roads, and will make getting 7mm duct to one of the farms on the 'wrong' side of the pipeline a long way from the road crossing a much more expensive task, rather than the direct route which could have picked it up along the way.

Keith Mothersdale has been a stalwart volunteer on this project, both with the normal B4RN tasks of garden digs and house kit installs and has also gone the extra mile, using his professional expertise to help residents to get world class connectivity inside their homes. He helps them to make the best of the

world class connectivity to the outside world, supplied by B4RN. Keith has diagnosed issues with wifi, due to foil-backed insulation reflecting the signals, to helping people set up power-line adapters and meshes.

He has also trialled B4RN's 10Gb service, buying himself a new water cooled PC that was capable of housing a 10Gb ethernet card, and looking to see just how quick a speed-test result he could achieve from a single computer. He achieved a result of over 9 Gbps symmetrical which we believe remains a B4RN record to this day and probably a record for the whole country for a residential service.

Rathmell dug over 26km of trenching, with a further 48km to do if Wigglesworth wanted to join on.

Rathmell is due to join on to the Slaidburn Core in the future, when routes are finalised through Tosside and Gisburn Forest.



The BDUK team. All of whom have been replaced by a new team and all they learned has been hopefully passed on.

Beyond the Book:

Keith's instruction video for ethernet.



Chapter 8

Capernwray/Borwick/Dalton/Burton/Yealands/Silverdale/Kellets

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Carolyn, a visitor from the south, joining in with the fibre blow.



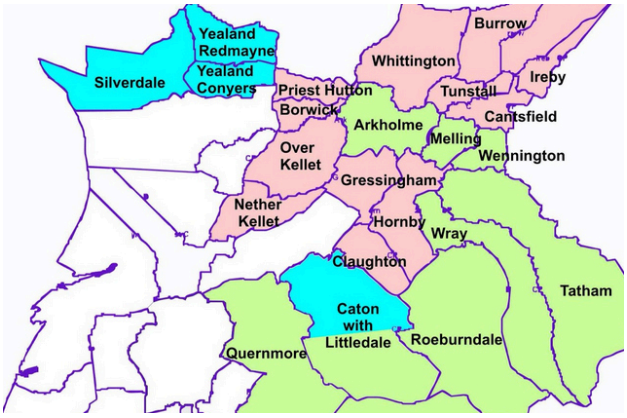
Iain getting the duct in order in the chamber, with audience.



Bruce Alexander, Chris Carr, Pat Close and Alistair Adams-Huset.



The Princes Trust Freelander pulling the fibre cable reeler.



Phase 1 = green, Phase 2 = pink, Phase 3 = aqua.

Capernwray

This project was the gateway to several more tribes joining on their branches.

Capernwray parish was not on the Phase 1 plan, but several businesses desperately wanted the service, and motivated others to help. Capernwray is at the half way point between the Kellets and Arkholme. The EIS scheme was still in operation and that helped with the investments.

There were going to be two routes into it, and they were all digging at the same time, to cover a very rural area.

There are three big caravan sites in the area, and they could not get a decent internet connection for the holidaymakers. People these days do not like to go anywhere that has not got decent internet speeds.

Capernwray Hall is a religious retreat, and lots of students there meant they had the same issue. Students from all over the world work there and they could not keep in touch with families, nor do the research they needed to do.

Most of the work was done by the Hall staff, and by James at the Capernwray Old Hall caravan site.



The Old Hall caravan park.



High tech camera and wifi system on the Old Hall caravan park.



One of the caravan site wifi transmitters.



James sorting out the connection box for the cameras and wifi.



Bruce blowing the fibre through with Carolyn and Pat.



John Tamlin joins the blowing team with Chris Hall.

Jackdaw Quarry is a diving centre with residential accommodation, and like the others, they were desperate for decent internet access.

James Wightman, one of the caravan site directors, had been relentless in his digging to get the core to Capernwray. He was determined the family run site would be part of the digital age. He also dug to many residential properties on the way.

The Old Hall caravan site provides wifi to all the pitches. In order to make the most of his gigabit service, James ran fibre to poles at several points within the very large site, so each access point has the best feed it could. This system also runs security cameras and other things as well.

Capernwray connected to the Arkholme route and also to the Aughton route. Borwick was also digging to meet them in the opposite direction, and they encouraged the project along; the two areas were very close and knew each other well.



Alistair Adams-Huset fusing a bullet next to a chamber.



The Lindsey spade.



Glenn Harrison with his spade award.



James Wightman's spade award on his milk churn.

Volunteers from other parishes also helped on this project. Chris from Arkholme, Chris from Aughton, Chris from Wray, and Pat from Docker came to help. Carolyn, who was was visiting locally, was roped in. Most of the blowing was done by Chris Hall and Bruce Alexander.

John Tamlin lived in a remote area between Arkholme and Capernwray, so he helped both parishes and learned to blow fibre too. He ran a lodge park and farm shop, and was desperate for it all to have internet access. The core had not got to Capernwray cabinet, so John made a case to have a temporary connection to his property, and several others, from the Arkholme cab. This was a severe test of the optics, as they were classed as 10km range. John was much further from Arkholme than that, but lo and behold they worked fine. His properties were eventually moved back on to Capernwray when that cabinet was live. There are a lot of very remote farms in the North West, so it was reassuring to know the kit could work past its range though.

Chris Hall with his pickup, and Iain in the Prince's Trust Freelander, had their work cut out delivering reels of fibre to the blowers. Alistair set to work fusing all the joins, when the diggers and blowers had done their bit. It was at a small residential complex that we installed Glenn; he had dug to all the houses and he was our 600th customer. We could now start employing people! We awarded him a spade. We gave James a spade or two too. The hub is situated in Capernwray Hall, and came live in 2014.

This project opened up routes to the Kellets and Halton central, and through Borwick to the B4YS (Broadband 4 Yealands and Silverdale) communities, who had already started digging.

Capernwray dug over 13 kilometres of trenches.



Priest Hutton village.



Digging from farm to farm.



Keith Brady, Graham Brady, Ken Dunn, Ken Richardson, Craig Scott, Richard Mellor, Dave Scott, James Fletcher, Martin Badley.



The Borwick and Priest Hutton B4RNstormers.

Borwick, Tewitfield and Priest Hutton.

Keith Brady rose to the challenge.

This was another group of villages not in the original phase one, but Keith would not be stopped. His group were in Phase 2, and when Gressingham and Aughton opened it all up, he talked to them to figure out how to do it. He galvanised a group and joined the tribe. He knew that Capernwray was already digging, so he had to be ready too, and the more he could do at his end, the sooner they would get the connectivity they all needed.

He organised the work parties, found a local lad and digger. They had plenty of digging to do so they got on with it, from farm to farm, to their village.

The Borwick and Priest Hutton B4RNstormers included:

Keith Brady, Graham Brady, Ken Dunn, Ken Richardson, Craig Scott, Richard Mellor, Dave Scott, James Fletcher (17), Martin Badley, Phil Horsfield, Dave Roberts, Steve Thorns, Simon Osmond, Andrew Foulds, Bill Ramsden, Eric Rooney.

Later Keith said, 'One thing I would say is that at the start of our project I really had no idea what we were doing and I relied hugely on the help given by John Hamlett from Gressingham. The other person who made a real difference to the way we handled things was Chris Carr, in that he gave me a few tips on how to handle the day to day spending that kept our dig going at pace'.

'My other hero was our own James Fletcher (age17) who taught us all about things farming. A typical day would start with a group of us 60-somethings meeting at 9am, spending half an hour discussing how to accomplish the day's tasks, then being joined by young James, who had already done half a day on



Keith explains the routes they were digging to the showtell folk.



Keith caught sponges in onion sacks when blowing time started.



Neat trench, soft filled and tape going under the sod.



Digging through the pony paddock.

the farm, upending our plans and showing us how it should be done. You could not help but see the funny side'.

'I think our group was probably the only one locally that did a regular working week, albeit a short one - starting on a Tuesday and finishing on Wednesday - perfect. Most of our volunteers were 'young' retired men and they appreciated the camaraderie that the group developed. We still have the core of that group who meet up to do jobs around the village, and maybe go for a pie and a pint afterwards'.

We took one of our showtell days to see what Borwick was up to. A few volunteers from the B4YS Silverdale tribe came too, and they picked up lots of tips from Keith. He explained the hazards of the farmer's water pipes, which feed troughs in the fields, and how his group managed to find them all. They know how to fix them now. They had joined the trench foot group too, but for different reasons. Keith also explained how important it was to remove stones from the bottom of the trench. Borwick used the bread tray sieve idea from Gressingham to soft fill, but they had a basket.

After a year of digging the core was in and the fibre arrives for Borwick.

Priest Hutton also joins on to Borwick as part of this project, and they all worked together. From here the duct carried on to the Yealands, (and then to Silverdale), also known as the B4YS project.

Over 21 kilometres of trench was dug.

Keith also organised 'BYOD' (Bring your own Device) days, at the Community Hall in Borwick. John Hamlett from Gressingham presented it, and Walter came too. This inspired and helped many more people and communities to join in.

Photo Gallery for Borwick, Tewitfield and Priest Hutton.



Perils of a dig. Water pipes to feed troughs in fields.



The standing room only BYOD day, with John Hamlett presenting.



Prime cause of trench foot, water in wellies.



Adapting the bread tray method to sieve out stones with a basket.



Mending the water pipe.



The Showtell day - Keith explains what they are doing.



Digging to the farms with James.



A nice straight trench by James, sod to one side.

Blowing days photo gallery



Paul Parsons and Keith Brady doing some house blows.



Gloves off and tea break at Longlands Hotel on a blowing day.



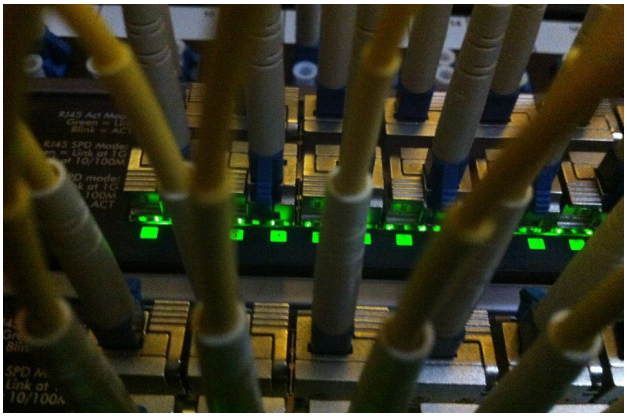
Bruce Alexander and Keith blowing house fibres at a chamber.



A late fleet on the core blowing day.



Blowing the core fibre.



Live at last at Borwick village hall.



Keith and his wife collecting duct from the farm, and a spade award.



Priest Hutton gets its spade award.



The Stable Yard, hosting several business units.



An award for the Dalton Hall Burial site.



Francis's digging team.



Tony Swidenbank with Graham and Liam.

The next little community to dig to meet Priest Hutton was not in the Phase 1 plans, nor in the Phase 3 B4YS plans, but that did not stop them. If a group could make a case to Barry he would let them make a start, and helped them.

Dalton Hall estate and business centre, owned by the Mason-Hornby family, worked really hard to get connected to this main core. They also have an award-winning natural burial ground. Their land is next to Priest Hutton so they were very lucky and had no wayleave issues as they owned all the land.

Francis had read in the Westmorland Gazette that B4RN were trying to get to J36, and knew that to get it from Priest Hutton, to there, it would go through his land, He thought it would be a good idea to contact them. He attended a showtell day at B4RN HQ, spoke to other people, and decided to just do it.

In the process of getting it to their own property and estate offices, they also connected every property in the area, as part of their community engagement ethos.

This dig also provided a resilient route for the next village, Burton-in-Kendal, which was branching off the B4YS core at Yealand. In actual fact the route did not go to J36 that way, because a landowner further on refused a wayleave which meant rerouting the duct.

Francis found enough people to buy shares and invest, as EIS (Enterprise Investment Scheme) was still operational. As Tony Swidenbank finished the Priest Hutton dig, Francis grabbed him to do the Dalton one. Rob Mackereth also helped with digging.

Tony moled through the fields and went under the farm tracks. When the blowing team arrived you could not tell where the mole had been.

Francis had learned at the showtell day how to fit

Dalton photo gallery



Chamber with core duct.



Will Corkhill made a tidy job of it.



A tidy mole plough.



Tony Swidenbank reaches the offices.



Tony doing a lane crossing.



Work round the hardcore to get the house ducts to the offices.



Under obstacles go the 7mm house ducts.



Digging and backfilling up to the hall.



The core blowing machine.



Core going through to another chamber.



Bruce and Alistair blowing the core.



Finally the core blow to the Hall.



Paul and Alex arrive to fuse the core.



Paul and Alex fusing in the stable block.

house kits, so he did all those whilst his diggers dug.

The whole family joined in, and Cressida dug her own lawn and lifted the patio flags to get the duct into her house.

Tireless work on the dig won Will Corkhill a spade! A JFDI B4RN man of grit.

Bruce arrives to blow the fibre, and Will did the reeling. When the fibre blowers came the family caught sponges, and received spade awards.

The core fusers arrive. Paul has a new volunteer with him; Alex Colton was volunteering with us that summer. She later joined us as staff when she left university.

The house fusers came, and a fuse at the family home brought them live in the summer of 2016, with a great speed test.



Bruce arrives to blow the fibre, and Will does the reeling.



Paul Parsons and Alex Colton, fusing at Dalton Hall.

The Dalton family dig photo gallery



Will Corkhill gets his spade award.



The family relax after a hard day's digging.



Cressida's paving dig.



Catching the sponge on a house blow.



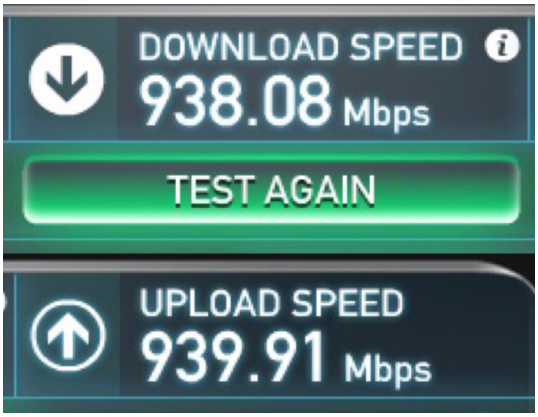
Cressida's lawn dig.



Family photo call.



Christopher and Cressida's fuse.



A great speed-test by Francis at the Dalton Hall Business Centre.



John's Land-Rover getting licked.



John collecting supplies from the farm store.



Tony Swidenbank and the directional mole.



Last of the Summer Wine characters watch the drill, Ron, John and Mike.

Yealand Conyers, Redmayne and Storrs

John Calnan and Mike Macklin took on the Yealand Conyers mantle. John said he spent a lot of time getting licked by cows who nearly trashed his Land-Rover with their tongues.

His main issue was getting his hands on duct and joiners from the 'bolshy' B4RN store owner, but he generally cajoled his way into getting what he needed.

They were tireless in their efforts to get a connection to everyone. John holds the distinction of connecting the first monastery... and he trained others to pick up duct for him as he was more scared of the B4RN store manager than of Mother Superior =the prioress at the monastery, and she was well scary.

They also had the excitement of working with Tony Swidenbank and his directional drill. There were lots of little lanes to go under to get to the farms.

John, Ron Ogden, and Mike were hands-on during all the digs, and John says they worked with some great contractors and volunteers.

They trenched 23km to complete Yealand Conyers.

They picked up all the properties on the way from Borwick including a small industrial estate and the village church, which got a free service.

They carried on the dig to the next village, Yealand Redmayne, and half-way there was the village hall, where their cabinet was to be sited.

The village hall also got a free service.

John's photo gallery



John Calnan and Mike Macklin making plans.



Reeling out the duct.



Put it there….



There I said.



Tony Swidenbank and the mighty mole plough.



Slave driver calls for tea break. Ron, John and Mike.



A hole sets off the mole.



Fettling.



John Calnan and Ron Ogden helped all the villages and got B4RN vests.

Then the great day came when the blowers landed and they began to see the end was in sight. Frank and Paul had to listen to all the stories and were amazed at how far they had dug.

Mike and John helped the next villages, Redmayne and Storrs, get going, and the projects often worked together.



John and Ron telling Frank and Paul how far they had dug.



Frank and Paul were amazed.



Mother Superior and John Calnan.



Bruce blowing fibre from the church, to the chamber.



Ron Ogden with a towel, cleaning the fibre on a blowing day.



Mike dug in the duct Granville had laid through the woods.



Granville finding a blockage.



Granville collecting duct.



Late night mole ploughing.



Granville Tunnicliffe-Wilson laying the special reinforced 18mm duct through woodland.



Granville and the team at Yealand Storrs.



Jean taping the duct together in the Yealand woods.

Granville Tunnicliffe-Wilson was the main mover and shaker in Yealand Redmayne. He and his wife Jean went to the village meeting, and had already heard about the project's success in Quernmore. They thought 'Thank goodness we could be included'. Granville already knew Barry from work, and knew if Barry was involved that it would actually happen.

Once Borwick was underway it was easy enough to get the Yealands motivated to invest and help. The Four 'A's leapt into action again. The EIS scheme was still running in those days.

They had quite a few issues with wayleaves, which was their main headache.

Granville says it was a case of 'drop everything else and get out there' every day, and they really enjoyed it. Their connection speed jumped from .25Mbps to 1000Mbps when they came live. There were not many houses but they were spread out in various out-of-the-way places and he had to organise some long digs and blows. He left nobody out and got to every farm or property that requested a service. He and Jean rolled out the duct and organised the volunteers and contractors.

Jean's story:

Yealand Redmayne lies on the side of a limestone hill facing east and north-east. At the bottom of the hill there is moss-land, drained by a deep channel cut through the rock. Much of this land can be underwater for weeks in the winter so we were very lucky to have a comparatively dry summer and autumn in 2015 to dig in the broadband across the moss. Most of this is deep peat lying on a marl base, with occasional boulders, which are not always visible from above ground.

Progress on the mole plough, with Tony Swidenbank, was generally good, moving boulders when necessary and being careful not to stop where



Clare, Jean and the Yealand Redmayne tribe.



Laying multiple ducts through the wood.



Laying ducts to the houses.



Mike Macklin, Jean and Granville get their spade awards.

the ground was particularly soft.

The fields further up the slope may look smooth but underneath the grass there is a succession of irregular rocky ridges rising up the hillside. Mole ploughing along the hillside was OK as long as we were between the ridges. Some of them appear as occasional rock outcrops but many are hidden just below the surface. Taking a trench up the hill could involve a diamond cutter to make a channel across the top of a ridge for the ducting – no chance of burying deeper at these points!

Higher up the slope, above the fields, lie woods with too much exposed rock for farming and the additional hazard of tree roots.

At the northern end of Redmayne, a row of houses has gardens which border onto these woods. We decided to take the B4RN ducting across these gardens to avoid the rocks and tree roots of the woods, but most gardens had no access for heavy machinery like a mole plough - it required human labour.

The preliminary work meant burying pipes under garden walls and hedges, ready to take the ducting under garden boundaries once the trenches were dug. Teams of up to 10 people could dig a trench across a garden surprisingly quickly, with turf neatly cut and placed on one side of the trench while the soil and plentiful stones were laid on the other side. The aim was straight lines but we had to work around flower beds and fruit trees and, towards the end, between outcrops of rock.

Most participants were pensioners. At one point we called ourselves ‘the cripples brigade’ as people came and went with knee and hip problems.

All the ducts had to be laid together across the gardens nearer to the chamber, so a team worked together to push and pull them through the pipes under boundaries and lay them in the trenches. At



Some ladies dig their own trenches!



The fibre arrives to fill the core ducts.



John and the volunteers helping Bruce blow core fibre.



Paul Parsons fusing the core fibre.

each garden, one duct peeled off to serve that house until there was one duct for the last house.

Later, as each house was connected there was great relief as the fibre was successfully blown through the wriggly route from the chamber.

One of the more distant parts of the village posed a different problem. Barns had been converted into dwellings with the pipes for the broadband set hard in concrete. Unfortunately the bends in the pipes were tight and the ducting was reluctant to go round them, even when pushing it fairly steeply downhill. Fortunately there was an electricity supply available at the bottom of the hill so we could run our powerful vacuum cleaner there. We sucked a drawstring through first so we could then both pull and push the ducting through the pipes'.



Mark Bryson.



Clare Hunter.

Yealand Redmayne hosts the UK's smartest home.

Clare was supposed to be decorating her home when the B4RN project was happening in her village, but she ended up going digging every day. That paid off, as the smartest home also got the best connection in the country. All that ethernet they built into the house now had a reliable feed.

Clare's story:

We were building a house in Yealand Redmayne and needed a fast internet connection. So, as Chris was managing the house, I decided to volunteer to work with B4RN, which was just starting in our village.

On my first day I went to join the volunteers - but I had trouble finding them. They were working to get a duct across a stream, I turned up late, and was faced with a group of men ... I was terrified. However they turned out to be very friendly and soon I was fetching various bits and pieces.

They were all volunteers, a great bunch, and good at working together.

One day we were hauling a thick core of duct up to the ridge, and dropping it down to the various houses. This obviously involved a right angle bend and someone at the bend to feed the duct down ... which was me. Trouble was many hands were feeding the duct up and only one was feeding it down. I was trying desperately to keep up and getting exhausted when a quiet, calm voice said, 'Shall I take over ?' In a little squeak, I said 'Yes please'. I have never been so grateful to see Granville.

Another time we had to get a core of duct across a field and it had to be buried deep because the owner wanted to have his regular Bonfire Night bonfire right where we wanted to go. It was decided to also put the core in a 4 inch plastic pipe to give it more protection. So it wasn't easy. And soon there we were, a whole bunch of us, pulling on a rope tied to this core trying to get it through this pipe. Granville said "one, two, three, heave" and we all heaved. You should have seen us, but we did get the job done.

Another day we were working on the crossing of a drive. But there were stones underneath the tarmac, which spilled out on to the edge of the road. A trench had to be dug in these stones parallel to the road edge - only about a metre but a voice said 'Clare, dig that trench please'. I looked at those stones and knew it wasn't going to be easy but I set to. I wasn't going to give up, my arms started to ache, it was killing me but just when I'd had enough, I finished it - and I'm not sure if anyone realised how hard it had been.

We had a gentleman who had a digging machine and was our contracted digger.This day, though warm, it rained on and off. At one point I was drenched and looked like a drowned rat. Digger-man came by on his digger, took one look at me, made some sort of comment - that I fortunately didn't hear - laughed and drove off. Three times that day I got soaked and three times I dried off. Towards the end of the day, Digger-man passed me again on his digger - and I was waiting for him to say something again. He didn't stop, he didn't laugh he just drove on and I have never seen anyone so fed up in my life. The weather had got to him, and I 'Thought that will teach you'.

Volunteering with B4RN got me into the village - I was a newcomer - and it made me a lot of friends. I also got to see a lot of places I wouldn't normally see and ... I also lost weight.

One thing did happen - on an icy day I tried to jump over a pile of stones, landed heavily and managed to break my wrist (fortunately not my phone, which was on my hip). Husband Chris of course then had to



Node Zero in Clare's house.

do everything for me for a while. But one job I did not get back was making our meals. Now he might have been fed up with the salads I was giving him, but these days I get home and find a lovely dinner waiting for me.

So we got our internet connection, I made friends, and I now get my dinner cooked for me. Well worth all the hard work !



Ron Ogden gets his spade.



Volunteers digging in a chamber.



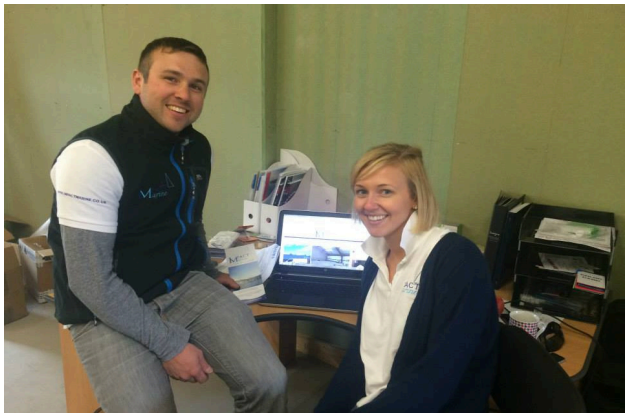
Rob Greenwood gets his spade.



Paul Parsons fusing a bullet for customers.



A hub at the industrial unit at Conyers.



Impact Marine, one of the businesses at the industrial unit.

Eventually all the spade work was over, and the volunteers got their spade awards. The fibre was blown and the B4RN fusers appeared to make all the connections. The Yealand cabinet came live in Spring 2015, just a few months after the Borwick link.

There is an industrial unit at Conyers that hosts several businesses, and now they have the best connection in the world to support their work. One of them Impact Marine, it is run by a couple, and you name it, they sew it!

Yealand Redmayne dug in 21km of trenches.

Beyond the book:

The Smart House.

Impact Marine

Tim's short film.



The Burton dig from the main core.


Bob Coulton building the plinth with Graham Wilson.


Getting the ducts through from chambers to cabinet, are Nick Martin, Sue Caddy and Ollie Craig.. *Photo by Mike Iddon*


The plinth is ready.

Burton-in-Kendal

The main route was going on to Silverdale, who were busy digging, but at this point a branch went off to Burton-in-Kendal. It would eventually join to the Dalton line and make a loop for resilience. The outskirts of Burton had been connected by Francis, but the village centre was fairly urban and it was a big job to take on.

Mike Iddon had moved into Burton and was appalled at the connection he had through his phone line. Francis Mason-Hornby suggested he spoke to B4RN, so he organised a village meeting and 80-100 people turned up; he was not going to be alone.

Martin Sansby had retired from teaching and wanted something interesting to keep him busy. This was just the ticket. Together they led a great team.

B4RN could have come through from the Dalton connection, but instead decided to give them their own cabinet and put Dalton onto that instead of the Borwick one.

By this time it had become clear B4RN would have to get to J36 another way.

They could not raise all the money to do the village in one go, and the EIS scheme had come to an abrupt end.

Mike and Martin spoke to Tom Rigg, and they decided to reach the school, and put the cabinet up first. This meant they only had to raise £30k initially for the dig and the cabinet.

They got a quote from a local builder, Graham Wilson, to install the chamber and cab plinth, but B4RN said they could not afford it until they got more investments. When they told the builder the bad news he said he would do it for nothing as it was so important for his village. Graham says 'The culprit



Laying the duct on the school field. *Photo by Mike Iddon.*



The Burton school children watch the duct roll out. *Photo Mike Iddon.*



Steve Thexton backfilling the trenching the duct is in the trench.



The Toro with Iain Robertson works on the paths.

in the photo is Bob Coulton, who is one of our supervisors, There is a likeness between us and I do get mistaken for Bob regularly even though there is a 20yr age gap! Bob can take the photo credit but it was a team effort!'

The volunteers got the duct through the school playing field. Iain and the Toro dug through the paths. All the local houses near the school got their ducts in at the same time, all neatly labelled ready for blowing. The team installed all the local houses and reinstated them to a very high standard.

The reception class at Burton Morewood CE Primary Academy turned out to watch Steve Thexton who is the deputy head, Mike, Martin and Ollie Craig roll out the duct.

Sue Caddy, a volunteer on the Silverdale project, showed them the tricks of the trade, and the damage a rock could do in a trench.

Michael says that with her help and from Martin Lange at Silverdale they were confident that they were 'competent'.

Martin Sansby went to help at Silverdale to learn the ropes, but he said for every trip he made over there Martin Lange made very many more to help them at Burton. 'The Captain is magic' he said.

The cabinet arrived and the volunteers connected up the school and nearby houses ready for fibre.

Martin from Silverdale came to blow and fuse the fibres.

The first thing they did after that was have a BYOD (Bring Your Own Device) day at the school, the residents were amazed, and it resulted in more investments.

This meant they could extend into the village a bit more. It also served to get the residents involved in the project.

Photo gallery



The cabinet arrives.



The cabinet is placed on the plinth and screwed down.



Martin Lange installing the exterior conduit on the school.



The finished cabinet sited.



Steve Thexton catching the fibre into the school, with Martin.



Multiple customer ducts marked up with addresses.



Sue Caddy explains the damage a rock like this can do to the duct.



A very busy but very tidy chamber.



Ollie Craig demonstrates his sub-duct skills.



Digging to the houses. Professor Keith is still helping his neighbours.



Johnathan Phillips, landscaping expert, whose turf roller is used after filling in the trenches.



Sam Robson and James Taylor from the B4RN civils team on a path job.

Vouchers were now coming into the plan, which also helped to fund the project. Mike scoured out all the little businesses who could get a voucher and helped them to apply. In those days you were allowed 10 residential vouchers for every business voucher you obtained, and Mike says they were lucky because they had lots of small businesses.

They found novel ways of getting routes into the urban areas of the village, and used some BT ducts, but B4RN had to cut 40% of the pavements where there were no ducts to lease.

The village already had FTTC, but the speeds fluctuated madly, and FTTCs reputation was that it was unreliable, so anyone who really depended on the internet migrated to B4RN. The tribe kept holding meetings to educate people about the benefits of B4RN fibre in comparison to a phone line broadband service. Ann Nichols did a website for them, went on Facebook, got it into the Burton News magazine, and that helped the project succeed.

Martin and Mike kept installing house kits where they could reach people.

They had multiple problems with wayleaves, but the bigger landowners like Peter Cummings, Mike Taylor, Karen Parsons, Richard Fawcett and Francis Mason-Hornby were very supportive. Some smaller landowners made some of the digs more difficult and expensive as they had to go round them.

Mike says that for him the project has all been about the community, ‘Our whole street now know each other,’ he says, and he and others ‘have made life-long friends’.

He says B4RN came at an important time for Burton, when they had to work from home, home-school the kids etc during Covid. ‘We could only have done one thing at once on the old broadband, but it brought out the benefits of B4RN to everyone,’ Mike said.

The Sunday Times featured them in an article.

THE SUNDAY TIMES | NEWS | NEWS

Villagers do their own spadework to bring in broadband before lockdown

Nicholas Hellen,
Social Affairs Editor

It took a shovel and a lot of luck to get high speed broadband to Mike and Maddie Iddon in time for Britain's coronavirus lockdown. They were connected on March 13, the last day of school for their two young children, narrowly avoiding that most terrible of modern fates: isolation without decent internet.

Like an estimated 155,000 other Britons, the Iddons had been stuck with a connection of such limp and intermittent performance that they could use only one computer at a time at their village home in Burton-in-Kendal, on the fringes of the Lake District.

Broadband speeds were so slow that the headmaster at Burton Morewood school where Rory, 7, Tabitha, 5, are pupils, could not provide online lessons.



Getting fibre cables installed is the key to broadband speeds that allow working from home
GETTY IMAGES

Mike, 41, who works at the EDF nuclear power station in Heysham, Lancashire, and Maddie, who leads The Lighthouse, a mental health charity, began working at home early in the crisis because Maddie survived cancer as a teenager and cannot risk infection.

Iddon and a fellow villager, Martin Sansby, turned to B4RN (Broadband for the Rural North), a not-for-profit supplier that delivers vastly improved broadband to isolated areas. A local builder joined a community effort to get the fibre cables installed and Iddon got out his spade to help connect his home.

In the end, 30 homes were connected, with download speeds of up to one gigabit per second. Time ran out for 150 more, leaving them bereft of video conferencing and other joys of life online.

After a live exercise session led by Joe Wicks, the celebrity trainer, on YouTube, the children's lockdown routine includes a change into school uniform ready for two to four hours a day of online lessons.

The local pub closed on March 20, but with the help of the Zoom video-conferencing app, there is now a virtual local, named The Zoom Royal.

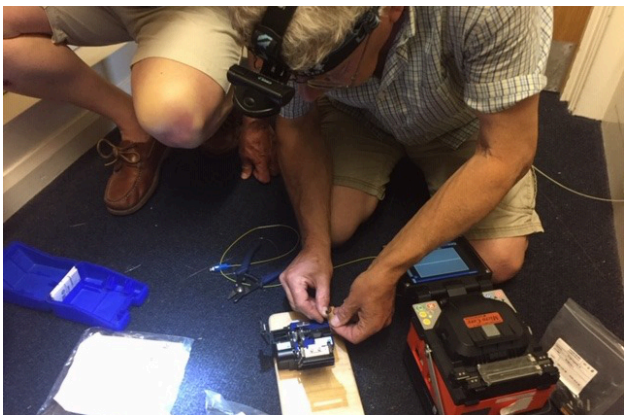
● Internet service and mobile providers, including BT/EE, Openreach, Virgin Media, Sky, TalkTalk, O2 and Vodafone, have agreed to lift any data allowance caps on their broadband plans to help elderly and vulnerable customers during the outbreak.

Check your broadband speed and availability at checker.ofcom.org.uk ■

Photo courtesy of The Sunday Times.



Martin Lange blowing the fibre into the school.



Martin fusing the indoor fibre.



Martin getting under obstacles.



Martin fusing the chamber in the field.



A tidy dig, with sod 'hinged'.



Using tarpaulin sheets keeps the grass clean.



Neat hinging of the sod means the grass carries on being green.



The Burton in Kendal team at the end of a long day. Martin Sansby, Alan Bethell, Sarah Colyer, Simon Little, Ian Thomas, Johnathan Phillips, Loz Colyer. *Photo by Mike Iddon*



Mike helping out with the mole ploughing between Dalton and Burton to bring the core into the village.

The school was already struggling with its PCs and whiteboards on its slow connection, but once it got B4RN it could do anything it wanted to do.

The school got a free service from B4RN, which meant it also freed up school funds for other things, and meant the head of the IT department did not have to spend all his time sorting out annoying problems with the internet.

It also meant the school VPN (Virtual Private Network) on its own servers speeded up, so teachers could log in and mark homework from home, without having to wait.

It is a source of great joy to the volunteer group that they have been able to do this for their school.

They made the most of their voucher money, and the dig grants were used to pay for much-needed tools.

All the volunteers worked for free, with Martin and Mike helped by Martin Lange (the Captain) from Silverdale connecting all the house kits. Together they formed a great team.

Some householders did all their own work and kept their dig grants, but a lot put it in the community fund. They had a proper charity bank account and kept records for transparency.

They ended up with a surplus, so have donated some of the money to other village charities.



Steve Thexton, Martin Sansby and Mike Iddon with some of the children and the B4RN banner at the school.

Francis from Dalton had inspired them, and gave them time in the parish council meetings to speak about B4RN. The parish council supported them very well, with 'just the right touch'. Mike says they have enormous pride in the finished project (although at the time of writing they are still trying to bring in the last stragglers), and that it has been a pleasure to be involved in building such a great facility for the community.

Martin says It is worth mentioning that during the initial Covid lockdown and with exceptionally fine April weather, it was a pleasure to work outside with numerous residents who were only too keen to be able to do something positive'.

In the very early days one Ollie Craig was so enthused, that he leafleted the entire village, of 640 properties.

Other special mentions must include Kate and Alan Bethell whose approach to gaining 'Expressions of Interest' in 2018/19 were 'terrier-like'. In a more subtle way Holly Philips was equally effective. Together they paved the way for the start of the 'hard-dig' in February 2022. Alan then became a key individual in numerous house fits.

Numerous garden digs and house fits were undertaken by Sarah and Loz Colyer. Their specialities included inserting ducting into sun-soaked tarmac and the use of a crowbar and 14lb lump hammer to route ducting under stone walls and hedges.

Gill Chilvers and her husband Akis, who run the post office, were very helpful in allowing the tribe to use their window display screen to publicise B4RN-related activities. They also host an MDU(Multiple Dwelling Unit) at the back of their property.

Over 14km of trenches were dug in Burton-in-Kendal.



Welcome to Silverdale.



A tribe formed.


The BYOD in Borwick village hall.


Barry Forde presents B4RN at the Gaskell Hall public meeting.

Silverdale

Silverdale is a parish of 900 properties scattered over a very large area. The majority of it is limestone or bog. It is a very challenging area. It is part of the B4YS (Broadband 4 Yealand and Silverdale) group, and our first meeting with them was when they came to the Borwick open day run by Keith's group. They shared information and they were blown away by the demonstrations in the village hall BYOD day. Tim Mackintosh made a film about it. Tim's short film. They had regular meetings and open meetings to engage their community. Many told them it could not be done in such terrain, and to wait for BT to do it.

By 2014, Silverdale was beginning to see the fibre coming its way over the hill from Yealand.

From the volunteers: 'A group of movers and shakers from the five parishes got together. Some were pushing from The Yealands end, some pulling from Sandside and Storth end and Silverdale in the middle with pessimistic limestone-based expectations of feasibility and sharp intakes of breath all round. They helped out in Borwick to learn the ropes, and then took the dig further into the Yealands, and on to Silverdale.

'At this stage in B4RN's osmosis out from Quernmore, parishes had to raise their own money for materials. The B4RN mothership offered loans at a good rate of interest and those who purchased 1500 £1 B4RN shares were offered a first year's subscription for free. Alongside the digging and the ducting, we needed to cast B4RN's bread upon the water. Or seed upon biblically stony ground.

'What we all had in common was an AONB and their championing of 'sustainable development'. We were confident B4YS would qualify. Chris Ward from Big Fish at Storth and Tim Mackintosh from Silverdale,



The AONB banners.



l-r Tom Milligan, Vince Smith, Dawn Hancock (front), Adrian Walker (back), Andy Wells, Mike Macklin, Chris Ward, Tim Mackintosh (front).

Photo from the Westmorland Gazette.



Delicious home made scones.



Chief charwallahs at Gaskell, thanks to Georgina and Angela for scones.

made a full fibre presentation to the AONB Executive Committee seeking support and money, and before we all knew what was happening, we had a grant of £3000.

'To help you and your group, we are pleased to offer you a grant towards the costs of project banners, informative printed and web communications materials, equipment, public meetings, transport and the distribution of a mailshot to every household.'

'Only, we had to have it spent and accounted for in a fortnight before the end of the AONB's financial year.

'A mighty effort from all the above and wonderful hands to the pump from; the Skipton Building Society, Big Fish Internet, the B4RN mothership, Emtelle, the Gaskell Hall Committee, the cake squad and others too numerous to mention, we had the Gaskell Hall launch event bought and paid for, the agreement of St John's Parish Magazine for B4YS to have a four page spread in the next issue all about B4RN and fibre and future proofing, and enough printed information and encouragement to persuade our neighbours to invest and/or buy shares.

Tom Milligan from Big Fish took care of our digital footprint. The sharp end of getting the fibre across B4YSland to Sandside is portrayed elsewhere in these pages but, as every where in B4RNland, would



At the Gaskell, Simon Wade from Emtelle shows us different ducts.



Getting control of multiple ducts.



Using the Toro to get to the houses and the church.



Soft backfilling the trench and removing stones.



Mattocks were valuable tools in Silverdale.

have been impossible without the active support of so many. In our case, all the usual volunteer suspects, we of a certain age for the most part but also our farmers, local businesses, conservation bodies, estates, country houses, local government, St John's Church and all our friends and neighbours.'

Even a few months after the optimism and confidence of the Gaskell Hall event, B4YS still really didn't know which route would be taken to get the trunk connections from the Yealands into Silverdale and on to Storth and Sandside. In Silverdale, in the absence of anything better to do, we spent time wandering the village pondering how to connect the two village halls, the churches and the schools, not to mention 900 other properties.

On one such (Compo and Clegg?) foray, Andy, Edgar and Tim were blundering about, trying to work out how to get duct from St Johns primary school across to Cove Road, and what wayleaves would be required. There was nobody much about except in the distance, at the other side of Townsfield, somebody was being busy at the back of the houses. A combination of neighbourhood watching, volunteer recruitment opportunities and the chance of a quiet cup of tea persuaded them to amble over for a chat.

A greenhouse was slowly being built, the better to occupy the imminent ungainful and unemployed time of an about-to-be-retired Captain of the soon to be King's (merchant) navy, on leave for the last time before the onset of pensionerhood. Andy, Edgar and Tim recognised an opportunity when they tripped over it and set to to persuade him that his time would be much better spent ...

... and so the seeds were distributed, taking root after six months completely at sea and Martin Lange was reincarnated as the answer to all those problems B4YS hadn't even identified by then'.

Get me to the church on time photo gallery



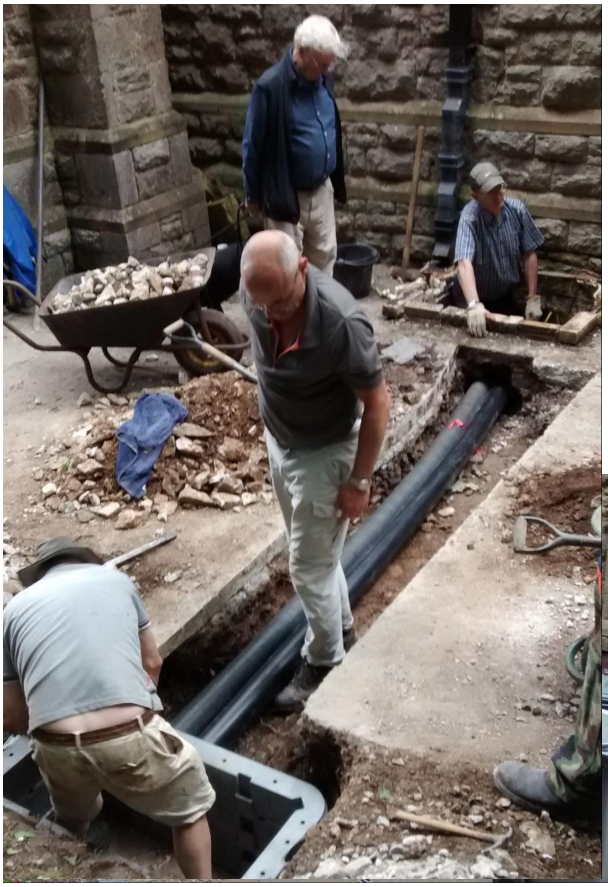
Martin with the Toro in the snow.



Main trench cut through the concrete.



Duct layers.



Sub-duct being laid in the trench.



Digging out for a chamber.



Multiple ducts being laid in the toro trench.



Tidy job, all done.



Getting under the church wall.



There was a lot of head scratching that day.



Waiting for them to stop scratching.



Paul Parsons and Alex Colton fusing the church chamber.



Duct into the crypt, and cabinet delivered.



Martin patching in at the new cabinet.



Bringing the crypt live, Rob Staveley, Alex Colton, Tom Rigg, Paul Parsons from B4RN, and the volunteers working together.



They made their own flyers and distributed them through the parish.

Andy Wells and Edgar Porcher divided the large parish into areas with different champions for each area. Noel, Anne & Peter Roger and Dawn each took on sections of the longest route, route 1. They were joined by Martin, a retired sea captain for the initial part of route 2. Julia and Richard took on the most challenging area in the centre of the village, route 3, and did an amazing job, and Fred route 4. Ruth, a potter, and Phil had route 5. Glyn had route 6. Andy adopted a new route 7, which had to be put in when a wayleave was retracted that cut short the original route 2.

Andy recalls: 'I think it is also the case that B4RN bought the Toro with a loan organised by Edgar and would not otherwise have had the finance for it at the time. We learned how to use the Toro for ourselves'.

They hired Tony with his mole plough and diggers, to get from the Yealands into Silverdale, 'We only used Tony Swidenbank for a small part of the route from the Yealands. Chris Alty did a further chunk for us with a tractor-drawn mole plough and Arthur Graves likewise for some of the work in the village'.

Andy also says; 'It would be nice to have a mention of Steve Whittaker, sadly no longer with us, who had a tractor and showed us how to operate a mini-digger. He was a staunch supporter from the start. Likewise Tim Mackintosh who played a key part in B4YS right at the start of the Silverdale project'.

They then borrowed a small digger and for the rest used the Toro, a small chainsaw type machine to cut through the fields and gardens.

Their first target was the church. As they dug through the fields they went under the walls to drop a duct to every house. Mattocks, moles, pickaxes and crowbars came into action.

A lot had to be done by hand. They all had six packs by the time they were done. Apart from Ruth, who was skinny to start with.



Clearing the trench of surplus stones.



Training day at B4RN. Martin and Andy get their hands on a fuser.



Martin's first ever fuse, in his own house.



Martin gets his very own blowing kit - a red letter day.

Clearing up afterwards is a major job. Volunteers took on all this work. The problem with using a Toro is that the sod is chopped up along with everything else. In the case of this field it left rocks on the top. The volunteers took the biggest ones away, and three months later after the grass had grown back, they removed any surface rocks still showing. There is very little soil in this field but it recovered remarkably well. The paths, gardens and driveways received similar treatment.

The tribe in the parish took 'responsibility' to make it work. Waiting for blowers and fusers just to connect one or two extra customers, prompted them to learn how to do it themselves, and because they proved they could, they had the training and the machines allocated to their project.

A few of them learned to blow and fuse when the time came. Andy is very proud of the fuses he did, but admitted his eyesight would not stand the test of time, so Martin became the chief blower, and then the fuser for the additional connections, as the build progressed. He then fused his own house fibre and caught the fusing bug too, fusing the house fibres as well as bullets, and ended up with a fusing machine at Silverdale too.

Martin says the whole thing was like cutting teeth. He had just retired as a sea captain, and had worked away from home for most of the 32 years he had lived in Silverdale, so he was not part of any local groups, not exactly a stranger, but he did not know many people. All that changed when he signed onto the B4RN project.

Silverdale, like all the early projects, had no funding or grants, and they had to raise all the money themselves. Martin encouraged everyone to buy shares and invest, if they could. He remembers thinking that if the project failed he would have to move house, as he would have been blamed. But he and all the others worked hard to make sure it did not fail.



Andy reeling the core duct.



Collecting the first duct and chambers from the new Melling office.



Typical 'site meeting' - deciding where and how to dig.

He remembers volunteers in the various zones near to tears in the field because they had made a mistake, forgotten a duct, forgotten to bring joiners or end caps, such was the pressure of working in those days. But he also remembers always someone being on hand to fix it. The duct is pretty basic technology, and there is always a solution. The main thing is to recognise a mistake. However, because the project in Silverdale is such a success, he feels it is important to remember these dramas.

With the help of the volunteers they got the duct to the church, which is where they had decided to site their cabinet.

Martin still connects latecomers to the party, and has also helped other villages get going and inspired them. He says the worst thing he has had to do is try to negotiate with the landowners who did not want B4RN on their land. Getting wayleaves is always a tricky job. In some cases they found it easier to go round them, but one route to three houses was on common land, on a footpath. Luckily the council confirmed it did not need a wayleave on the land on each side of it, so the duct went through okay.

One of the trickiest bits they had to do was on the Woodwell Cliff, and a special duct was ordered and fastened to the cliff wall by B4RN's Dave Ryall who is an expert caver.

The B4RN core fusers Paul and Alistair came to bring it all live. Andy stood still long enough to get his MBE spade award, and Fred comes live when Andy patched in the crypt. It had been decided to put Silverdale's cabinet out of sight and weather, underneath the church itself, in the crypt. Gives a whole new meaning to FTTC - Fibre To The Crypt!.

Once the main core had been done it was a case of adding more customers in dribs and drabs. Silverdale is enormous and there were many hard to reach areas, with numerous geographical obstacles and wayleave issues. There remains one area they

Photo Gallery



Mattock work.

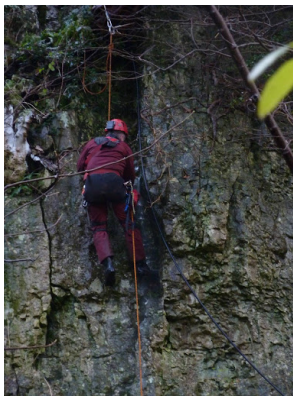


Andy patches customers (including Fred) at the cabinet.



The blowing team at Silverdale.





David Ryall, the B4RN caver, fixing duct to the Woodwell cliff face.



Andy presented Julie Wise with her silver Simon spade for all her work.



Getting the chamber in a big enough hole.



Alistair Adams-Huset fusing the core fibre at Silverdale.



Robert Staveley and Paul Parsons fusing at Silverdale.



Fred was a route champ and stored the materials at his house.



Rosemary gets her MBE spade award.



Andy gets his MBE spade award.



Martin and Tom getting a connection to the station. JFDI in action.

cannot reach but hopefully will one day. Gaskell Hall is top of their list, blocked by a wayleave issue.

As with most parishes, once the bulk of the work is done the impetus dies and volunteers go on to other projects, but there will remain more people to connect once they decide they want a connection. A few had been content with what they had through the phone lines, a few were not interested, and considered themselves too old to use the internet, but as time went on they changed their minds or new owners moved into the property. This is where Martin came to the fore, and has continued connecting people for over 6 years. He can blow, and fuse, and dig, and connect the equipment into the property, he has been invaluable.

Because of Martin and a few others, B4RN started a scheme, whereby trained volunteers could become contractors. Martin had already helped nearby groups get going but now he could be paid for it. At least it stops him being so out of pocket, but will not make his fortune. His main reward is helping more people and removing the things blocking them from getting online. He also helps them get their devices connected to the wifi, helps them with mesh systems, or power-line adaptors , and even runs ethernet for them. He is also often their first port of call if they have problems.

The volunteers were on national TV, but they also made their own film about getting the core to the church. The link is in the blue box.

The last thing they had to tackle was the waiting area at the station. Network Rail could not provide information for passengers due to lack of comms. They did not want B4RN. There was no mobile reception. Enter stage left the B4YS team, who managed to beam a signal to the station from the golf club. Aided by B4RN's COO, Tom Rigg.

Captain Martin Lange



Martin fusing customer fibres in the fields.



Martin doing a bullet, watched by an interested volunteer.



Back to reality, Martin mending a break in mud and rain.

From being a virtual stranger nearly everyone in Silverdale now knows Martin. 'The great thing about being a volunteer is that you cannot walk down the street without everyone waving at you,' he says.

Martin earned an invite to the Buckingham Palace garden party for all his efforts, accompanied by his other half, Brenda.

Martin is also often the first port of call if there is a break in the fibre, and he can do the repairs very quickly.

Over 31 km of trench was dug at Silverdale.



Martin and Brenda, scrubbed up well for their Buckingham Palace date.

Beyond the book:

The Westmorland Gazette story

Getting to the church video

The Ttrowbarrow video



Welcome to Storth spade on the post.



Here comes the cabinet.



The cabinet on the plinth.



Getting the cabinet settled and ducts put through.

Storth

Once the fibre got closer, Storth started.

Another small village near Silverdale, Storth, wanted to join on. Steve Spencer and Duncan Brown organised a village meeting with Barry.

Mark Fisher and Greg Tagney sprang into action. They canvassed the village and organised the site for the cabinet.

Dealing with the village was okay, but getting the core route into the village proved to be a major headache for them. Despite the hold-ups they dug the ducts into the houses and back to the cabinet through to the local chambers, ready for the big day.

The big day was basically held up with wayleave issues, so B4RN decided to put a BT leased line into the B4RN cabinet, as a temporary measure. This was also held up, because BT decided they needed to do a road cut, instead of their usual pole method of delivery, and this was held up as well.

Nevertheless, the volunteers kept on working and waiting for the hold-up to clear.

Henry and Greg strimmed the long grass to make it easier for the diggers. As in Silverdale they had the limestone to contend with too.



Strimming before the Toro comes.



Dave Ryall from B4RN fixes external duct to solid rock.



The Storth terrain.



Team meeting. The best sort. With Beer.



The Toro in the rough.



The Toro in the smooth.

Duncan remembers getting David Ryall from B4RN to come and peg some UV duct to the rock-face down a cliff where it was impossible to dig, David is an expert caver and Arnbarrow, where the route was going, is literally a huge lump of rock. They helped B4RN plan all the routes using local knowledge. Adrian Walker organised volunteers to canvas the village and raise shares. One person invested heavily which gave them a good start. The EIS scheme was still going and saved taxpayers 30% tax, which was a great incentive. The first voucher scheme also started when EIS finished and that brought more interest in joining in. £80k was raised quickly to reach the £120k target they would need.

Mark says 'innovation' was their keyword, they found ways to do things.

Everyone in the village was very cooperative regarding wayleaves except one person, so they just went round his property. They enjoyed the project, despite the terrible frustration of not being able to get the main feed into the village. They say it was hard work but fun. Duncan recalls a lot of householders being under the impression that B4RN would do it all for them. This was because this particular project went on for SO long due to the wayleave hold-up,

B4RN at the time were transitioning into a professional network as opposed to self-install, and communications got muddled. Nevertheless Mark and Andrew did most of the house installs and a lot of garden digs for those who could not do it themselves.

The biggest disaster they had was using the Toro. They had a long route to do along the old railway line, and it went like a dream - they did 1.5 kilometres in a day. Despite being told to put the duct in the trench, the volunteers got carried away, and dug the whole length in a day. Overnight torrential rain came and the spoil from the Toro, which is usually so easy to backfill into the trench turned into a cement puddle that solidified. Too far,



Frank blowing house fibre.



Frank on the core blow machine.



Frank Brown and the volunteers tidy and label the fibres.



Bruce with his peg leg tidies up the core fibre in the cabinet chamber.

too fast, they said, taking this as a learning experience. Needless to say they did not make the same mistake again.

They were using multiple ducts, often 24 x 7mm duct plus a 16mm core in a trench, and reeling that out took a lot of time and planning too.

Andrew Skinner had been working with the Silverdale tribe, because he had a holiday cottage there, and learned how to blow and fuse from Martin.

The hold-up with the wayleaves set the project back several years, he says. He carried on working in Silverdale with Martin, connecting more properties, and did what he could to help his village of Storth.

The village install was literally in two halves; the first half was all ready to go, thanks to the hard work of Duncan, Greg and Mark and others, but the other half was partly hard dig, and very expensive.

B4RN undertook some of it where interest was high, but Andrew said that due to the delays Openreach had installed 4 FTTC cabinets, providing VDSL to most people close by, and that they were 'content' with that and not as inclined as the people in Silverdale to dig up their gardens. Andrew was used to working with committed people, and some Storth people were just not interested.

The way vouchers were allocated and the way they kept changing in those hold-up years meant Storth had literally 'missed the boat'.

But undeterred they carried on digging.

Once all their problems got sorted the blowing teams arrived, and blew fibre to all the houses the team had prepared.

Bruce was still in his ankle brace so Frank did all the running around. A lot of the local houses had their duct direct to the cabinet, so Bruce had a bit of spaghetti to sort out. It was okay as long as he did not

Storth photo gallery



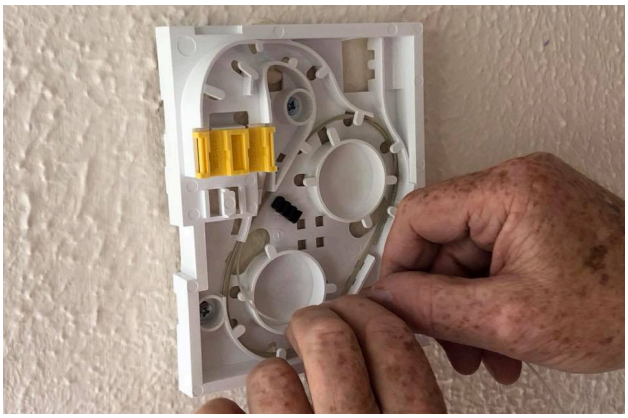
Frank Brown catching the fibre and labelling it up at the chamber.



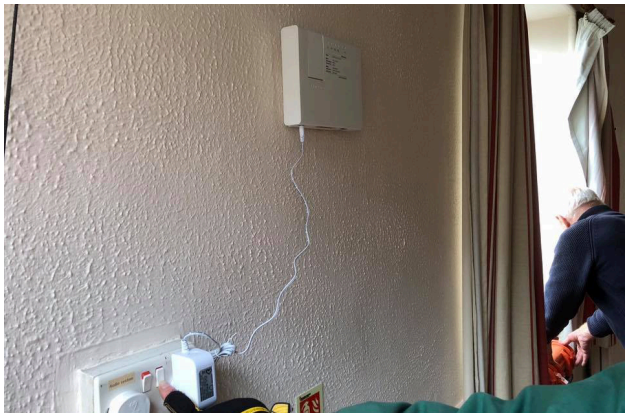
Core blowing from the cabinet.



Mark, one of the volunteers, waits at the house to catch the fibre.



Mark wraps the fibre in the FTU on the wall.



Completed job, with the router on.



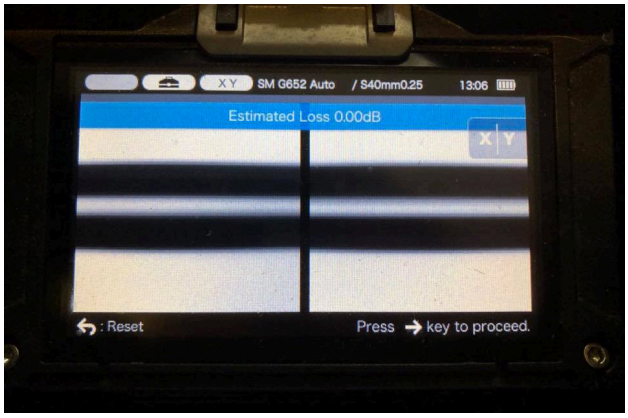
Overkeen chicken helpers backfilling, before the duct has been laid.



Greg Tagney and Andrew Skinner at Heron Hall.



MBE spade awards for Greg Tagney and John Weinholt.



Perfect fuse for the village hall.



Martin Lange from Silverdale blowing house fibres. On a wheelie bin!.



Wet digging too, on the field dig.

have to run around. Frank and the volunteers sorted it all out in the other chambers and it looked much better.

Frank blew the core to the chambers round the village.

The first house blow in Storth was to the village hall, and the volunteers wrapped the fibre ready for fusing. They had installed all the house kits and were ecstatic that at last the project was coming to fruition. The village hall had a perfect 0db fuse.

Martin from Silverdale also did some blowing and fusing as payback, paying it forward.

Despite all the ongoing work, the wayleave issue still was not sorted, and the decision from B4RN came through about the BT leased line to be used. Duncan remembers when the cabinet was to come live, they were watching the BT engineer make the final connection. There was a fault on his line, and he did not know where it was, except that it was 600 metres away. The volunteers knew exactly where it would be, in a BT chamber down the road. and took him there. He fixed it and the lights came on, amidst deep rejoicing.

It gave them a real buzz to see the look on the BT engineer's face, that a group of villagers could know so much about fibre networks. Duncan says to see the internet light come on in the village hall router was really all the reward they needed.

Half the village was on the Milnthorpe telephone exchange and half on the Arnside one. Openreach had enabled FTTC on the Arnside one and were starting to roll out FTTP, so for some people B4RN were too late to the party.

With hindsight Andrew thinks this could have been avoided, but nobody could have guessed that wayleaves would prove such an obstacle. Nowadays with PIA (Physical Infrastructure Access) the core



The field dig starts.



Field chamber.



The route to school under the roots.



The dig through the woods.



Digging through the woods and under tree roots.

could have come through Openreach ducts and reached Carr Bank, but those people were now lost.

When the cabinet finally came live there was another burst of activity to get the bottom half of the village live through a field dig.

Volunteers were thinner on the ground due to bereavements, changing jobs, health, holidays or whatever, but Greg, Robert and Andrew persevered, digging by hand to the customer houses, suitably rewarded with tea, and using the Toro when it was available, installing access chambers and hand digging under all the tree roots.

There was a group where a lot of shareholders lived and who really wanted B4RN, and now with B4RN having their own civils team, they did an 'urban dig' through pavements and laid ducting to reach them.

Urban digs cannot utilise volunteers as easily, as chamber access needs streetworks authorisation, so more of the work was done by B4RN.

B4RN used a contractor (Dave Rogerson) to fit the house kits and fuse the customers. Andrew fitted the routers and did the customer contracts, and gave advice on VoIP and wifi.

Cost-wise the project stopped after this. There is a chance that a connection to some customers on the route to Milnthorpe may be made in the future. PIA has meant that some of the issues with limestone and landowners can be solved, by leasing Openreach open access ducting. If this had been available at the start of the project, and if vouchers had been available, it could all have been done in a year instead of taking 6 years and missing out on a lot of the community.

Photos show the exhausted volunteers at the end of the final push to complete route 3 through Burntbarrow Woods. It was done during the heatwave in June 2023 with the help of B4RN



B4RN civils team do the urban bits.



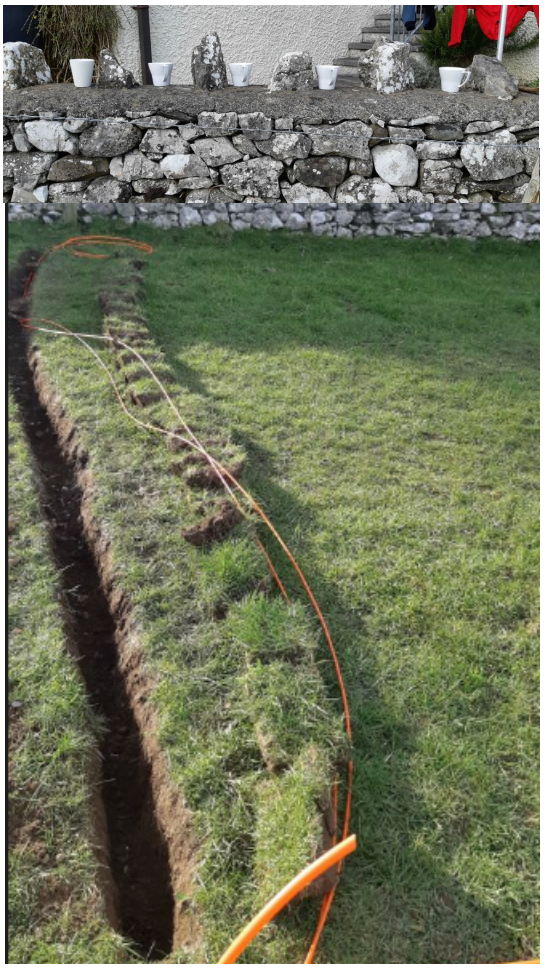
B4RN civils team laying duct.



Tea break for the volunteers.

contractors, and the landowner produced refreshments for them to mark the completion of the route through her land behind Burntbarrow. The completion of this route marked the end of the project in Storth for the volunteers. Robert Harvey, Andrew Skinner and Greg Tagney. Work is still ongoing with infill.

Over 10 km of trenches were dug in Storth.



Digging for tea.



Robert Harvey, Andrew Skinner and Greg Tagney. at Burntbarrow.



The Kellets are in Phase 2, pink on the map.



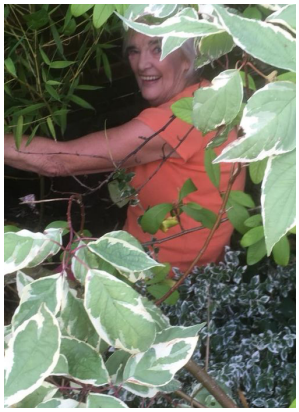
Nick Ward and Lesley Gee.



The OK tribe.



Having a break on the dig.



Digging through a hedge.

The start of this long project for B4YS had started off in Capernwray, but another important route also came from the same branch of the tree, and turned towards Halton, which was already underway from a different branch, but by connecting extra parishes a resilient loop would be formed, so this story goes back to the Kellets in Phase 2.

Over Kellet

Nick Ward had been asked by the parish via his role as councillor to find out about B4RN, so he came to find out about it in March 2016. He was most insistent that he did not want to get involved, as his village was already connected to FTTC and he thought most people were happy with that and he had a lot of other things to do.

However he was determined to get all the facts, and he organised a public meeting with Barry at the village school. He was blown away by the attendance and the interest, and by the ethos of the project.

He asked Lesley Gee what she thought of it, and she was all for it. She became his right hand because between them they had the skills to organise it all.

His wife realised 'he had not put his head down at the right time' and was firmly in the tribe. Nick made enquiries and found out that the Capernwray team had already got the duct fairly close to them, so they had a good start and got going.

They raised the money in investments to pay for it all as there was no government funding available. Lesley did all the admin work, sorting the spreadsheets and wayleaves, and finding out who wanted the connection.

They tried dividing the village into zones each with its own leader, but that did not work there, so they changed their approach and concentrated on one zone at a time, and this worked well.



Quick tea break.



Bacon buttie pit stop. With a hopeful dog.

They walked the routes with locals in each zone and modified the B4RN maps if necessary, with Lesley reporting everything back to B4RN.

Nick concentrated on the engineering side, getting from one house to the next. A lot of the dig was through gardens, and volunteer days were set up to blitz an area every Saturday. Nick took lots of photos and Lesley updated their Facebook page and kept everyone informed.

They got funding from the local quarry for drills and spades.

They had their own community pot for donations, but also actively raised funds themselves through Ceilidhs and other social functions and this money went to provide Saturday lunches, where the volunteers enjoyed bacon and sausage butties, lots of cake, and tea. This approach certainly seemed to work well.



Lunch with chips.



Freshly cooked grub.



Lunch ready for the workers.



Another day, another lovely spread.



Measuring out the ducts.



Labels ready for each duct.



A big duct day.



Frank Brown and Lesley Gee picking the ducts to blow that day.

Lesley sorted out all the duct labelling as it was laid, and let everyone know what had to go in the trenches. She made sure every house got a duct whether they wanted the service or not.

Duct was measured out before the dig, so as soon as the trench was dug it could be laid in. Sometimes duct was rolled out in a field without livestock so that a mole plough could pick it up and mole it straight in.

Lesley provided maps and wayleaves for both B4RN and the householders so future customers would know where it had been laid. The chamber work and labelling in Over Kellet was outstanding. The correct length of duct had been left in each chamber ready for blowing, and end caps had been used to protect the integrity of the duct so the fibre would blow well.

Frank blew most of the house fibres, and he left the fibre in a 'blowing tail' so the fusers would have some free fibre to fuse with. This was then all wrapped up in the chamber to wait for the core fusers. Lesley helped Frank get the fibre blows underway, checking the houses on the labels for those who want service. Nick was always on site making sure each area was complete and the right ducts were in the chamber for Lesley.

The Saturday digs continued, with the civils teams coming to help with long digs, road crossings, and particularly difficult digs under walls.

James and Sam from the civils team tried out new equipment at Over Kellet, the Toro and the self drive mole, with varying degrees of success.

They did not use many contractors within the village, they did most of the work themselves, apart from a few areas where hard dig was needed by the B4RN civils team. This work was because of some newts, and instead of disturbing them the Environment Agency said they would not let the diggers through. At great expense B4RN tried a method of putting the



More duct ready to lay.



Laying the duct ready to go to the houses.



All the duct in the chamber, labelled up ready to blow.



Nick Ward checking the ducts and labelling core ducts.

duct in the pavement and going up the front garden instead of the back garden. This was an inconvenience to the residents, especially when the newts continue to walk into the road and get squashed. Hey ho. A quick mole plough of some duct in the field around the back of the houses would have saved much time, stress and expense, and the newts would only have been disturbed for half an hour.

Just below Nick's house was a building plot for three new houses. Nick spoke to the builder about B4RN, and he wanted it in his houses. He also wanted mains water, so they came to an agreement whereby Nick got the trench dug, and they put both ducts in the same trench. The builder paid Nick and the volunteers to do it. So it literally self-funded that bit.

To get to remote houses and continue the route to Nether Kellet they used local farmers who worked for shares. Johnny and his mole dug all through his own land and others picked up the idea.

Once the core reached Over Kellet it was time to start connecting customers. More core routes were blown by Bruce, Frank and the civils team.

Once a zone was ready Lesley called in the blowers and got the volunteers to help.

Nick learned how to patch them in the cabinet.



Blowing day with Will Dehany, Frank Brown and the volunteers.



Martin in protective gear.



Martin hedge diving.



Road works to avoid some newts.



The newts ignored the signs.



Martin in his usual attire of awful t-shirt and shorts.

Martin actually had a good connection in the village centre. They had FTTC and he was getting 30 mbps down and 10 mbps upload. He had managed to get an extremely good deal from an energy company and only paid £22 a month. The service was more than adequate for his needs, and he had to put a lot of thought into changing to B4RN where the equivalent service at the time was £30.

He got involved because it was a community project, and it would also help all the people and farmers outside the village whose connection was not as good as his.

He also realised the parish needed a future-proof connection that benefited the whole community, not just a few near an FTTC cabinet.

He threw himself wholeheartedly into the project (literally hedge diving with hard hat and overalls instead of his usual shorts), and brought the average age of the volunteers down. He gave up his Saturdays with the rest of them, and did the hardest bits, once being photographed upside down under a hedge.

He is a technical person, and he became the 'go to' person for problems, and eventually started working at B4RN as helpdesk manager. He is currently in charge of all customer connections with a new manager and several staff working with him. He also helps all the staff with their technical problems and keeps office systems working.



Another chamber with multicore ducts labelled up.



B4RN civils going under a wall.



B4RN civils moling duct in.



Frank Brown starting house blows.

By now Bruce had 'bitten the bullet' and learned how to fuse. Alistair's team did the main core routes, but often Lesley and Nick completed a zone and because the bullet was already in the chamber they called Frank to come and blow, and Bruce fused them. Nick patched them and Lesley ticked another off her list. Nick and Lesley both helped install the routers in the houses and gathered the contracts in.

Over Kellet is now a gigabit village, no longer reliant on the slow service through phone lines. They laid over 14 kilometres of duct. Lesley and her records are still on call when new people move into the village, if their house is not already connected, and she can locate the duct for the engineers.

Nick has continued his good work, and has just raised £100k for the bells in the church. Funny how you can get funding for bells but not for broadband. Also support for newts, but not for children wanting to do their homework online.



Frank puts a blowing tail on the duct he's going to blow next.



Bruce Alexander fusing the house fibre into the bullet from the chamber.

Over Kellet photo gallery



Toro, driven by Iain, with house ducts splitting off to each property.



Putting the duct in the Toro trench.



Brushing in the spoil and replacing the turf.



Turf replaced, as good as new.



More bacon butties.



Local farmers dug for digging shares.



A shady brew.



And when they were only half way up…



Will Dehany un-fleeting core fibre as Frank blows it to the next chamber.



Garden digging.



Winder Garth dig with nonagenarian Malcolm Cobb.



Lesley on a route walk.



A team action day.



Nick patching customers in the cabinet.



OK. They had it in spades.

Nick says, 'So Lesley and I took it on as a double act and it turned out to be an excellent community project. We had an average of 20 volunteers, and sometimes as many as 30, turning out every other Saturday, rain or shine, over the 3 years for which it ran.

'Perhaps it was the lunchtime bacon sandwiches, produced by my wife, Jane, which helped, but more likely it was the spirit of camaraderie and community



Ryan Cook gets his MBE spade award.



Tom Rigg and Dan Richmond-Greaves blowing new fibre.


Tom Rigg and Robert Staveley at the cabinet Christmas 2023.

which it developed'.

This then continued when many of this group of volunteers morphed into the village 'Covid Support Group' and subsequently into the 'Over Kellet Jubilee Bells Project', to replace the three unsafe church bells with a new ring of 8, which is now coming to an end.

"What next?" I was asked the other day, "proper retirement" was my response... "

One can but dream Nick.

Swarthdale

A small settlement near Over Kellet wanted to join on.

Their branch bud started in August 2014 when Ryan Cook made the first enquiry to B4RN. 'We are a village of six homes, three of which are businesses.

We'd be interested in the services you and your company provide'.

Their route in from Aughton had been blocked by a landowner so they dug south to join on to Over Kellet. They were very determined. They got their fibre in May 2017. Ryan built a good tribe to help him.

They also managed to have a major fibre strike on Christmas Day evening, when a landowner was digging in a field next to them. Tom Rigg and Robert Staveley immediately went out to find out where the problem was, they measured it from the cabinet so they knew how far away the damage was.

Ryan turned out to find the routes he had dug so the B4RN team could blow in some new fibre. Tom called out the core team and they fixed it all within 24 hours, new fibre and new splices, and they were all back online. The repair team and Ryan spent Boxing Day in a field instead of in front of the fire.



‘The crushed bit is definitely there Dan’.



Local knowledge of the route finds the right place to dig to find the blockages. The dogs and tea help.



Dan and Ioan Leonti fusing one of the bullets to bring the customers live again.



Ioan fusing a join.



The speed sign in Nether Kellet and volunteers with spade awards.



Laying duct to the caravan site.



Moleing the duct and digging through gateways to the site.



Digging the tricky bits, and soft backfilling.

Nether Kellet

John Bentham had been at the Over Kellet presentation that Nick Ward had arranged, and the Nether Kellet team got going once they saw Over Kellet was go.

They raised the money in investments to pay for it all, with some help from business connection vouchers from the government, as these had started now.

There were quite a few farmers and small businesses in the area who were suffering from poor connectivity. The money paid for contractors to do the core digs, and the volunteer team installed all the houses, for which they were awarded their MBE spades.

There was an issue on the main route from the church at Over Kellet through the quarry. The quarry wanted the connection, but the HSE officer put a block on the dig going through the car park, so the first feed into Nether Kellet actually came in through Halton.

The quarry had also supported the Over Kellet team. The HSE paperwork was finally sorted, and the other core completed, giving Nether Kellet and Over Kellet resilience from the start, which was unusual in those days. Nowadays paperwork is done well in advance, and lots of villages get two feeds in and out and even more in some cases.

Another caravan site near the quarry was also desperate for a connection, and despite the mammoth task underway to build the route, a little bit of legal paper held them up too. Such was life in those days.

A little community assisted in getting the feed to Nether Kellet. The community consisted of 12 properties down a country road. Their postcodes were actually in Halton, and they were in between



Andrew Towers gets his MBE spade.



Feeding the duct into the mole.



Laying the duct out.



A chamber dug in.

the two villages. Originally they were in the Halton central phase, but that was not in build at the time. The line had gone past them about half a mile away, to the Halton Eco project, and now Nether Kellet was stalled from joining on to Over Kellet because of the quarry paperwork.

Andrew Towers and his dad had heard about the B4RN project from a presentation Barry did at Halton, but did not want to wait until Halton central was done. Andrew ran a video production company, and he was very keen to get B4RN, because he knew he would benefit the most.

His dad William had a caravan site and taking bookings over the internet, and also the caravaners needed wifi.

They had meetings with their neighbours. Robert Aldren took up the organisation role with B4RN, who were reluctant to join them on to the Eco line at first, as there were no spare fibres for them.



Digging under obstacles.



Protective pipes for subduct on directional mole.



Labelled up and tidy for the blowers.



John and his team get spade awards.

When the Nether Kellet project stalled, B4RN changed their plans, and temporarily connected the properties to the spare management fibres on the line, and enabled the project to work. These negotiations and plans took a couple of years.

Robert knew their little community would have no help from major telcos, and he and his neighbours often did not even have a phone service. Repairs by BT took ages and they were all fed up. He liked the idea that the farmers around him could end up with a better service than people in the towns and inspired them to get together and make it happen. The farmers were great with permitting wayleaves and the duct went right to their farms and Robert and his team did the house instals. Will Dehany did the house fitting, where the householders could not do it themselves.

Steve Foster did the digging and moleing, and Robert says he is a tremendous guy. Andrew, his dad and Brian Taylor helped Steve every day, rolling out the duct and soft-filling the trenches for him. They took duct right up to people's properties and fitted some of the house kits.

Robert sorted all the wayleaves. There was one landowner who was not keen, but once Robert had explained everything he changed his mind. There were issues further down the line where it was to join onto the Eco route, due to some poor reinstatement by someone else, in the early days, and a different route was located.

Government vouchers for business became available, which helped with financing the project, and one person put in a large amount of investment to kickstart the project.

Andrew says he took two weeks off work to help do the dig from the Eco route to their properties and it was done within that time. This is further proof, if proof were needed, that communications and paperwork take longer than the actual physical work.



Ronan Halstead and Robert Staveley - the core fusers from B4RN with the best ever views from the office.

The dig went from farm to farm, under the lanes with a mole, under the walls with Steve's digger. They mole ploughed where possible but hand-dug under drains and utilities.

Once they got the fibre through to Moor End farm, the Nether Kellet group took it to the village hall to bring it live. Once it came live the little community was changed onto the Nether Kellet cabinet, where they remain. In helping themselves, they also helped others. They had great satisfaction in their success, and Andrew's business remains in the same rural location and has not had to move away from the area.

(Special thanks to Andrew for the photos of the dig, uploaded in seconds).

John says they had a lot of fun doing the project and made lots of new friends. The core fusers had some idyllic places to work on the chambers. The new employees tackled both routes with professionalism and gusto. John also says the farmers were amazing and very supportive.

Nether Kellet laid over 17km of duct.

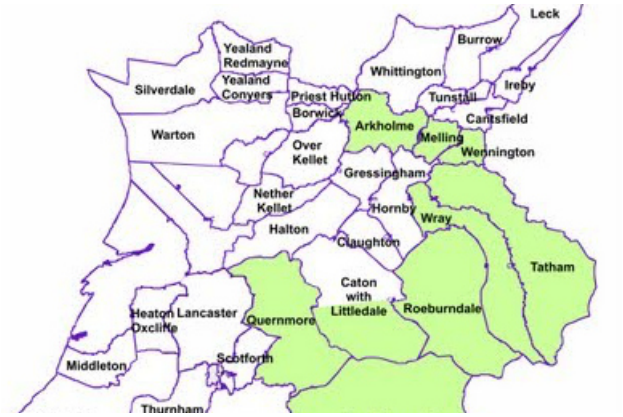
Chapter 9

Back to Phase 1 - Lowgill / Tatham Fells

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Phase 1.



The very first parish council B4RN chat, as Tatham Church.



Barry presenting at the Lowgill meeting.



Phil Stone from Lowgill digging at Quernmore.

Tatham

Tatham is one of the longest parishes in the country. From Wennington in the Lune Valley it wends its way right up into the rural uplands.

The people up at the top had terrible connectivity and some were paying exorbitant amounts for a very poor satellite service. Some of them could not even get a dial-up connection because a lot were on DACS, which splits a phone line into two. Those who could get dial-up found it failed more than it worked.

Phone lines were strung across masts and often broke in the winter, only to be left un-repaired for weeks, trailing in the hedges.

Some customers just put up with it as the price for rural living, but some were determined to get a connection for their businesses, especially the farmers, who needed it to comply with regulations. A trip to the local auctioneers to use their connection took up too much time in the day.

Lowgill had tried to join the WenNet wireless network in the Lune valley in 2004, but had no line of sight for a connection to work well.

After the village meeting many Adopters were recruited, and they worked their magic on the Apathetic ones, with only a few not getting inspired.

Beyond the book

The Tatham website

A volunteer from Thrushgill recalls:

The meeting in our area was terrific. The turnout was fantastic and Tatham Fells School's large classroom was full. No-one knew Barry Forde and no-one really knew what to expect, especially after the rumour mill had been grinding. What we got was a clear, professional presentation explaining the theory, the reality and the possibilities, backed up with maps and financial information. We were shown pieces of ducting and fibre optic cable. The whole scheme seemed to make unbelievably simple sense. A core route would be a priority, like a main artery, and as many spurs as necessary would come off it. There were some very sharp and knowledgeable questions from the floor, all fielded with technical info and efficiency. It looked as if this was a goer and as we all enjoyed tea and biscuits from the school kitchen, the positive vibes in the room were almost palpable.

There was much jargon to learn and various thicknesses of ducting to be matched to service and terrain. The core route is thick, orange ducting carrying a myriad of fibres, but when a spur is required to connect a hamlet, a thinner duct is necessary - and less costly to purchase. 16mm, 7mm, purple pre-populated, multicore... It was amazing just how quickly locals became experts and were able to share their knowledge with authority and confidence.

Volunteers began to find their niche and develop an aptitude for certain tasks. There is something for everyone to do, whatever their level of competence and or confidence. Many hands make light work is a simple truth.

I happened to be around on the morning of a blow near Abbeystead. It was a clear, fresh morning and several people had turned out to help. The ducting was safely in the ground and now the hi-tech bit of blowing the fibre through the duct was the job in hand. The fibre arrives on a big reel and can be grubby, so it is important to make sure it is squeaky-clean before it gets blown. The team had the high tech blowing thingy (please note, I have all the relevant technical terms at my fingertips), plenty of cloths to clean the cable and the huge reel on a reel trailer.The men of grit had done this before and had a practised method to minimise fuss and faffing. It is difficult to slot into a team, especially when the core team is established and I felt as if I was wandering about rather aimlessly, being a bit of a nuisance. Actually, it is the standing back, observing and talking to people that is most important. If you are happy to do that, even if you are feeling a bit surplus to requirements, then next time you will be au fait with the routine. The fibre had to be peeled off the reel steadily, so that there would be no snagging or stuttering as it was blown. There was a bit of a break as the blower was set up on a trestle table and the compressor was hauled into place. Rolling the cable off a reel is surprisingly hard work. (Note - very good for an upper body workout and completely free.) You have to keep the reel turning steadily so that the people in front can pass it through a cleaning cloth and on to the blower. There is a bit of a knack to keeping it running smoothly and not going too fast. If it goes too quickly a loop of cable can drop down beneath the reel and get tangled. If you miss a beat, it throws everyone out so it is a good plan to anticipate when you are getting tired and mention it well before you run out of steam. (No pressure then.) Also, it is best to wear gloves, as the edge of the reel can be a bit vicious and splintery.

The route planned by B4RN was inspected, and some farmers thought they would get it quicker if they came another way. Both ways depended on getting the core to Wray first, so they went and helped out on that route and learned the ropes.

Getting to Lowgill turned out to be a two-pronged attack with two routes for the core. This is ideal as it gives the cabinet more resilience, but is not often achieved in the early stages. The Lowgill folk did it.

One of the most remote farmers, Andrew, had been kept in the loop by his brother Robert, who was doing some digging for Abbeystead. They got the bit between their teeth, and got going on the route that was going through to Thrushgill from Wray.

Meanwhile the group in Millhouses via Wray, and Old Moor via Wennington did not want to be left out, nor did the Old Wennington people, who were on the Wennington route to Low Bentham, so they all got going too. At the Lowgill point in B4RN's history we still did not have a depot for supplies other than a farm, nor had we got many staff, but more were being taken on.

Old Moor Road project

This part of Tatham was on a route of its own out of Wennington. It did not join the Lowgill line. Tatham, being such a big parish, ended up being served by three different cabinets.

Jim Harrison from Old Moor Road met up with Wennington's Jim Murphy, and discussed how to get the feed up the Old Moor road, and back down to the Wennington cabinet.

Jim M's biggest problem was the main road crossing, but Jim H's problem was a railway, and the two could not join at the place they needed to.

One landowner would not give permission as she did not 'hold with that internet rubbish' and this meant many detours, but it saved crossing the railway which is always an impossible job (see the Wennington chapter for the details of the detour).

In the meantime the diggers were coming the other way to meet them from Wray (again, see the previous chapters).

Constructing a network core with duct means that different bits can be dug in when weather or crops permit.

Another issue is areas where wildlife have to be protected at certain times of the year, so on the ground coordination is essential. This is where local knowledge is such a blessing.

The Wennington farmer/contractor, Brian, had done a lot of the detour dig to start with, and the Old Moor tribe picked up the link from his last chamber near the Tatham Bridge Inn. Andy McClements took over the digging.

Wennington had given them a good start.



Volunteers from Old Moor road helping Alistair with the blow.





Andy McClements digging and volunteers help with backfilling..



Andy McClements gets his spade at the end of the digs.



The finished job to the Greenfold houses where Jim H lives.

Jim Harrison and his tribe joined in with the Wennington blowing and fleeting after learning what to do.

Jim had moved into the area a few years earlier and joined the WenNet wifi network. When the WenNet network started supporting B4RN, he and his neighbours got involved, and Jim set forth, knocking on doors to get registrations, wayleaves and finance.

He met with Carl Hunter (from B4RN and the WenNet project) and Bruce from B4RN and they advised him how to get the routes through to all the houses in his area.

Kay (Jim H's wife) John and Melinda Elder, and John Walker followed the digger and sieved the soil back into the trenches, and buried the duct. The indefatigable team of sod lifters/re-layers, hand diggers, and sifters on the OMR route were also Andy McCements' partner Julie, and Janet and Nick Cookson.

The photos show the dig approaching his house.

They had not got a mole plough so Andy dug it all. Jim's house is the one in the middle. The farmer in the house on the left had hosted the kit, and beamed the wifi signal to them from WenNet. He was more than happy to grant wayleaves.

The house on the right was a young family, and they joined in and helped with the digging because they really needed it too.

John Elder fitted a lot of the house kits and Jim says there was fantastic community spirit and support. He says B4RN has been a great service since then, and is a well-organised and helpful broadband provider.

All the volunteers turned out and helped Alistair and Bruce with the blowing and fleeting when the time came.



Millhouses.



Mike Winstanley helping with the Wray Blow.



In a darkened room.



Bronwen Osborne brings tea to the blowing team.

Millhouses

Mike Winstanley had been involved in the Wray/ WenNet network during the satellite trial, as his tiny hamlet of Millhouses had very poor internet, and no mobile signal. He wanted fibre for his community and was prepared to work to get it. He had been to Wray to volunteer to see how it was done, and had experience of fibre blows and what could go wrong if the duct was not laid properly.

A lot of his community were already shareholders, so he knew they would all be supportive. He attended lots of meetings at Bronwen Osborne's house where everyone in the area worked towards the same goal, getting B4RN to their community. This particular route through Millhouses was the one that would reach her patch. Bronwen kept them well supplied with tea when they got going.

Mike got the route plans off Barry, and immediately walked the routes to find they could not be done. He met up with all the farmers and they came up with much better routes, so he got the routes altered to where they knew they would work.

He got Keith Sykes to dig up from Wray to Millhouses as he knew all the farmers and what they wanted. They all took the service and were delighted with it.

Once they got to Millhouses Tony Swidenbank came and got it under the road. 'My 65th birthday was spent helping Tony Swidenbank get under the road in Millhouses. I did not have enough cable so had to go searching, eventually finishing up at Iain Robertson's at Lower Thrushgill where there were spares'.

All the people dug their own gardens, and Richard Wilson from Lowgill fitted a lot of the house kits for them.

The summer came and the land was dry, and he



Tony Swidenbank's directional drill rig at Millhouses.



The UU man keeping an eye on Clive Story.



Going through the fields between Millhouses and Ashleys.



Clive doing trench works.

used Kenny Hunter and the mole to take it up the hill to Ashleys, where the Lowgill team would pick it up.

He remembers trying to locate farm water mains.'I always knew where the Haweswater Aqueduct went, more of an issue was precisely where the privately laid water supply extension from Millhouses to Ashleys went. UU provided a plan!

'United Utilities just appeared as if by magic as we were approaching the aqueduct and advised us to hand-dig. They sent someone up to observe the next day and Dr Clive Story helped with the trenching'.

Clive was going to try to get B4RN to his community and was learning the ropes. The UU man stayed and watched as they went over the aqueduct to make sure no damage was done. They made great progress once they got back to mole ploughing, and one sunny day they were working at the top of the hill and the two nearest householders came out and said their electricity had gone off. They were near the pole, but had not cut anything, but they were held to blame. They investigated when they noticed an electric company van down the road, and it turned out a tree had fallen and broken the line, so they breathed a sigh of relief.

They had no trouble at all with wayleaves, apart from one field that was for sale, and they had to wait until the purchase (by a local farmer) was complete and then they got their wayleave.

Mike says the moleplough jobs were a lot easier than the digging ones and looked much better too. The Burrows brothers and Keith Sykes moled dry fields. Keith also dug when it was too wet to mole or where the farmer wanted a dig instead of a mole. Graham, Peter and James dug the track. Two different types of mole were used. The impact mole that Tommy had bought could smash or move rocks as it went, the drag mole was more for easy ground.

Pneumatic mole and a drag mole. Mike's photos from the Millhouses dig.



Nearly at the houses with Big Bertha, Tommy's mole plough.



A mole plough with a tractor.



Tommy's mole being put to good use.



A tractor mole plough.



A neat mole trench.



Kenny's mole worked well.



Tommy Hartley's mole plough in action.



Diggers are often needed to finish off trenches.





Hand digging under tree roots near the houses.

Once the ducting was in, Bruce came to blow the fibre. Volunteers from Lowgill helped with the blows and fleeting. Later in the summer the rest of the blows up the hill started, with many of the Lowgill tribe coming to help there too.

James Gorst, a local farmer, won a Lindsey spade for pulling the trailers out of boggy bits.

Mike always had his plans on site to estimate the length of fibre to fleet to the next bullet. His



Putting the sod back on.



The dig across the track to the houses.



Reeling the fibre into the blowing machine.



The fibre blow with Richard Turner on the reeler.



Mike consults his maps and notes for fibre lengths.



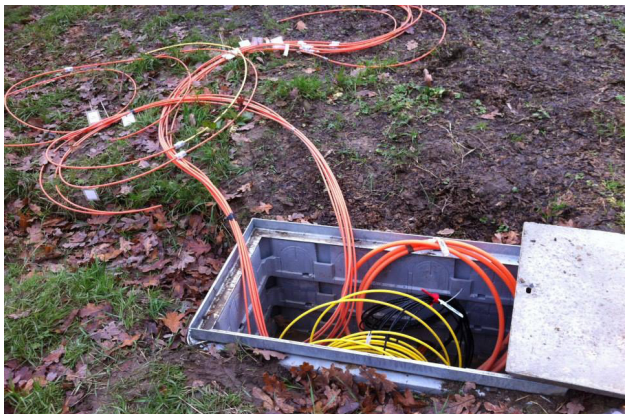
Graham catches the fibre. Mike's measurements worked.



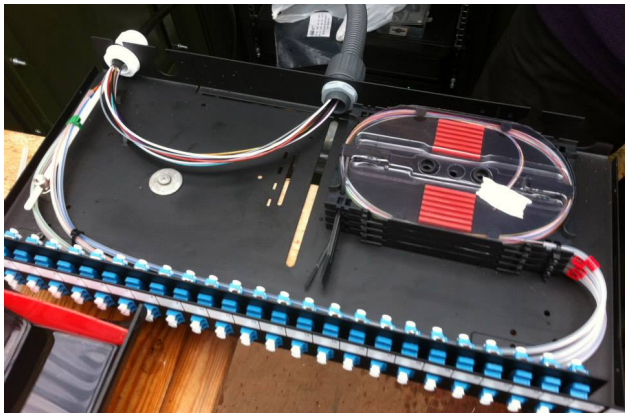
Alistair fusing a bullet in the trailer.



James Gorst and his spade award. He moved the trailers around.



20 metres of yellow fibre, and house ducts ready to blow.



The tray in the cabinet that will feed them is completed.

calculations must have been right, because Graham caught the fibre as it arrived at their houses.

The blowers then blew the house fibres to each property, with all the ducts labelled up ready for the fusers.

First of all one end of the core fibre had to be fused in the cabinet at Wray. Then the fusion team could come and join all the houses on in the bullets.

Alistair came to fuse the first bullet of the day, and as the day progressed he had to walk back to the road to his car and get the farmer to move the fusing trailer to the next site. Mike escorted him, bringing the brews and biscuits.

Meanwhile the route from Lowgill to Millhouses was arriving, and it joined up at Ashleys, and fibre was blown the other way, with all the volunteers out in force to help Bruce blow it, and leaving Alistair with a lot of bullets to fuse.

24km of duct had been used on this route.

At the same time the house fusers were visiting different areas and some volunteers learned how to do their own. Nigel and his wife did theirs. Others had a go at fusing too. The photo gallery showsVal doing hers, watched by Mike, and photographed by Nigel, and together they brought their Gig to Millhouses.

The first customer connected was Ray Burrow, which was great because his farming family owned most of the land leading to Millhouses, and his best computer scored 967Mbps. Mike was there when he tested it and can still remember the joy of the new route coming live.

Another group of people, at the other side of Millhouses, wanted to be connected, so the next summer Mike started the second part of the project. Paul Taylor at Parkside could not watch anything on YouTube, and neighbouring kids could not do their



Val's fancy teapot.



Millhouses junction.



Paul Parsons fusing on the moor with Richard Wolfendon helping.



Andrew Taylor digging for Bank End.

homework, and they were desperate. He encouraged his neighbours and some bought digging shares, and that enabled Mike to pay the diggers.

The route to Parkside was moled by Keith and his brother but from there to Moorhead and Russells it was done by Tom Hilton.

Mike says he really enjoyed meeting all the different people and getting to know them. There were never any days where he did not want to get out of bed and get stuck in.

Mike had taken his dig to Ashleys. Andrew and Robert Taylor had already started from there, and were getting into Lowgill village (19 houses), and to the church where the cabinet was situated. Fanning out from there it went to many farms, often digging miles for one property. Millhouses is fed from the Wray route, and Lowgill joined on to the network there. Lowgill had been given a good start.

The farmers were happy to dig, and were paid £1.50 a metre in what we called 'digging shares' to do it. There were very few issues with wayleaves in Millhouses, and they all helped each other.

Finally they were on top of the world amongst the heather, bringing a gigabit connection to properties without mains electric or piped water.

While the other Phase 1 groups had been busy, so had Lowgill itself. A lot of the main core routes were in, and their cabinet was ordered.

The volunteers' stories follow, they had a mighty tribe of determined people

About this time (2015), when the network was getting bigger and storage of supplies a problem, B4RN moved to new premises. As we started to get an income from connections, and more people bought shares or invested, we could afford to buy more stock at a time, to keep the costs down.

Millhouses fusing gallery



The fusing trailer at the far end of a field.



The farmer moves the trailer round to chambers.



Tea time at the trailer.



Mike and Alistair walk to the next chamber.



Fusing the houses.

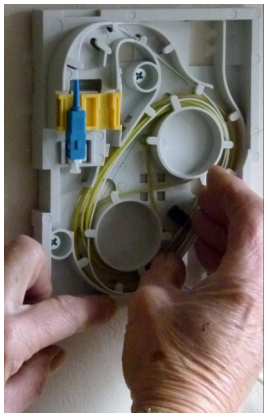


Val's fuse, fibres lined up nicely.



Val fusing her own fibre.





Wrapping a fused pigtail into the FTU (Fibre Transmission Unit).



Old Moor Road sign.


The beast of Lowgill.


The tracks of the beast.


Richard Wilson helping on a blowing day in Arkholme.

Lowgill

Lowgill are the only group who have used a 'beast' and if you are on Facebook you can view the video of 'The beast of Lowgill' . The Beast was a weird trencher, but it certainly did a good job. They could do half a kilometre in a day, it beats digging with a spade!

Geoff Higgin's background in his working life was building networks between computers. He recalls how awful the broadband was where they lived, and he attended several meetings, specifically the one in Hornby where a fledgling B4RN had challenged the NWDA's decision to give the government funding to the county council and BT Openreach.

They had more meetings at Edward Mason's house, and then a big one at the school organised by Bronwen for the parish council with Barry explaining it all and answering all the questions.

Bronwen 'woke them all up'. They had many meetings at her house.

Richard Wilson had been volunteering on other village projects and had a pretty good idea what to do. He was a great help when it came Lowgill way. He was always there at blowing time too, and helped the contractors fine-tune the routes. Blowing days are a lot faster if a local champion is there, they know how to get into fields, where to park, who the landowner is, etc. Richard was indispensable to Bruce and the team.

Kate Stone, Edward Wilson, Richard Wilson, Andrew Taylor and Geoff Higgin formed a team to take it all forward. They did not have a leader, they all just worked together and had regular meetings themselves 'in a darkened room'. Geoff was methodical, and that is why we have such a good photo archive.

A volunteer remembers:

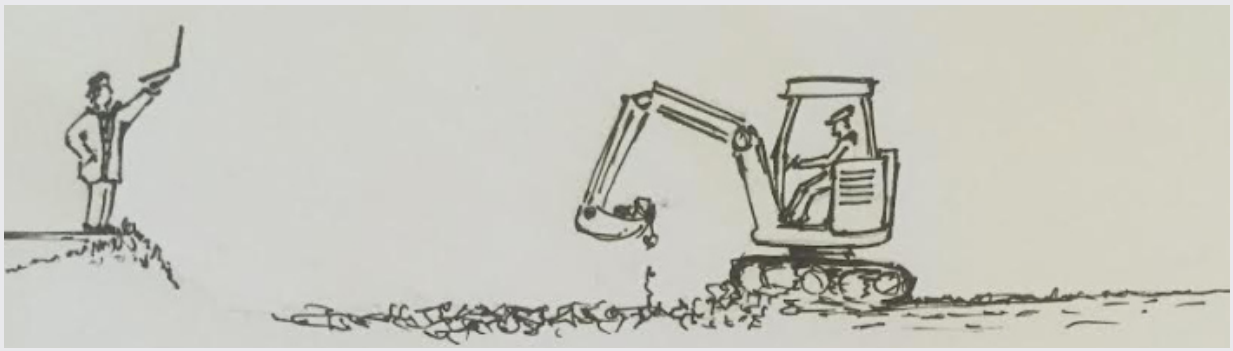


An awful lot depended on a few individuals who were committed and actually stumped up and bought cable, thus gambling their own money with no guarantee of return. Thank heaven, all angels, gods, tree sprites or whoever one feels must be thanked for the bravery and generosity of these people, as without them, B4RN would still be on the back of Barry's envelope having never seen the light of day.

It was a scary investment, particularly at the start of the decade when the financial crisis was still raw and money was not that easy to come by. In a bizarre way the fiscal climate was a plus. Nothing was happening, little building work was being undertaken, road repairs were pretty much non-existent, no one was daring to spend money, and that locked down mentality in some ways gave fertile ground for the seeds of B4RN to germinate.

It was blindingly obvious that no public body was going to help rural areas – not out of spite (which is sometimes how it appears) but simply because they jolly well didn't have the resources. Of course, any public investments should be made in well-populated areas thereby benefiting the most people possible. Us rural folk couldn't expect anything, as we were just a handful of people, whilst in the towns and cities any infrastructure upgrade would benefit hundreds, if not thousands of people.

That wasn't a message we could overlook and it was completely understandable, but it did create an attitude of 'get on and do it yourselves, 'cos no one else will'. So, entirely based on trust (and a well-researched, watertight blueprint) – stuff began to happen, and happen it did.



As things began to gather momentum, all the theorising and modelling began to become reality. Never mind digging trenches, there was a bit of pretty technical stuff that had to be learned and executed. Our volunteers, so filled with optimism and enthusiasm during the meetings and discussions, now had to get their wellies on and get out into the field.

Lots and lots of brilliant, visionary people had bought what we called 'Earlybird' shares that helped to get things going financially. £1,500 of shares promised you a free connection and the first year's service, but even if you'd pitched in with cash, it didn't mean that you were excused being in the field in the mud, and the rain and the wind.

As most of us know, farmers are a savvy, capable bunch, well-used to problem-solving and generally happy to share their knowledge and equipment for the greater good. So, when the men of grit appeared with the huge coils of cable and blowing machines, after the initial hilarity and 'it'll never work' banter, the overriding attitude was 'good on you for trying'. And with that in mind tractors and diggers and mole ploughs were made available along with detailed knowledge of the local terrain. It was, as they say, a huge learning curve.

Digging ducting into the ground is one thing, but it had to be done in a certain way. Big stones and rocks were to be avoided. Sharp grit and gravel was best kept away from the duct as if, a tractor was to drive over the land and compact the soil, we couldn't risk any likely stone damage, which could fracture or break the duct. A smooth run was vital, as any angled bends, steep drops or rises would make blowing the fibre almost impossible. Break out chambers had to be installed so that any problems could be isolated and fixed, without having to dig everything up again. All this (and these were just the basics) had to be learned on the hoof, without any training or former knowledge and without any equipment, other than garden spades.



During the weeks preceding Christmas 2014 it was common to see groups of people, well wrapped against the weather, beavering about with spades and ducting. Coils of orange cable peeped from behind walls and hedges all over the district and it was a joy to see the fantastic work in progress. People power got most properties connected in and around the village before the festive season kicked off.

Because of the importance of broadband almost everyone got on board and pitched in, from kids with froggy wellies to grandmas and granddads. Residents made time to get together, help, rekindle old friendships and forge new ones. Whether it was sharing a shovel or co-ordinating lifts to the bus stop, neighbours were working together and talking face to face.

This community cohesion seems like an ironic legacy of the fastest broadband system in the world, with its ability to access folk on the other side of the globe in seconds and chat to people that you'll probably never meet. But somehow it seems rather poetic – after all, the whole project has communication at its heart, whether near or far.



The core carries on round the back of the school room.



And there is time for tea.



Phil Stone setting the ducts into the chamber next to the plinth.



The finished plinth.

Geoff photographed all the routes for wayleaves.

He remembers a farmer who was not keen on the dig going through his patch. One day he was out for a walk and the farmer was doing some hedging so Geoff stopped to chat. He admired the good laying of the hedge, and nattered for a bit, then Geoff mentioned that it would be great to go through the field, so they could get the broadband into the village, and the farmer was happy to give wayleaves.

Once the main core duct was dug in to Lowgill, it was time for the hub to be built. So at the Old School, the families took over to build the plinth for the cabinet to sit on.

It all got done, and the cabinet arrived.

It was now time for the blowing to start. The dig via Millhouses was the first to reach Lowgill cabinet. The route fibre was already at Millhouses, so the blow started back down from the cabinet to meet it,



And time to scowl at the photographer.



The cabinet arrives.



20 metres of fibre in each chamber.



The fibre blow down to Millhouses from White Pits Lane.



Helen Wilkinson and Carole Butcher, fibre queens with spades in hats.



Bronwen Osborne catches the sponge at the cabinet.

with many fleets on the way. Some portions were blown up, some were blown down, with 20 metres left in each chamber to join them together.

Phil and Carol and the other volunteers carried on helping to blow the fibre, cleaning the fibre as it left the fleet or the reel, to go into the blower. In those days the fibre was stored outside at a farm, so it was muddy. It had to be clean to go in the ducts, so it went through towels and rags in the hands of the volunteers.

Bronwen had the honour of catching the first sponges prior to the fibre arriving. She had been at the very first parish council meeting in 2011, and inspired many people to join in the project.

Now the cabinet is in, the route from Wray via Thrushgill can join on too, and other routes going out of the area are getting completed by the teams. The fibre finally arrived at Lowgill after Bronwen caught her sponge.



Carole Butcher and Phil Stone cleaning the fibre.



The fibre being blown from the cabinet to new routes.



The fibre blow from White Pits hits a blockage. Find it.



Carole and Helen did very tidy fleets.



The belts on the blowing machine playing up. Bruce fettling.



A fibre blow from the cabinet to Sea View and Botton Head.



Bruce and Richard Wilson turning a fleet.



Edward Mason and Bruce turning a fleet.



Making sure it is all tidy after the duct has gone through.



Finishing touches to the plinth.



The Lowgill families dug the duct round the school rooms.



Bruce Alexander, aka Bruce the Blow.



Andrew Taylor digging from Bank End Farm to the core route.



A spade for Andrew and one for Bank End.

Once the fusing was done the cabinet came live. This project set off other areas out of Phase 1, and Keasden and Clapham took up the challenge. (See their own chapters). From Lowgill the fibre feeds all the remote farms on the fells, and then the core carries on to further villages. Geoff got many wayleaves sorted, and took photos of all the routes they dug, mostly very long routes.

He said he thought a lot of the farmers dug for shares, but had not been involved in the finances. He remembers some very long digs out to remote farms and houses. He helped out on many, and says the householders did their bits.

Bank End dig for Ted Lester was a good example. Andrew Taylor from Botton Head is in the photos, doing the digging. Ted's house has no mains water or electricity.

His four sons were at secondary school and they really struggled on the satellite for homework. They had no phone or mobile signal and they missed out on the social life as they only got their weekend texts on the school bus on a Monday morning. Teachers would not believe they could not download their homework and they got detentions. Ted was a software specialist and had to rent some space in a town to upload his work.

Once he got B4RN in he could easily work from home and his company saved a lot of money. Ted and Andrew dug Ted's connection in from the nearest chamber to his farm, about a kilometre away.

Phil Stone and Richard Wilson did most of the house installs where the householders could not do it themselves. Phil had learned a lot from volunteering in Quernmore, and Richard Wilson had volunteered at Arkholme.

They all thought it was a bit like Grand Designs and they would 'have it all done by Christmas'.

Lowgill photo gallery, most photos by Geoff.



Mighty long digs to reach the village.



Rough dig avoiding productive land.



Rough dig.



Finished trench.



Sub-ducted ducts under walls and fences.



Many hands.



Finished job.



Trench ready for duct.



Farmers got the fusing trailer into fields.



Home made reel stand.



Mole ploughing.



Laying duct out over the fields.



Laying out the duct.



Pulling the right length of duct off the reel.



Group dig.



Hole for the mole.



Tommy's mole gets through.



Mole trench.



Carole Butcher and Helen Wilkinson.

They designed and welded their own reel holder to facilitate reeling out the multiple strands of the duct for the trenches. For the larger reels they used scaffolding. The community volunteers helped get it laid out ready for the diggers, and then helped backfill the trenches.

When they came to a road they called out Tommy Hartley, with his mole. They made a hole each side for him and he got under the road and sub-ducted it for them, so they just had to push the duct through.

Eventually they got all the duct in, and Bruce arrived to blow their fibre and connect them all up to their chamber. Then the core team arrived to connect their chamber to the cabinet at the Old School. Not all the blows went well. Blockages are a fact of life, but after much debate and scratching they get fixed.

Belts wearing out on the blowing machine are another issue.

Some extremely long blows were involved in Tatham Fells, but Tommy was always available to help Bruce fix things.

The farmers were all supportive, and often helped get the B4RN trailers on site in bad weather.

Once the core was in, Bruce blew all the house fibres ready for the fusers.

Geoff says he missed the best bit of all as he had not got a camera with him, and it was priceless. The first big blow brought out the ladies with tea towels to clean the fibre. New to the game, Carole turned up in pristine gear, just like Margo in The Good Life. He wishes he had that photo! Carole and Helen were part of the Lowgill team and were awarded the silver spades for their efforts in getting the fibre to their village - and another volunteer got the photo of her.

We also got a photo of their tidy fleets, and one on the coldest wettest days of the year, where they were



Phil Stone gets his MBE spade award.



Richard Turner tidying up the chamber.



A tidy chamber.



Fusing the fibre at Ivah.

again present with their tea towels. Phil also got his spade award, and has carried on over the years in the Computer Club, helping people with battery backups, and extending wifi in their homes.

Richard Turner helped on many of the digs and blows to get to Lowgill, and then the route carried on to his house, and Geoff's, at Ivah.

Bruce came to blow the fibre and then the bullet was done to bring their cluster of properties online. The route carried on to connect even more. The photos show a long day's work, where the fusing was done and finished as the sun set.

The route from Thrushgill to Lowgill was also completed at this time, in the most awful conditions.



Ivah's bullet being fused.



Close of play on fusing day.



So near now.



Alistair Iain and Judy blowing fibre approaching Thrushgill.



A Thrushgill fleet.



Walter and Fibre (the dog) catching sponges.

Walter

By a fan

Another great help in our Lowgill project was Walter Willcox. RIP.

Although not a spring chicken, Walter thought nothing of hammering up the motorway to attend early meetings and discussion groups. His enthusiasm was infectious and his knowledge invaluable. As the project developed 'Walter from Surrey' became a well-known figure and he very quickly got to know all our twisty lanes and gated shortcuts.

Leaving his wife Jo at home in Surrey and neglecting his duties as a grandfather, Walter would arrive with his car stuffed to the gunwales with useful equipment and pitch camp for a week or so. His boundless energy put younger folk to shame. Not content to simply relax after the horrors of M6 he would begin his networking straight away to discover which B4RN area most needed his help the following day. After a good, hearty breakfast he'd be off into the fells with his wellies and foul weather gear at the ready. He was happy to dig, problem solve, trouble shoot, deliver kit, in fact anything that needed doing – at full speed until the light began to fade in the evening. Then he went back to the B&B for supper, a glass of wine and on with the evening tasks of letter writing, communicating and devising solutions for the problems the day has delivered.

Just as a side note, Walter then designed and built his own network, B4SH, which is still run by volunteers in the Surrey Hills. He was B4RN's first shareholder, and also held the millionth share. See chapter 1 for more of his escapades in B4RNland.



Walter and Iain got the fibre to Thrushgill and then through to Lowgill. They blew the smaller fibre to houses, and installed the equipment in them. Iain and Alistair then fused and patched the fibres and everyone rejoiced. After years of satellite and dial-up they joined the high speed digital world.

Richard Wilson had originally come to the Wray/WenNet group in around 2006 to see if he could get a wireless connection up to Lowgill.

When B4RN first started he was one of the first supporters and shareholders, and despite what he says below, we know how much time, effort and enthusiasm he gave to us all.

Richard recalls

Until this trawl through the archives (my diaries) I had not really appreciated how much time I put into B4RN in 2014 and 2015. I know many other Tatham residents were equally, if not more, committed to the project. The best thing about it was the sense of shared community purpose that it created; B4RN brought together people – even neighbours - who might otherwise never have met. I made many friends, and felt by the end that I had met nearly everyone in Tatham!

A Case Study

Securing wayleaves was the biggest headache. The difficulties were compounded by B4RN's newness, which prompted scepticism about its chances of success; to be honest, even I was doubtful, until December 2013.

There was also a widespread lack of appreciation of the future importance of a fibre connection, and a feeling amongst many householders that they were happy with what they had got from BT, so why change? Several landowners questioned why they should let their land be dug up if they themselves did not need or want B4RN. As a result, the desk-study route-maps, with which route-walkers were initially provided, underwent some major and often inconvenient changes.

This is best illustrated by Property M, which should have been an easy dig from the core route, in fields beside a road. This option was blocked by an uncooperative landowner, so the route junction was moved back down the core route, and a less direct line fixed, taking in a few properties in a reversal of the original plan for connecting them. Whilst this change solved the problem of getting to Fourstones – later to become the gateway to the Clapham project – the obvious way to Property M was blocked by another intransigent landowner, at Property F. A road crossing might have got round the impasse, but this route was blocked by yet another refusal, over a mere 20 yards of sheep pasture!

Back to the drawing board, and the only remaining option was to get there from well beyond Property M - a chamber nearer the far end of the route to Fourstones. This new strategy required a road crossing. We knew there was a culvert there although we could not use it. Its upper end was in a morass, easily located; the other end, in land owned by property M, took me two days to locate and expose. But we now knew where it was, so it could be avoided when we made the road crossing.

The fun did not stop there. There was enough 7mm to cross the road but it did not go much beyond, so I needed two 400m lengths to reach the buildings, and confirmed that it could be taken from a reel sitting in a barn at a nearby farm; as it was so close, I decided to transport it on foot. I reeled out the two lengths in a straight line up the public footpath from the farm towards Property M. Just as I finished the second length I realised that the farmer, who had not been within hailing distance when I started, had arrived. Not realising I was still there, he moved the reel end of the lengths of duct 'out of harm's way' (his tractor), creating a big pile of orange spaghetti.

After an hour of disentangling, I set off up the footpath, dragging the duct behind me. The path goes through Property F, whose owner spotted me. Unfortunately this owner was, for reasons unrelated to my interpersonal skills, ferociously anti-B4RN. On seeing the 400m of duct trailing behind me, he tried to prevent my passage. I explained that footpath law allows users to take with them anything that is a "reasonable accompaniment", and that furthermore, as it was necessary for my work, the duct was a reasonable accompaniment. I was allowed to proceed, and the duct was then laid out, ready for digging in by Robert Taylor.

Days later, we learned that the culvert (blocked, hence the morass) was about to be replaced by Lancashire Highways. When the workmen arrived I went along to beg them to avoid damaging the nearby duct ends on either side of the road, explaining how much the frail, elderly occupants of Property M needed B4RN to keep them connected and safe. Expecting a 'not my problem' reply, I was flabbergasted when they volunteered to install a small pipe next to the new culvert specially for the duct, thus saving B4RN the cost of a road crossing.



At last a happy ending!

But the tale has one final twist. Two years later, Property F was sold, and the new owner promptly signed up for a B4RN connection.



Iain using his portable stile sign.

Iain Robertson

By a fan

Tapping into the zeitgeist of iPhone, iPad, and iTunes, iRobertson could be construed as quite a cool name. However, known throughout B4RN simply as Iain, he saw the fantastic potential of fibre and was completely hooked before the end of the initial meeting in Lowgill. As fairly recent residents in our parish, Iain and his wife Judy took up the cause and waded in where others may well have feared to tread. Unencumbered by too much local knowledge and politics, their 'can do' attitude was both refreshing and infectious.

At that point Iain and Judy were semi-retired with far too much energy to rest on their laurels. An accomplished carpenter and furniture designer, Iain was used to problem-solving. It was not unusual for customers to present him with a squiffy, unworkable sketch on a bit of scruffy paper and expect him to magic a sideboard or cupboard out of wood – which with a lot of thought and skill he would do. So, 'can't' was not a word in his vocabulary. In fact, the very mention of can't made him more determined to succeed. B4RN was a challenge and a worthwhile one at that.

Straight after our inaugural meeting at Tatham Fell School Iain was on the phone asking how, where and when? The concept of Do It Yourself was top of the list. There was no tried and tested formula and we were all on a steep learning curve. Everyone had to discover for themselves a way of getting fibre to their area and making it happen. So, with little to go on Iain and Judy got on. This learning process was occurring in other areas at the same time, but early in 2011 Wray and its environs were the largest areas that needed coverage.

The tea and coloured pencil phase came and went – championed by Iain, with Judy and Millie the terrier offering stalwart support. There was much tramping across fells, knocking on the doors of remote farmhouses and trying not to be a nuisance but at the same time talking to people and getting them on board. Wayleaves were vital and needed sanctioning. Iain became a bit of a secret weapon. Used to dealing with woodworkers and talking to people but not a well-known face in the parish, he developed a neat way of approaching anti-B4RN folk and winning them round. Some people had dug their heels in and said a flat 'No!' to letting fibre cross their land, but after a candid chat with Iain lots of



Iain with his portable canopy and B4RN banner.



Iain and Judy collecting duct.

landowners caught his enthusiasm.

Once the digging began Iain took on the job of logistics. Ducting needed to be taken hither and yon as most of it was delivered straight to a farm at Wray, where there was enough space to store it. There were not many days when Iain was not to be seen towing the reel trailer loaded with varying sizes of orange ducting, with Judy riding shotgun. Initially it was a bit frustrating as there was not a lot of cohesion and the parishes that had taken off were all digging at the same time, so there were an awful lot of miles to be covered, from Dolphinholme to Wennington. Nobody wanted to wait and nobody wanted anybody to have to wait as capturing the wave of volunteer enthusiasm was vital, and if people lost impetus it would be really tough to regenerate it.

I discovered a reel trailer is a splendid thing and a wonderfully practical bit of engineering. It has clever hydraulics operated by a handle at the front so that no one has to lift a reel or shove it about too much. If you are clever, you can put two reels side by side – and reels can be of varying sizes, you just have to jack up the hydraulics to accommodate the biggest one. Ducting was supplied to all who needed it and Iain's mobile was seldom quiet. Now he probably knows the local lanes and short cuts better than most natives and certainly much better than me, but then, I've only been here for 27 years.

Splicing was the next duty on the list. There was an expensive qualification that could be attained involving lots of paperwork and study, but, at retirement age Iain didn't want to go back to school, he just wanted to get on with the job in hand. So, teach- yourself-splicing was the order of the day. It was around this time that Alistair came on board with B4RN, (Alistair's story is in Chapter 1–Ed).

Splicing fibre is a high-tech job and is exactly what the name suggests – but fibres are pretty much the width of a human hair so it wasn't a case of twirling a bit of wire together and adding insulating tape. It involves a scientific screen, important kit and loads of patience. Not an easy task when the wind is blowing and the rain is dripping down your neck, often at the same time. As mentioned, hedges, boot lids and windbreaks were employed to attempt to dodge the elements but Iain quickly realised that something more substantial was needed and so designed a special tent that hooked onto the back of a vehicle for stability.



Todds tent.

Todds the Saddlers of Kendal were pressed into service and a durable, square tent was commissioned. The bespoke tent made an enormous difference and felt like huge progress



The Todds tent in action.

at the time, but there was still the problem of iced feet on soggy or frozen ground and of keeping the high tech splicing gear squeaky clean and safe from mud. As more digging and blowing was accomplished, more and more splicing became necessary and the task at some points became almost overwhelming.

In November 2013, after a lot of behind-the-scenes work, filling in of forms and jumping through ever-decreasing hoops, B4RN was given the use of a top of the range Freelander by the Prince's Trust. This was a terrific bonus. Not only was it an endorsement of our extraordinary commitment and achievement, but it was also probably one of the most practical boosts we could have hoped for.

We'd got to the stage where people were risking damage to their own vehicles by taking them to the fields in a determined effort to get the job done. My 1962 Series II Land Rover was pressed into service and for a few weeks was very helpful - but also rather amusing and a bit distracting. Towing with a 50+ year old vehicle to do a day's work is not everyone's idea of a good time and the rattley-bang ride and lack of power steering quickly wore a bit thin. So, when the shiny and magnificent chariot arrived, it was nothing short of a treat.

B4RN was to have use of a vehicle for a year, but due to an administrative muddle we actually had it for almost 15 months. The first one arrived all clean and sparkly with the aura of a Chelsea Tractor – surely something so posh couldn't be that practical? But Iain quickly modified its space and fitted it with purpose built drawers and easy access stuff so that everything was neatly to hand in the field. Life became a bit simpler. Trailers were easier to hitch using built-in snazzy cameras, and beep-beep things and power steering made the need for the shoulders of a navvy unnecessary. Almost immediately everyone wondered exactly how we'd managed without it at all. The Todds Tent fitted neatly on the back and way-hay – job's a good'un.

But, Maslow's Hierarchy of Needs and all that. Very quickly something better became the must-have piece of equipment. The tent was splendid but there was still the cold, wet, slippery ground to contend with. No one really felt like dying in the attempt to get us a proper, reliable internet service and things were still staffed solely by volunteers – who deserved to be looked after. A weatherproof something was needed to enable all-weather splicing and to keep all the kit in one place and make it accessible at all times. It was just another little problem that needed to be solved, ideally without spending any money. Every penny raised and donated by the community was going to fund ducting and fibre – thrift of the highest order was imperative.

There was a bit of subterfuge around the acquisition of the next bit of kit - much below-the-radar research and costings so that any questions could be answered with the minimum of fuss. And what



Iain with the new trailer and the Prince's Trust Freelander.

joy, when early in 2014 a smart trailer materialised on the yard with a non-slip ramp and/or doors at the back and a door at the front. Iain calmly customised it and fitted it out with drawers, benches, a generator, lights and a kettle, not to mention spades, shovels, ropes and all the sort of stuff needed in the field. Everything was designed to be portable and not shuggle around during journeys. It meant that the whole splicing caboodle could be easily transported to the required spot, set up and sorted.

It made a fantastic difference to the progress of B4RN. The weather was no longer a key factor and even on the shortest of winter days work could go on until at least five o'clock. Sometimes it went on for much longer but, enthusiasm apart, it had to be remembered that most volunteers had loved ones to return to and nobody wanted to create B4RN orphans or widows.

Iain and Alistair made a good team from the start. Both are utterly dependable and in possession of a dogged, can-do ethos; 'I've started, so I'll finish'. They could work steadily together without getting side tracked–completely focussed on the job in hand–and in this manner the splicing was achieved.

Looking back, it was a monumental effort, as in the early days they were the only people doing it, and if blowing went well, it could create a huge amount of work to keep on top of. Lesser mortals could well have been daunted, but the lion's share of core splicing now fell to Iain and Alistair.

It was a long time before Iain and Judy actually got a B4RN connection at Thrushgill, as the route was very tough and the weather rather unhelpful. But, at no time was their enthusiasm dampened and although they were pretty much at the end of the line, it never prevented them from soldiering on in other areas, ensuring that the network expanded as swiftly as people wanted.

The Prince's Trust chariot retired to the yard every night with the beautiful new splicing trailer behind it and Iain maintained and looked after it at weekends, adapting glitches and solving any problems encountered in the field. The rig was also washed and tidied regularly. When the Freelander was eventually returned, despite its rough duties and serious off-roading, it was still an asset to the Trust.



Alistair and Iain fusing in the new trailer.



Alistair and Iain fusing in the new trailer in Quernmore.



Alistair and Iain fusing in the new trailer. With tea.



Iain showing John Doyle at the showtell day how small a fibre is.



Iain and Bruce getting the duct into a bullet at close of day.



Fourstones area, where Keasden would take up the baton.

Iain was one of the first volunteers to accept a position as a staff member, he was a valuable asset that could not be lost. He made all the fusing tables we use, the bullet holders and the fleeting table. His woodworking skills were amazing. He trained other new engineers how to fuse and assemble the enclosures (bullets).

He retired in June 2020, and we made a film about him. You will see him on many photos throughout this book. We made him a little film, the link is in the blue box below.

Iain was also responsible for getting the dig through from Wray to Thrushgill, and onwards to Lowgill, designing a wonderful method for getting across the mill stream. It consisted of strong pipe and cages of stones. An engineering miracle.

Iain negotiated wayleaves with all the farmers on the way, and advised them how to dig the duct to their farms, and he delivered the supplies they needed. The first half of the digging and blowing process had been in the summer months, then there was a lull while issues were sorted, so the final fibre blows to Thrushgill were in January 2015, the depths of winter, but nothing stopped them doing it. From Thrushgill it went over the valley and joined Lowgill, making two lines into the village and connecting homes and farms on the way, giving the village its resilience.

From Lowgill cabinet another route went to the end of the parish at Fourstones, where the Keasden tribe were to pick up the route that would eventually end up in Rathmell, via many villages in between.

Lowgill dug over 28 km of trenches.

Beyond the book

Iain's film

The beast of Lowgill



We meet Paul as a volunteer at Yealand Conyers on a blowing day.



Paul reeling the fibre at Caton.



Paul's first experience with an enclosure (bullet), with Bruce.



Paul on the mammoth blow to Leck Fell House.

Paul Parsons

Like Iain, Alistair and others, Paul appears in quite a lot of the chapters, so here is his story.

Paul drove a forklift at a local company whilst a student at university. He kept the job on when he left uni, as he had not found anything else. Then he volunteered for B4RN. He started on a big blow day at Yealand Conyers and was Very Useful. Despite wearing gloves he got blisters but he really enjoyed himself.

This photo was a major blister day as he was the reeler on a mammoth blow to the new Caton cabinet.

Before long he had been recruited to the blowing team by Bruce, and the photo shows him halfway up Leck Fell blowing the fibre to our remotest farm. He was the second engineer to be taken on as staff after Alistair.

But the fusers also had their eyes on him and they got him. They showed him how the process worked and he was a natural. He was what Iain called dextrous.

For the next couple of years Paul smashed his way through many hills and dales fusing the bullets, often working on his own and then training more youngsters.

He would not go home until the job was done, and the youngsters had to stay and learn.

Paul and Alistair fused the cores as soon as they were blown. They sort-of got into a competition with each other as to who could do the neatest bullet in the most professional way, and set the standard for others to follow.

More youngsters were recruited and trained by them. Many are still with us and have their own teams now. They are all certified by Lucid training



Night shift to bring Killington live.



Fusing at Borwick.



The first bullet Paul did on his own.



Fusing at Killington.

and have good careers with us or within the industry.

This photo (left) is when he was bringing a very remote group of properties live at Killington, watched by the local volunteers.

Paul was also interested in the network side of things as much as the practical side, and he ended up working with the B4RN NOC (network operations centre) and guiding the data through the myriad of wet strings that is the internet.

He was eventually headhunted to join a much larger telecoms company and he moved on with his career. We are very proud to have assisted him in reaching such a high skill level while he was with us.

We made him a little film too.

Beyond the book

Paul's film



Paul's first day volunteering at Borwick.

A few memories of the origin of B4RN from a Tatham farmer and parish councillor.

By Andrew Taylor

Botton Head had a long distance phone line from BT that frequently caused problems, sound familiar?

Tatham Fells school 2 miles down the valley had a CLEO wireless connection that cost the school £3000 per year, so I knew better things were possible if enough money was available. A thing called the internet became available to some; it looked like the future, but not on our phone lines. You could get a 52-bit connection on a very good day, almost good enough for an email.

We tried a dongle from Vodafone. This was was not much better and completely cut out in school holidays due to congestion.

Then we started looking at the wireless system in Wray and Wennington with a view to doing something similar in the Hindburn valley above Lowgill, and trying to get support and funding, I was tasked with this but as 'nothing was happening' someone else would try, with the same result. Chris Conder, who was my contact with this, commented that no-one is going to help us, and we would have to do it ourselves. Shortly after this she was having a go at laying duct and fibre just to see how difficult it was. Her success with this somehow led to a call asking if a fibre network could be built, and did I think Lowgill would be interested. As if I needed asking!, but it led into discussions of funding from the community. The project was going to be a leap of faith with the dig starting in Quernmore, 18 miles away by road, a few miles shorter cutting a few corners.

Meanwhile we had acquired a satellite dish. This was far better with a possible 8Mbps download 0.5Mbps up with limited data. The first dish cost £750 which became obsolete so we had to buy another. To be fair this dish did give us the means to be connected with the outside world and most importantly with the community, sending a message and not having to wait for someone to answer the phone.

Taylor Environmental Groundworks (TEG) were involved at an early stage in Quernmore and Littledale, Robert doing quite a bit on his own, when one remarkable young chap fresh out of university came to help in Abbeystead, I think for something to do. One particularly wild wet morning Robert was expecting to have to jump out his digger cab and lay the duct himself, but Alistair appeared in the trench and just got on with it. The duct was heading for Wray, and with Botton and Tatham looking more likely, it inspired us to be digging up here with Wray 3 being my preferred route as it had to come by Higher Broadwood. Robert was also featured in the Xtreme dig over Roeburndale. (See chapter 1)

More funding was needed so another round was put in motion; we could not go too soon as some were questioning if it would ever happen. So with a large amount of digging for shares and loans we managed to the bury the duct round the top of the valley back towards Lowgill to meet the teams digging the Wray to Lowgill route at Ivah. TEG were also involved in some of this with volunteers all the way. It was a bit of a tussle getting duct out of Chris, 'that's for Dolphinholme, etc'.

All landowners that could see the community benefit were keen to donate wayleaves. There are still a handful of the 200-plus properties in Tatham without a B4RN connection. But we can proudly say we built and paid for it ourselves, with a bit of assistance with some technical stuff and a donation towards advertising from Forest of Bowland Area of Outstanding Natural Beauty (National Landscape).

We didn't get involved with the Arkholme cabinet digs but one comment about Silverdale had me wondering why they were digging so far away from the planned area. I had a measure and discovered Silverdale is 3 miles nearer to Arkholme and slightly nearer by road to Quernmore than we are.

There was an attitude of 'How can we help, can I start digging towards you, would you like a cup of tea? latterly it seemed more of 'When are you coming to me, why am I not connected yet...?'

In many cases B4RN has been a life saver; work from home during the pandemic lockdowns was possible, communication with distant relatives can be achieved at very little cost. The only downside to B4RN is power outage, but with a bit of planning that too can be overcome.

The next project is to sort out mobile phone signal availability. It will come at a cost, but with a fibre connection and some remote power (sun or wind) batteries, it should be possible.



Andrew and Robert Taylor.

None of this would have been possible without the knowledge and remarkably accurate costing of the project at the beginning.



Taylor Environmental Groundworks (TEG) completing the dig to Abbeystead.

Beyond the book

Extreme diggers

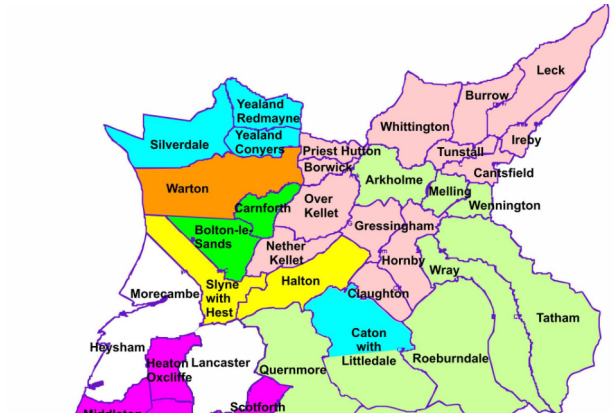
Chapter 10

Arkholme to Lyth Valley

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The Newton business. Centre.



The Newton dig from the business centre to the core.



Ted and his family digging down the field.

Start point, Arkholme

This project is a big branch on the B4RN tree. The branch started off as a small cluster of farmers and businesses wanting a connection. They were in the Whittington parish, but they persuaded Barry to let them join the feed that would come from The Arkholme parish in Phase 1. This also meant that Whittington would get a lot of their core duct put in for them.

The way they managed the Docker and Newton route was to finance all the dig themselves, using their own manpower and equipment. This meant they only had to find investment for materials. This was similar to how Arkholme had done theirs, but Arkholme had invested in digging shares and hired a contractor. It was a case of JFDI in those early days.

Whittington then joined on as part of Phase 2, and then it went right off the plan as other villages saw what they had done and decided that they wanted to do it too.

The branch started to get bigger and stronger, and over the next 10 years this chapter sees it grow many more branches and dig in hundreds of kilometres of trenches. We will see new cabinets, new communities, loss of the EIS (Enterprise Investment Scheme), the start of voucher schemes, and many more stories from people of grit.

Docker and Newton

Pat, who brought us tea every day as we worked in Arkholme, had asked to be connected, but she had been told that Docker was not in phase 1. This did not stop them, or the estate at Newton from achieving their goals. They ended up being 'shoehorned' in from the Arkholme cabinet.

Newton estate had several farms and business units that were on a long and often faulty phone connection which severely impacted them, so the



Two tractors pulling the drag mole plough.



Fleeting the fibre to get back to Arkholme.



Rob Staveley and Richard Wilson volunteering on the blow.



Phil Wring catches the sponge from Newton.

owner put a lot of time and money into getting the core to Newton. That meant Docker could come off that core too.

The farmers worked for digging shares, and local people invested. In 2013, EIS was still available on shares, and that helped.

Ted was the estate gamekeeper, and Malcolm one of the farmers, and they dug or moled all the routes from Arkholme to Newton. At one point they used two tractors to drag the moleplough.

Edward, the estate owner, invested, and encouraged other parishioners to do so too, if they could,. Together they managed to raise enough to bring the fibre to their community.

Volunteers from Wray turned out to help Chris Hall and Tommy Hartley, with the massive 4km blow of 144f from Arkholme to Newton. Volunteers from Tatham came to learn the ropes, it would be their turn soon.

Phil Wring, from Wray, caught the sponge at the Arkholme cabinet.

Immediately the Docker farmers started digging too. Philip Ward and Stuart Close, two of the local farmers, dug it all through Docker to Keerside where the Blades family took over. From this branch it would eventually lead to Capernwray and Westwards. (see Chapter 8)

There were a few tech-savvy families on the route through Docker, and many turned out to help the farmers get the duct in the trenches. Some had helped at Arkholme so they knew how to do it.

Phil Haygarth and Steve Duxbury were often in the trenches helping the farmers.

Chris Hall was the main blower at the time, and he and Tommy got Bruce Alexander, from Quernmore, hooked on the job. Chris also learned to fuse, and



Steve Duxbury and Stuart Close at the start of the dig, which is why they looked so clean.



Families turning out to help lay the duct.



Chris Hall blowing house fibres at Docker.



Chris Hall and Iain Robertson fusing the Newton bullet.

assisted Iain Robertson, from Thrushgill, in many of the bullets too. Two hands are always better than one.

At this point in time B4RN did not employ any staff. All the work was done either for free by volunteers, or for shares in their company.

The first customer at Newton came live in June 2013, followed by the Docker and Keerside groups as the route progressed.

Pat managed to get a live service at her farm two weeks before BT stopped providing her dial up service. She was never able to get 'broadband' through the phone. As with many farmers, her lines were too long. John Popham, a famous digital connectivity campaigner, came to film Pat showing it off. (Click the blue box to see it and listen to the sound of dial-up once more).

Pat and Stuart (who was on the parish council) were asked how they had managed it, and before long, were helping and advising the next village how to do it.

As these parishes were not in the phase 1 plan, it reinforced the theory that herding cats was one metaphor, but that the Lord helps those who help themselves is a better one. Other villages soon got the idea. B4RN had to do more cat-herding as demand grew due to the initiative of the communities.

The Newton Business Centre attracted attention from BBC Breakfast with the 1000th fuse by Prince Charles. The video is linked in the blue box.

Beyond the Book

John Popham's video

Newton Business Centre



The Whittington Lindsey spade on the signpost.

Whittington

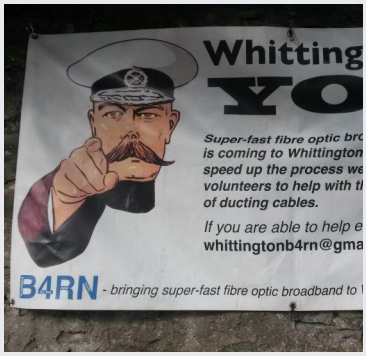
The next village to Newton asked if they could join on. They were all in the same parish after all, and if B4RN had let the others on then why not them too? Pat and Stuart helped them get started.

Jeff recalls, 'Whittington's B4RN project started in 2014 when village residents were to asked if they wanted to join the expanding B4RN network which had at that time arrived at Newton, the next village along the Lune Valley. The initial response was not wildly enthusiastic; although existing broadband provision in the village was barely adequate, villagers had been persuaded by British Telecom that their installation of superfast broadband was "imminent".

'The majority of residents were hesitant about putting their trust in a small, relatively new, "maverick" outfit; they were also uncertain about the fact that the B4RN scheme would depend on local volunteers digging a network of trenches around the parish along which the ducting for the fibre optics would run.

'A survey carried out in early 2014 indicated that only 28% of parishioners were keen on going with B4RN. B4RN's response, however, was that that figure was sufficient to proceed and that in their experience, once work was underway and new connections were being made, other residents would come on board.

'A working party of volunteers was duly formed and work began in August of that year when a long stretch of Alkathene pipe ducting was laid across fields between Newton and Low Farm at the south end of the village. This work was done using a mole-plough, a remarkable piece of machinery which could excavate a 50 centimetre deep trench, lay the ducting and close the trench behind it as it trundled along. The mole-plough, however, could only be used over large, flat open spaces; the majority of duct-laying around the village would involve digging trenches with a mechanical digger, laying the ducting by hand, riddling the soil to remove sharp materials, and filling in before 'making good' with wheelbarrow and shovel.



'An important part of the project involved liaising with landowners and residents for permission to access and cross their land. We were extremely fortunate in this respect in that the working group included John P., a semi-retired builder, and Rob M., who operated a plant-hire business. Both John and Rob were born and raised in Whittington and had personal and professional connections with the great majority of parishioners; they were also generous in sharing their tools, skills, expertise as well as their invaluable knowledge of the local topography.

'It should be emphasised, however, that Whittington's B4RN project



John and the volunteers sorting the customer ducts.



Chris blowing, Pat and Kristina cleaning the fibre.



Fleeting the fibre to Whittington with the volunteers helping.



Jeff gets his Lindsey spade.

was very much a community effort. The core working group numbered between eight and twelve men and women volunteers who gave up virtually every Saturday over a two-year period to see the project through to completion. At the end of the day, the team had buried a network of ducting around the parish and ran individual spurs across properties and into homes to connect up with newly-installed routers.

'The job was challenging on several levels, some technical, some physical - but it was done with care, enthusiasm, good humour and ultimately with pride and satisfaction. Meanwhile, those individuals who kindly furnished us with much appreciated refreshments, every week without fail, deserve a special mention 'in dispatches'.

'As the team completed its work, B4RN technicians, (many of whom were working on a voluntary basis themselves (like Chris Hall in this photo) would mechanically blow the fibres under pressure into those properties where residents had signed up for a connection. The take-up, in line with B4RN's predictions, had risen by the end of the project from 28% to over 95%! The team's final task was to make a detailed digital map of the new network which was then deposited with B4RN for future reference.

'Whittington today, like many other rural communities served by B4RN, enjoys a reliable, hyper-fast, fibre-optic broadband service which is second to none. The legacy of the initial B4RN project is that it brought the community together socially and demonstrated what could be achieved at a local level as a volunteer-based initiative. That legacy continues to be felt in Whittington and is sustained by the fact that B4RN, as a 'not-for-profit' organisation, now employs several local people as it continues to grow and expand. We have, what most people in Whittington would agree, a 'win-win' situation.



Digger goes anywhere. At Tebay house, John, Jim.



Tea break Sally, Adrian, Virginia, Pat, Phyllis, Robin, Simon, Jim, Mike



Wet working with Jeff and Mike.

John Pinch was the main organiser on the ground. He recalls that they bought their own digger, and dug round the village. The volunteers installed every property, charging homeowners £20 to do it. This way they did not have to train everyone to do it, and they knew it would be done properly.

The parish council gave them £500 towards expenses. Manon made lots of cherry cake, and the volunteers got together every Saturday for 2 years to do the main work, with John and the others working in between times too. They had many adventures.

After it was over the community group sold the digger and got all their money back.

Paul Parsons by now was trained to fuse, and he and Alistair came to fuse the fibre in the bullets. Pat Close had learned to fuse at Arkholme, and she fused the customers in the houses. Frank, a local electrician and shareholder, had volunteered to wire up the cabinets to the mains. Frank and his team fused the core into the cabinet, and the whole project was a major success. Frank worked for shares until



Bruce Alexander came to blow the fibre to the houses.



Double fibre blow at Manor Farm, of core and house fibre with Chris and Bruce..



20 Metres of spare fibre blown into the chamber.



Alex Dawson, Mike Remond, knee deep.



Paul Parsons fusing house fibres into a bullet.



Paul puts the cabinet bullet back into the chamber.

we could afford to pay him properly. He invented many methods of working, including putting an old towel over his head to test the red light that shows his splices in the trays were good. Frank got hold of an old chassis and built a shed on it so he could fuse in it next to a cabinet. We used that creation for quite a few years.

Once we got our new premises the cabinet kit and trays were assembled there, and all that was needed was a simple bullet enclosure in the chamber next to the cabinet.

Because this was the first network of its kind ,it was all a learning curve, and thanks to Frank and his innovative ideas, we learnt a lot. Their full story is in another chapter.

Alex Colton had been volunteering with us in the summer and came to work for us as a splicer and did many bullets and trays. When it was fine she did



Phyllis Pinch gets her Lindsey spade.



Mike shows off his Lindsey spade.



Whittington displays its Lindsey spade.



John Pinch brings the first customer live, in March 2015.

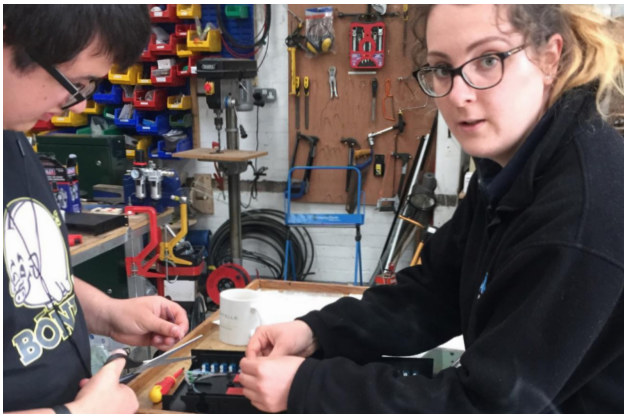
bullets, and on wet and wild days she worked on the cabinet trays in the workshop, as the other fusers did too.

Alex also helped with the training as she had been trained by her dad (John Colton from Lucid), and by her experience working with us. Alex's career path then took her on to lead the splicing team at a new network in Scotland. (Gigaloc)

As well as learning so many new skills, we also spent time teaching others. As we found things out we shared the ideas; we had many ideas.

Because the network had reached Whittington, other nearby parishes took up the challenge, and Hutton Roof joined on. The herd-cats were everywhere.

Whittington dug 10 kilometres of trench.



Alex Colton training Hugh Tamlin to assemble trays in the workshop.



Frank and his towel trick to check the fuses.



Coffee Break with Phyllis, Pat, Paul, Robin, Virginia, Manon, Jeff, Mike.



The Whittington poster.



Final update put on the poster.



The Whittington work horse, next to the poster.

Hutton Roof

When Whittington got underway there was a lady called Marilyn, who thought it would be a good idea to join Hutton Roof on.

She called a village meeting and as usual in this village 'Everyone came out of the woodwork'.

They swiftly formed a tribe and Nick Hall and Eve Simpson emerged as the movers and shakers.

Barry told them what was needed, and they set out to raise the money. Nick found out how to do it from Whittington, and found contractors to dig it to the village. One epic dig he remembers was Tony Swidenbank and his mole doing 2.5 miles in a day and a half.

They had 15 volunteers every Saturday and often during the week too. This message appeared a lot when Nick was out digging chambers in.



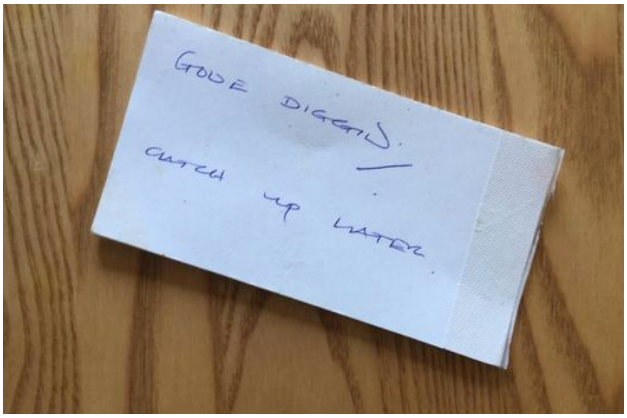
Marilyn.



The Hutton Roof meeting.



The volunteers helping with the mole ploughing.



Nick's note on the kitchen table.





Eve Simpson digging a chamber.



Volunteers rolling out the ducts.

Hutton Roof photo gallery



John and Andy laying out the duct to Biggins.



Tony's mole in action.



Contractors dug under the old stone walls on the core route.



Setting off the mole.



Bernard delivering reels of duct.



Bernard taking the duct into the fields to roll out.



House fusing view.



Frank and the volunteers blowing the core fibre.



Adrian Taylor supplying brews to the contractor.



John Dickinson getting the duct to Biggins.



A remote fleet at a chamber on a core blow.



The end of the line, 20 metres in the final chamber.

Bernard delivered the duct with his tractor.

Volunteers reeled out the duct and dug the gardens and installed the house kits. As well as helping with the installs, Adrian Taylor also kept the contractors and volunteers sweet with tea breaks.

Different contractors were used, sometimes a mole on a tractor, and sometimes Tommy Hartley was called in with his pneumatic mole.

To go under things a directional mole is used, then the duct is pulled through, and the dig continues.

Everyone was updated on progress via Facebook, including the excitement when blowing began.

One of the Facebook posts records 'That's another 4000 metres installed today - made it to Newbiggin! Over the past three days we have blown 6600 metres of main cable and blown fibre to 30 properties! All fused and ready for B4RN to connect.'

Photo shows one of the remote chambers on the route - the fleet is not the tidiest we've seen, but it is still the correct figure of 8, and the ground is clean and dry, so does not need the groundsheet, but it shows the remoteness of the properties and distances between each of them.

It must have been dug well, as Eve records 2228 metres blown by Frank without a hitch.

The villagers collected the cabinet, which was to be sited at the village hall.

The fusers arrived and started joining things up.

This was another community where we have evidence of hard drink. A champagne breakfast when it reached Sellet Hall community.

Hutton Roof dug over 15 kilometres of trench.

Hutton Roof photo gallery



Volunteers pick up the Hutton Roof cabinet.



Bill from the Mansergh project comes to visit, and watch Tony in action.



Paul Parsons fusing the core route.



Bill Nutter from Mansergh picking Tony's brain.



Adrian shows off his spade.



Nick also got his spade.



Sellet Hall champagne.



Colin gets his spade.



Bill Nutter gets his spade award.



The little grey fergie got the trailer where it was needed.



The lodge park, with all homes now on gigabit fibre.



Bruce Alexander training a new employee (Rob) to blow at Hutton Roof.

Mansergh

Enter another retired vet and a grey Fergie.

Bill Nutter got a flyer from someone, who had got it in New Hutton. He thinks it was from his daughter. Then Steve Crossley got one, and they had a natter. Bill phoned up Barry, and they planned a route from Catholes over the phone. Barry said it would cost about £10,000. They made an appointment to meet Barry. By the time that happened, Barry had worked out that if he put a cabinet in Mansergh it could help a lot more communities. The price went up...

By now Bill and Steve were committed. Their decision to go ahead meant 4 routes could come out of that cabinet, and help many villages including Rigmaden, Old Town, Old Hutton and Lupton.

They had to re-route a couple of times, once because of a terrible boggy bit, and once for a landowner who wanted payment, but the four routes were drawn, and the project started. Bill visited other groups already in build mode and learned the tricks. He had already visited Hutton Roof, and met the contractors they were using.

The cabinet and route into the village was financed by the Mansergh tribe. It was mainly used to pay contractors, but they also did a fair bit of digging themselves. They connected all the houses, and helped supervise and dig the routes out.

Nigel Goodship joined on to get the route to Kearstwick dug, and Phil Pease did a lot to get the duct to his holiday cottages. The business park came on board, and that helped finance a main road crossing. Lizzie Wilson sorted the route to Rigmaden, and then it was on to Killington, where Will Dehany appeared again to help.

Once the digging was done Bruce blew the fibre



The Mansergh cabinet comes live.



The Plough at Lupton.



Mary gets her MBE spade.



The village spade on the BT pole.



Bruce the Blow, completing the join between Mansergh and Lupton.

through from Hutton Roof and fusing began.

Bill often had to tow the trailer to remote areas with his tractor, but it all went well, and eventually the cabinet came live, with Bill there to witness the fruits of the labour that had lasted nearly two years. Bill patched in the customers and breathed a contented sigh.

Mansergh dug an amazing 48+ kilometres of trench and the branch continued out to many other areas.

Lupton

The local farm shop to Mansergh wanted a connection, and Mary Tyson recalls Stuart Lambert calling a meeting at the Plough, the local pub. The Lupton connection was to be fed from Mansergh.

They wanted a champion and nobody volunteered, so Mary put up her hand, as she felt it was important for Lupton not to get left out. At the meeting everyone seemed very enthusiastic, so Mary and Ann, another resident at Foulstone, set about getting registrations of interest, and then enough investment to pay for it all.

Mary visited every property in the parish and got to know everyone, many of whom became friends. She really enjoyed it all. Once they got the green light from B4RN and the maps, Mary and Stuart got all the wayleaves, Stuart did the Underly estate end and Mary the village end.

Most of the villagers dug their own gardens or paid handymen to do it.

They paid Tony Swidenbank to mole it all, and kept him supplied with gingerbread.

The fibre had to come to Lupton from two directions as it was not possible to cross the A65. This meant



Mary and Derek fixing up the router for Dorothy's connection.



A rose and two thorns get MBE spades. Peter, Liz and Peter.



The Rigmaiden spade.



Paul threading duct through Alkathene pipe.

the schemes in Lupton moved at different paces, and as a result, one of our early and most enthusiastic supporters was the last home to be connected.

Derek Wightman from the farm and Mary did the house installs, Neil, another Foulstone resident, drilled through all the Foulstone properties with their very thick stone walls.

Then the fibre arrived.

The B4RN fusers got all the core route fused, and the house fusers came to do the houses. Mary arranged all the appointments and helped the customers with their contracts.

The village went live, with the Plough getting its connection in November 2018, and Mary getting her MBE card and silver spade brooch.

The two Peters and Liz also took the route through Rigmaiden.

From Lupton the core went on to Junction 36, which had its initial route thwarted by a landowner. It was originally intended to come via Priest Hutton, Dalton and then up the M6, but the new route paved the way for another branch, and also joined on the Old Hutton (dad's army) project.

Many branches were to grow on the mighty tree.



The Alkathene will protect the duct as it goes under the wall.



Map of the area Lupton - Hincaster

Hincaster



Bridget's snowdrops welcome visitors to Hincaster.

Hincaster at the time was stuck on very long lines, half on the Milnthorpe exchange, and half on the Sedgwick one.

When the upgrade to FTTC happened, they ended up with an even worse connection.

This was affecting house sales in the area, as well as keeping the residents in the slow lane. Nobody wanted to buy a house with such poor connectivity, (even with Bridget's beautiful snowdrop field).

Mark Meth-Cohn was tearing his hair out with responses from BT, who would not help them in any way, and said they had no plans to upgrade such a rural area in the future. Hincaster was falling behind the digital world. Mark's IT guy lived in Silverdale, and told him of the plans being made to connect their parish up to B4RN.



Mark gets his MBE spade award for all his hard work.



John the taxi.



Loading up the taxi trailer with the gear to do a bullet in a field.



Bruce becomes the gate opener on the journey.

He investigated, and found out that the network had gone live in Quernmore, and things looked promising.

He got in touch with Barry, who looked into the plans and the nearest connections, and told him it was possible.

He was amazed that they had no offices or staff, yet were still helping people where BT could, or would, not. It looked like B4RN was his only viable option, so he went to the parish council, and explained it all, and they were all well up for it.

Mark had a background in project management and civil engineering, so he quickly got to grips with Barry's plan, and started coordinating it all. He spoke to all the landowners and farmers, who were all very keen to help and get a connection too.

They split the project into two phases, the first phase was to get from J36 to Hincaster. To do this he had to dig from where the Hutton Roof project had got to, and from there up to the motorway junction.

He got the funding for this from Egg Homes, who were building a luxury housing development in the area, because nobody was interested in buying million pound homes with less than a megabit broadband.

Tony Swidenbank did the digging and got it to them.

Mark sorted all the wayleaves and mapping.

As this was happening, the residents of Hincaster came to believe it would happen, and Mark split the area into zones round each chamber, nominated one person to control it, and the local digs all started. The parish was defined by chambers, and although each group did their own, they also worked together and shared resources and knowledge.

Mark says it all worked very well and lots of people made new friends.



Assembling the bullet in the field.



An area of beautiful spring flowers. Aconites.



Daffodils.



Status Quo fan very happy with his install and his gig.

Mark collected supplies, and gave each group what they needed, and explained what had to be done. Duct to every property, then dug through the garden to the houses, where he would install the B4RNboxes himself. John Hayhurst did the local digs to join on to the chambers Tony had put in. He was contracted by B4RN to do this, and he also did some garden digs that the householders paid for.

The community invested time and money to pay for it. They had no vouchers, but the share offer gave them free connections if they bought £1500 worth, and the interest rates were very good. They also had the benefit of EIS at the time, so that was a great incentive too.

All the area was ducted and ready for the core fibre to be blown and lit by the fusers. The cabinet was in place and the blowers got the fibre through. The fusers came and one chamber was inaccessible by car due to the rain so John Salisbury got them and their kit to it in his tractor taxi.

Mark took the volunteer fusers around the houses to connect them, and everyone got connected.

The bullet was fused and a happy Hincaster customer and Status Quo fan got his gig.

Mark reckons there was 95% take-up, with about 115 homes and businesses taking the service in the village, and the first customers going live in November 2016.

The farmers were brilliant. They took spurs out to all their remote farms and properties, and these were then picked up by the villages of Levens, Stainton and Heversham. Their stories follow.

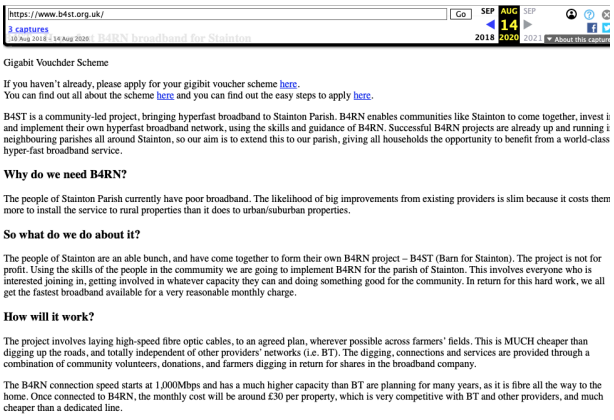
This branch work also enabled the Preston Patrick and Old/New Hutton Parishes to get a resilient link

They dug nearly 16 km of trenching.

Stainton



Stainton sign.


https://www.b4st.org.uk/ Go SEP AUG SEP 14 2018 2020 2021 About this capture

3 captures
10 Aug 2018 - 14 Aug 2020 B4RN broadband for Stainton

Gigabit Vouchder Scheme

If you haven't already, please apply for your gigibit voucher scheme here.
You can find out all about the scheme here and you can find out the easy steps to apply here.

B4ST is a community-led project, bringing hyperfast broadband to Stainton Parish. B4RN enables communities like Stainton to come together, invest i and implement their own hyperfast broadband network, using the skills and guidance of B4RN. Successful B4RN projects are already up and running i neighbouring parishes all around Stainton, so our aim is to extend this to our parish, giving all households the opportunity to benefit from a world-class hyper-fast broadband service.

Why do we need B4RN?

The people of Stainton Parish currently have poor broadband. The likelihood of big improvements from existing providers is slim because it costs them more to install the service to rural properties than it does to urban/suburban properties.

So what do we do about it?

The people of Stainton are an able bunch, and have come together to form their own B4RN project – B4ST (Barn for Stainton). The project is not for profit. Using the skills of the people in the community we are going to implement B4RN for the parish of Stainton. This involves everyone who is interested joining in, getting involved in whatever capacity they can and doing something good for the community. In return for this hard work, we all get the fastest broadband available for a very reasonable monthly charge.

How will it work?

The project involves laying high-speed fibre optic cables, to an agreed plan, wherever possible across farmers' fields. This is MUCH cheaper than digging up the roads, and totally independent of other providers' networks (i.e. BT). The digging, connections and services are provided through a combination of community volunteers, donations, and farmers digging in return for shares in the broadband company.

The B4RN connection speed starts at 1,000Mbps and has a much higher capacity than BT are planning for many years, as it is fibre all the way to the home. Once connected to B4RN, the monthly cost will be around £30 per property, which is very competitive with BT and other providers, and much cheaper than a dedicated line.

Stainton web page on the wayback machine.



Marianne and Mike set off on a house fusing day.

Stainton Parish Council had heard about the progress of B4RN. It was already getting a good reputation and had been set up by 'a chap who was building it properly and for the good of the community', so they joined in.

Everyone in Stainton had very poor connections to the internet, and poor comms in general, so they held a public meeting at the Westmorland show ground to explore if there was enough interest in B4RN coming to Stainton. A committee was formed and people took different jobs; admin, comms, diggers, liaison with B4RN, door knockers, wayleaves: there was a job for everybody.

Some amazing people came forward and made the job easy and great fun, with monthly meetings to update each other on progress. Pauline Kelly became chairperson, and Marianne Ivory became the secretary, and kept all the admin sorted.

When vouchers came in she sorted those too, and got all the businesses to sign up, which made their projects much more affordable to build quickly.

They had started by raising shares; all the committee bought some, and encouraged others to do so, but they knew they would need more investments, as there were a lot of big digs.

Getting wayleaves for the routes were undertaken by committee members who knew individual landowners. As a result, they only had two small areas they had to dig round. Luckily, the vouchers system coming in really took the financial pressure off individuals, and meant that contractors could be paid not only for the main core digs, but also to do house installs.

The householders at Stainton were amongst the first



Jorj pushing the house fibre through to fuse.



Rob Staveley and Kit Mackereth fusing the core near Halfpenny.



Cag from Halfpenny gets her silver spade.



Pauline's chocolate brownies and sweet peas for the fusing ladies.

to get dig grants from B4RN, and they worked really well. The grant was used to pay the local electrician, amongst other professionals, to install the B4RN equipment in the houses.

There were two techie people on the team, Joe Bowman and Graham Green, and they planned all the routes and documented detours, and fed the information back to B4RN. Joe says they numbered each file as it changed, and this method was taken up by B4RN to keep a track of changes.

Tony Swidenbank and Tony Middleton did their digging, with Tony S doing the road moles, and the directional drills. Everyone did hand-digging who could do it, but they tended to work individually, as Stainton is so scattered, covering both sides of the A65.

Joe says he was a 'backroom boy' and his job was the network design, and making sure the right ducts went in the right places. He spent time knocking on doors to find out who wanted it, well as in the fields, with Mike redesigning routes within the parish they knew would work best to get round obstacles. He said his biggest concern 'was making sure things got done properly'. There were five routes, like a star coming out of their cabinet at the church. Each route served the parish, but also went on to serve other parishes.

Graham Green took one of the routes across the main road to Halfpenny, where there were several businesses, and concentrated on that side of Stainton, working with Joe to keep all the records right.

They all had regular group meetings to let each other know what was going on, Rob Cowly attended all the meetings, and kept the parish informed via newsletters and a website, so everyone knew what was going on. The B4ST.org.uk website closed when the project finished, but you can still find it on Wayback Machine.



Nick's spade award.



Pauline and Paul get their spade awards.



John with his spade award.



Marianne and Mike get their spade awards.

Rob says it was a remarkable project, and personally he was so glad it happened, as it means he can now work from home. That was brought home to everyone when Covid struck. There was no way any of them could have done that before B4RN came. His work is in advertising for the British Tourist board, and involves very big graphic files and videos. B4RN access has literally 'transformed his life'. He now works 'hybrid', part at work and part at home, and says the benefits are similar for everyone in Stainton.

Pauline said a couple of their meetings were at the pub at Barrows Green, to inform everyone in the village of progress, and were great fun. Also she got in the habit of taking snacks to Tony when he was digging, Sausage buns were his favourite, he was so appreciative. She also supplied sweet peas and brownies to the fusing ladies. She was really sorry Covid meant they could not have their wrap-up meeting when the project was finished.

Mike remembers starting the main dig on Peter Cooper's land, and that when the canal was relined they got them to put ducts underneath, 'for the future'. The dig came through those, and to the motorway, and connected the whole village. Tony Middleton dug all that, he says. There were no gardens to cross as every house is surrounded by fields.

He says the management of the project by Pauline, and the work the team members all did, meant it was all very 'easy' and good fun. There was never any bad feeling, everything was so well organised. The team worked together, but did their individual roles very well.

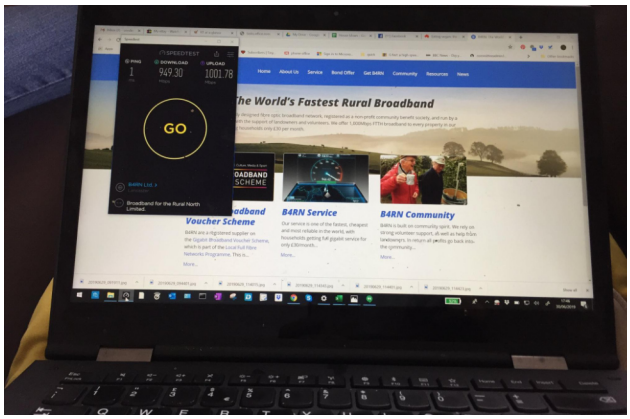
Mike says prior to B4RN the village literally had no internet. Once B4RN started they had 100% interest and about 95% take up, with some really elderly folk not wanting to be bothered. But the duct was left ready for if they changed their minds, and in actual fact some did.



High tech house in Stainton.



Ethernet to every room through the switch.



Great speed test .



The JFDI Lindsey spade.

He also made the point that the vouchers (and the B4RN admin of them) made their job easier, dig grants worked well, and Nick Mathews did his job well and looked after all the financial details.

Frank and Will came to blow all the fibre routes and the house fibres, and the fusers came to do their bit. Marianne, Pauline, Paul and Mike took them round some of the houses, and fitted routers. The fusers were very impressed with some pretty high tech houses in Stainton, and said ,'What a difference a gig will make to them'.

Stainton dug nearly 20 kilometres of trenching.

They came live in the summer of 2019.



Mike is pictured next to the cabinet with the Stainton Lindsey spade.



Heversham's B4RN banner.



John and Fiona get their MBE spade awards.



John, Iain and Barry with their MBE spade awards.



The cabinet being commissioned by the B4RN team.

Heversham

Iain Richards had tried to get Heversham interested when he heard about B4RN from Ashley Reece, who had been building a development at Egg Homes at Viver in Hincaster in 2016, and had got a B4RN cabinet in. He canvassed the village, but not enough people were interested; their BT connection served their needs, and although he knew that it would not for much longer, he could not convince them to raise the money needed to do a B4RN project. Still, he had told them , 'You should do this, it is the future'.

Then government vouchers came in 2019 and that made all the difference, he said, as the ones who really wanted it could get vouchers, which would subsidise the build for those who were not ready. He knew one day they would be glad of it.

Mark Jameson who had helped with the Wray/ WenNet networks in 2003/4, lived in Heversham, and was fully up to speed on B4RN development, having helped out in Arkholme in 2012, and he encouraged Iain to proceed. Iain and the parish council tried again to raise interest, and this time succeeded.

John Armer was one of the people who went to the parish council meeting at the pub, and he got a bit carried away with it all. They set up a sub committee to do coordinate the work. He 'roped Barry Cheeseman in'. They dug round to Tristans playing field, and got it to the school, then round the back of 15 houses with several chambers. They took it to the edge of properties, helping the householders when necessary.

B4RN did the road crossings for them, and they put the cabinet near the tennis court at Dallam school.

John, his wife Fiona, Barry, and Iain went round all the houses, to see if people were interested and got



Barry doing a house installation.



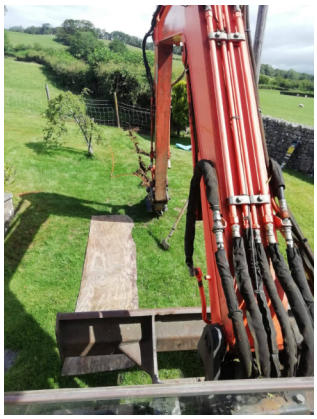
Barry fuses a house install.

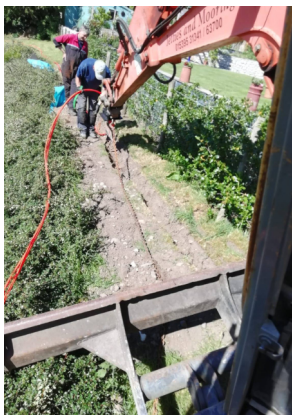


The digger mole.



The digger mole in action.





Barry's digger with its mole invention.



The Stihl cut.

investments, and when a house was interested they paid an electrical contractor to fit the boxes on the houses. In Leasgill, Barry and John did all the installs, as they could do it cheaper and they claim 'better'. Jorj from B4RN also helped them with training and installs. They learned to fuse as well.

Iain worked with the B4RN planners, and suggested routes he knew were possible. They had a lot of limestone to avoid and steep gradients to pass through, as well as a couple of landowners' properties to avoid as well.

The parish council supported them with a grant for leaflets, they formed a tribe and made a start. John, Iain, Adrian Bland, Fiona, Natalie and Rob Philips made up their core members.

They raised enough investments and vouchers to make the project viable, so the first thing that happened was that Barry and John dug from the end of the Hincaster line at Woodhouse, through the playing fields and into the village.

The pandemic was then in full swing, and everyone was stuck at home. It encouraged many to get out and dig their gardens, and Barry and John did the gardens for the elderly people.

Iain says they came up with a genius invention of a Stihl saw with twin blades 9mm apart. With this they could easily cut through driveways, and reinstate to a very high standard.

They had a mate called Brian Haddow from Viver, and he made Barry a mole attachment for his digger, and they used that to save digging whenever they could.

Iain liaised with B4RN to make sure all the ducts went in the right trenches, and one of the team was always on hand when digging was going on, to help and check it was done right. Tony Middleton and Tony Swidenbank also did some contracting work on



Community digs to the houses.



Digging round the houses.



Mark fusing in Heversham in 2020.



Mark fusing in Arkholme during December 2012.

the project.

The dig grants appeared with the vouchers, and some householders donated some of it to their bespoke bank account to help pay for drill bits and things the volunteers needed. Iain says the dig grant was an incentive to get connected.

When the pandemic was in full swing, people could not go on holiday, so more of them invested their 'holiday fund' in B4RN, so the project was financially healthy. More people got involved in the digging as it was a glorious summer, and lots of people helped.

Iain says they had a tremendous amount of help from Frank Brown, who came and blew house fibres for them as soon as Barry and John had them ducted up and the boxes on.

Iain remembers 'The B4RN fusers came and we had volunteered to be trained to fuse. Mark Jameson was already an expert, so he did his own and showed us some tricks.

'So Barry, John and myself had the training, and then we had a competition to see who got the best score. When a fibre is fused you can see on the screen if it is a good fuse or not, a nice straight line with no bubbles or cracks, but it also gives you a 'db loss'. Anything under 0.1 is okay on the model of fuser we were using. John went first and got 0.03 which was brilliant, but Barry beat him with 0.02. When it was my turn, I could not believe it when I got 0.0, and then everyone burst out laughing as I had forgotten my splice protector. I had to break it and do it again and scored 0.03, so Barry won'.

When Mark was fusing this connection in Arkholme in 2012, little did he think one day he would be fusing his own in Heversham in 2020!

It had been a freezing cold day in Arkholme in December, and he had to keep running up to the top of the field to keep warm, or his fingers seized up.



Barry's go.



Iain's go.



A good fuse.



Alex Colton fusing the cabinet trays in the new B4RN vehicle.

Iain estimates take-up for the village was about 50%, with a couple of small clumps not done yet, but hopes a way forward will be found soon.

Iain reckons there is no way they could have done this project without Barry and John dealing with the practical side, they 'just knew' how to do it.

'On Wednesday 30th September 2020 the B4RN core fusers arrived - Danny, Alex, Kit, James, Steve, Jorj and Jon, and Alex did our trays, and then we saw them being patched in the cabinet and the first 44 customers coming live'.

The three musketeers, John, Iain and Barry stood in front of the tallest tree in Cumbria, which is in Heversham, worthy winners of their MBE spades.

Heversham dug 16km of trenches.



John Iain and Barry with their MBE spade awards.



Barry and John - they 'just knew' how to do it.



Tom and Laurence joined Tony Middleton aka Swampie & Sons.



The original A team. With Tony Middleton, working on route 5.



Digging under walls to houses.



LOBB, Dave's team. Levens Old Boys Brigade.

Levens

In March 2016 Barry Ford came and gave a talk at the Levens annual parish meeting. This gave everyone food for thought. In November 2016 he was invited back for a parish meeting where he answered all their questions. Dave Rogerson had joined the parish council by then, and he hosted it' Together with Kevin Holmes, Simon Dodderel, John Watson, John Wood and Laurence Ormerod they formed a committee. A lot of people were keen, and the committee met regularly in Dave's conservatory, to make plans. In early 2017 Dave was away skiing, and the meetings continued on Skype. Simon Doderel became the chairperson, Laurence Ormerod took charge of maps and wayleaves, and each block in Levens had its own coordinator.

The Levens project was a mix of hard and soft dig and Wet Dig! The soft dig part was started very quickly with Tony Middleton to get the core into Levens, but then to move onto route 2, along the limestone ridge, which took a lot more work with help from Steve Bavin, Tom Addison and equipment loaned from PV Dobsons. A real vintage shot of our A team working with Tony M to get ducting in for our route 5 - the south and eastern flank of Greengate.

Pretty much at the very same time, Church Road was due to be resurfaced by the council. So the B4RN hard dig started 2 months early, with a rush to connect up the 79 houses on the route in just three weeks. Dave with Laurence, Jake and Tom H headed up this connections team, otherwise known as the 'get things done' team. They Did Not uncover bones on this route as it would have forced an archeological survey! Dave's team also known as Levens Old B4RN Blokes, or LOBB had got 28 houses live when Covid struck. 'LOBB's came out to play. LOBBs smashed another 27-metre trench for duct towards Woodside Cottage'.



Numbers on the sign start to creep up.



Passing the village shop, everyone notices the numbers.



Limestone everywhere.



Some Levens champs with their spades and some B4RN 'widows'.

Progress was quite slow until the urban part of the project started, and the B4RN civils team moved in to get the centre of the village done, through the pavements. They installed a ducting system, and put a toby box outside each property. They then pulled through all the ducts they needed into the chambers.

Jorj Haston organised a training day for the LOBB team to teach them how to fuse, and on that day Dave smashed it and fused 26 properties.

They kept a board updated outside the shop, and after the training day the total shot up. Dave carried on installing and fusing. Dave was a chef, and was having a break from catering. He really enjoyed the install and fusing job, so he went to work with Flick at Nether Wyresdale and became a B4RN contractor, fusing most of the houses there for her as well as installing them. He has carried on helping many more communities since then.

Dig grants changed after the Levens project, due to the feedback from the volunteer teams. Many customers had used the dig grant to pay people to do the work for them. Where the volunteers did the work they could not be paid, so word went out that if those who had work done wanted to donate part, or all of their grant they could put it in the Levens charity, and many of them did.

They raised over £12k this way, which is used for many good causes around the village.

Around this time B4RN had a rethink about the dig grants. Some people wanted to donate it to the group of volunteers in a project, but it had to go to a recognised 'charitable' bank account, like Levens had. Another learning curve was coming up.

They kept in touch with all the community through their facebook page.

From the Levens B4RN Project Facebook page we have the following reports.



Dave fusing house connections.



The B4RN civils team arrives.



Another shirt, another fusing day for Dave.



A Toby box next to each property.



Checking the finished wrap in the wall box. No bends.



Core duct to each chamber in the pavement digs.



Jorj from B4RN awards Dave his MBE spade.



A tidy customer install, no sign of disturbance.



Photo of a garden dig going under the tree roots.



Link back to Hincaster.



'I did not expect to spend part of retirement digging under drystone walls, or dragging ducting across a field behind a mole plough. But all of this has been great fun, and also a challenge.'

8 October 2019

Awaiting permission to cross the green and link into our route through Walnut Cottage. This is one of the last missing links to give a route back to Levens Bridge and our link with Hincaster

10 March 2021

Tony Middleton and team are racing around the plain between Levens and Gilpin to plough in route 2.

Today another team from Tony Swidenbank started work with directional drilling to pass under the river Gilpin as well as two dyke crossings. We hope to get a start on routes 5 and 4 once these works and the field crossings are done.

Levens' cabinet came live in 2020, but work continued for a couple more years to get the whole area done.

Dave Rogerson went on to become a B4RN accredited contractor. He now does training for new groups and has helped many get their house kits done properly.

Once Levens was connected the branch network grew out to help others. Crosthwaite and Witherslack joined on, then Crosthwaite went on to connect to Crook, Cartmel Fell and Winster. Dave installed many houses in these new areas and others.

He and the group in Levens continue to install more houses in Levens as houses change hands and the new people want a gigabit connection.

No other ISP offers a symmetrical service.

Levens dug over 20 km of trench.

The Levens Facebook photo gallery.



Sub-ducting across the car park.



Lawrence Ormerod and subduct.



Digging to the houses.



Digging to St Johns church in 2021.



Digging up paths.



Digging under utilities.



A happy customer goes live in May 2022.



Kit Mackareth and Rob Staveley, core fusion splicers.



Cutting through some rock.



Barry blowing house fibres.



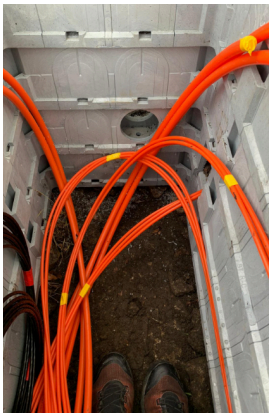
Cutting holes in a chamber.



Hard core digging in 2022.



Kit fusing at the cabinet.



Inside a chamber.



Fusing at the chamber.



Levens Cabinet comes live in January 2020.



Dave Rogerson demonstrates house fittings at the volunteer day.



The tiny shop in the village.



Flick and Nick from B4RN meet Nigel Wilkinson at the county show.



Little B4RN signs appear.



Flick Greenwood and Tony Middleton, the digging contractor.

Witherslack

Witherslack is an area of limestone pavements and hard digs, but in 2022 the community rose to the challenge.

Nigel Wilkinson and a team of 3 other businessmen led the project. Nigel (Windermere Lake Cruises) finally meets the team after months of Zoom meetings.

Like Mint and Sprint, they made signs to show where houses had signed up for a connection, and soon the area started to blossom with them.

Digging teams were mobilised and duct measured out. Tony Middleton arrived to do the moleing through the fields, and the volunteers did the gardens. Sometimes there was only one duct in a trench, sometimes multiple ducts.

Most of this was worked out by B4RN coordinators and the contractors. Vouchers were available now, and they helped to get the project underway. By this stage in the voucher process, it was starting to look like the local champions would have less responsibility for their projects. Bit this was proved wrong when the routes moved further north. In Witherslack there was not a lead champion.

However, there were plenty of willing volunteers in the community who certainly did a splendid job, but there were also elderly folk, or people who just expected it all to be done for them.

The community and contractors worked with the volunteers, and the project ended up as being a marvellous achievement despite the rocks. Need a pickaxe even in the lawns! Following is a brilliant example of a top class garden dig. The volunteers used a sheet for the spoil, so as not to lose any in the grass, and to keep the area clean. They folded back



Sheets put down for spoil and sod rolled back.

the sod instead of cutting all four sides, to keep the sods in order, and to facilitate regrowth. As is normal on B4RN digs, and there was tea.The trench bottom was levelled and cleared of stones, and the duct laid into it. The volunteers then soft-filled it with soil first, then all the rest of the rougher stuff, and then the sod is rolled back on and pressed down.

In this way there is hardly a mark left where the dig has gone through, and once it rains all trace is gone.



A pickaxe to loosen the rocks.



Putting sod back.



Tea break.



Levelling the trench.



Backfilling the trench.



Duct in the trench ready for backfill.



From left, retired farmer Danny Jackson, sisters Anya, Thea and Tilly Bennett, and Steve Ratcliffe from the B4RN steering committee. Photo from *The Westmorland Gazette*.



Barry and Graham doing a house install.



St Paul's church in Witherslack.

Sue Caddy and Flick Greenwood from B4RN were on hand to help them negotiate walls and hard dig in the gardens.

The Westmorland Gazette gave them some publicity.

A local contractor did most of the house kit fittings, with other B4RN contractors from Levens and Middleton completing them all.

Barry Cheeseman from Heversham did a lot of the blowing, and Graham from TS Trenching helped him out.

They also did some full installs including the digs.

Once all the houses had their fibre blown the B4RN fusers arrived and they went live.

As with other villages the B4RN connection to the local church was provided for free. A note on the village website read, 'Thanks to the local volunteers who made this possible and the generous B4RN shareholder who donated their own free connection to the church.'

The Witherslack project dug 39 km of trench.

Beyond the book

Westmorland Gazette

Photo gallery for Witherslack



Digging under a big wall.



A happy digger.



Sue Caddy digging under a wall.



Flick Greenwood sorting duct.



Graham catching fibre for Barry.



Barry and Graham on a Ditchwitch dig.



Barry and the volunteers on a blowing day.



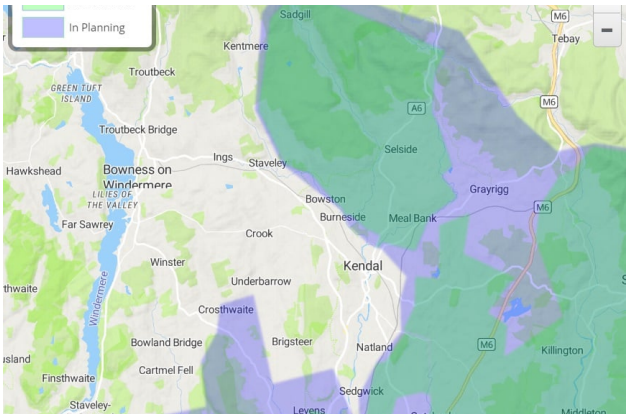
The B4RN fusers doing house connections in a bullet.



The Lyth Valley

Crosthwaite

In July 2020, the first volunteers met in Crosthwaite C of E Primary School hall, to discuss the possibility of connecting to a community-driven fibre connection called B4RN.





Matthew Jessop, who is the headmaster at the school, had approached B4RN for a connection because he was being charged £3500 a year for a connection from BT. He needed that money for other school resources, and there was a grant available to get B4RN to the school.

The only problem was that there was a deadline, and if they missed it they would end up signing another long contract. Stuart Wren, who was the school's governor for finance joined him, as did Andrew Brown, another governor.

In the map of the area, you can see where Crosthwaite joins Levens and feeds on to Cartmel fell, Crook and Winster.

Andrew took on the PR role to raise awareness and motivate everyone. Anyone who has ever met Andy would testify to his tenacity, and the fact that he did a splendid job. They had some great members in the community.



Mike Bevans, Adam Walker, Matthew Dobson, Matt Jessop, Stewart Wren, and Martin Casson.



Tony Swidenbank and Graham.,TS trenching, bringing the feed in.



Tony Middleton at the Gilpin join.



Reinstated field. Low impact mole plough.

By December 2020 they were ready to start in the Lyth Valley. Above, the photo shows the first soil cut, with Mike Bevans, Adam Walker, Matthew Dobson, Matt Jessop (head of school), Stewart Wren (Project Lead), and Martin Casson, chair of the Lyth Valley Landowner Association), who was a great asset in helping landowners understand what was happening.

Andrew Brown whipped everyone into shape and showed no mercy in press-ganging people into the tribe. They had no issues with landowners, as they had all attended the school, as did their children and grandchildren, and supported the project.

One absentee landlord was a problem, but they just went round that land.

Crossing the Gilpin was their first expensive job, but then it was not far to the school. Levens had left their join for them.

The quality of the work was superb, as shown in the photos

The volunteer dig group dug to all the properties around the cabinet site, including the community hall and the church.

They were suitably fuelled by tea and cake.



Digging the fibre to the properties.



Re instated path.



Rob and Ronan arrive to blow core fibre.



Andy telling Matt Warman MP at a blow how they have fought to get their fibre.

The fibre blowers arrive and the core team blow the big fibres through from the Levens join to the cabinet chambers.

Matt Warman MP, minister for the DCMS, got a very clear picture of what B4RN volunteers would like from his team. A good day, in good spirits all round. You can feel that the Crook, Crosthwaite, Strickland Ketel and Cartmel Fell also got a good representation at this meeting. The house blowers entertained the MP.

Andy Brown kept everyone informed through Facebook, and on 7th June 2021 he announced, 'Crosthwaite Route One, up the Lyth Valley to the hall is now LIVE. If you're not live yet, awaiting ducting, house kit or router installation, then get in touch now!'

Once the school and the houses round the cabinet were connected, Andy took a step back and another school governor who had been involved took over the organising. Henk Muller led the teams into Phase 2 of Crosthwaite, which enabled the other Lyth valley projects to happen.

Andy reckons they had about 50 volunteers working on the project, and they claimed the dig grants B4RN were providing, which all went into a community pot. They used the money for their essential tools, and if any had excessive travel costs then a petrol allowance could be paid. They raised about £20,000 and Andy reckons they spent about £5k of it. The balance will be returned to the community, the village hall, school and the Parish council, who set the fund off with £1000.

Dig grants are not paid until customers come live, and B4RN gets the voucher money to pay them. They wanted to do the digs themselves to be sure of them being done properly and also to keep money in their community.



Digging out the base for the chambers and the Crosthwaite cabinet.



Crosthwaite cabinet.



Crosthwaite Primary school.

Up until then the dig grants had been paid to the householders, but this proved to be a better use of it and B4RN took it on board. Each community seems to improve what B4RN does if they feed information back to the mothership.

MP Tim Farron came to visit when the school came live. He had been very supportive of the project, and very pleased to know the school had won a future tech award because it was a high tech school, with all the children having their own chromebooks to get used to technology at an early age.

Crosthwaite have dug over 25 km of trench to date.



Tim Farron MP visits the school.



The mighty Crosthwaite team. Henk Muller, Martin Casson, Andy Brown, Matt Jessop, Stewart Wren



Andy Brown.



B4RN banners raise interest.



Parish meeting.



Planning.

Crook

Boyd Gilmore had moved to the area 4 years previously, and the broadband speed at his new address was appalling. He struggled to work and communicate effectively, and at one stage resorted to using a local microwave radio internet system. His family were reluctant to visit because of the poor internet connectivity - specifically the upload speed. He had a friend in Nook who had recently got connected to B4RN, and so he knew about the B4RN concept and how good the service was - and was therefore very jealous!.

One day in July 2021 he saw a sign at the end of his lane saying B4RN was coming to the area. It immediately grabbed his interest, and he soon met the key activist in the area, Andy Brown. Andy was a governor at the nearby Crosthwaite school and had been instrumental in getting B4RN there, and now wanted to help others in the Crook locality to get B4RN too.

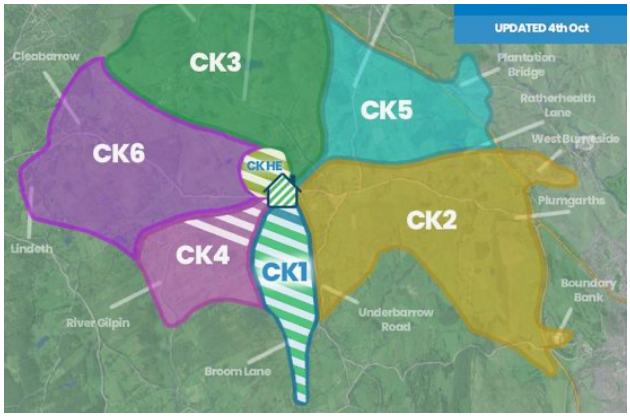
Subsequently a team formed in Crook to raise interest and get the B4RN project started. They divided the area into 6 zones and allocated volunteers to go round all the houses in the area to assess interest in getting B4RN - they called this “door-stepping”.

As a relative newcomer to the area Boyd did not know many people locally, and so was rather apprehensive about visiting strangers to talk about B4RN. But he is from a farming background and often found it helped to introduce himself as a neighbour, and make connections about the stock or farming life for a while before even mentioning B4RN and getting technical. Eventually he got used to meeting up with local landowners and neighbours and actually enjoyed it, often returning to give people more information, and securing wayleaves.

The responses he got were mixed, from ‘thank goodness someone is going to do something at last’



James Taylor and Nick.



Crook 1 on the map.



Tea for the church diggers.



The Church digging day.

to 'don't trust it, wouldn't touch it with a bargepole - not for that price, it must be a scam'. A few people had really no interest in a digital world, and were happy with the postman visiting daily. They were unable to conceive of the need to future-proof their connectivity and engagement with the wider world.

The Crook group held a series of meetings for the public in the Crook Memorial Hall, together with pop-up meetings in the local pub, the Sun Inn, and in the grounds of Plumgarth's farm shop and retail park. Andy Brown was their visionary and chaired the meetings, and kept visiting B4RN for updates. A core of about 20 volunteers was actively involved. They also had a weekly Zoom meeting where everyone could share their information.

Andy Brown reported on Facebook. 'A great day on Friday at the Volunteer Coordinators' Day in Melling, at the B4RN HQ. Nick being shown 'the ropes by James Taylor (in the photo above)

They achieved approximately a 70% positive register of interest which meant that they hoped that they could start building soon.

However, the processes and lack of information from B4RN tended to slow things down. What they really wanted to know was, 'what steps they needed to take, how much money they needed to get to ensure the project's viability, and when B4RN could start to build'.

B4RN could not tell them because the BDUK computer system had a bug and so nobody could sort out the vouchers, and without them the project would need to raise a lot more money. Bit of a chicken and egg situation. Also, they could not find out what steps in what order to take. Every project was unique, and there was no template to tell them what and when to do things – they had to reinvent everything based on what they could pick up from others who had done it. They attended the B4RN showtell days and talked to other groups. John and



Investment flyer.



Ann, Liz, Judy L, Judy P, and Pippa bringing duct home at Spigot Cottage.



Ladies working in the frost.



David Foster keeping Steve right.

Judy Leigh were very active in the trenches, and fitting house kits, and digging gardens. John also is an estate agent and could see the potential for the valley if they had decent broadband.

Having designed the route and obtained the majority of the wayleaves, Andy kept things going through weekly Zoom meetings. One of the volunteers, Nick Truch, provided invaluable technical expertise setting up a private website, integrated mapping software to facilitate the process of drafting and recording of wayleaves, and drafting tube-maps and site assessments. Nick's technical mastery was a huge asset to the Crook project, as he was able to very efficiently automate many of the processes, saving a huge amount of time and duplication of effort.

In response to B4RN guidance regarding the process of 'dig and fits; a community dig and fit team was set up, as well as a B4RN for Crook and District entity and bank account. Andy Brown, Chris Mowatt, Godfrey Hunter, Lucy Heatherington, and Boyd Gilmore were appointed as managing members. Dig and fit dig grants were paid into the community pot, and that meant the team would do all the house digs and house kits, so that they knew they were all done properly to the B4RN standard.

They held more events in the village to get sign-ups, investments and shares, and made plans to start digging. Nick Truch, David Foster and Johnathan Jeacocke went to a training session, which was 'not much good', and they basically set to and did all the tube maps from the spreadsheets and .kmz files B4RN supplied, and shared them through the team's private website.

David Foster had been endlessly working in the background, helping with wayleaves, delivering supplies, and collecting duct and house kits from the Melling depot. He was instrumental in the project's success and still assists with installations for latecomers to the party.



Tony Swidenbank's team



Volunteers reinstate the land where it branches off to houses.



Volunteers levelling a trench.

Elizabeth Jolley wrote on the Crook Blog, 'September 12th - Monday morning at Crook Hall and the discussion is which way do we dig next? East to Whinpot or North to the Memorial Hall? With Dave Foster's help - he had been talking to the farmers - Steve, Adam and their ploughs set off. They also believe that they will have dug duct all the way to the memorial hall by Friday.'

Tony Swidenbank, Liam and Graham worked on other routes, and volunteers reinstated the land where it branched off to houses.

They had three B4RN contractors all working at the same time to beat the voucher deadlines, and get the job done. All three were brilliant, Tony Swidenbank, Tony Middleton and Steve Foster.

Each zone champion kept the landowners informed when the diggers were going to be working on their land. The zone champs kept an eye on the work, and also kept everyone else in the team up to date on progress, and updated the Facebook pages.

Pete Simm then organised the dig and fit team. They had team training days with Jorj Haston and Sarah Pollitt who showed them the B4RN standards, and they did all the house digs and house kit fittings for everyone. There were 15 active members in this team. They even had a ladies team of Pippa, Judy P, Judy L, Liz and Ann.

A few householders did their own digs, but always supervised by a member of the team because they wanted all the installs to be to a consistently high standard.

They set up a bank account and constitution to accept the dig grants, and that enabled them to buy the tools they needed. Claiming the grants was tricky, but they overcame that too; it was one of the first of such schemes B4RN had tried, and another change, another learning curve.



A dig to every house.



Whole families at work.



Lots of duct to lay.



Diggers of grit.

They all said it was great fun most days, getting 'down and dirty', learning how to get under stone walls and different skills from their day jobs.

Because of the way this project worked, there was not the engagement that comes from everyone digging their own gardens, and volunteers helping. Some households thought the volunteers were just 'workers from a utility company' and often did not even offer them a brew. That did not really matter, but there was not the same job satisfaction working at their houses as there was at other homes, who understood it was all being done by volunteers, for no payment at all, but just for the satisfaction of doing something Good.

The dig teams worked in all weathers and took duct to every house boundary and dug through to the premises where people wanted to take the service. Their fit team then went and fixed the boxes on the houses ready for the fibre blowers and fusers to arrive.

Across drives, gardens and up slopes, the intrepid dig group got to all the houses from the core Steve or Swinny had put in. Spare bits of 16mm duct were used as extra protection for the 7mm house duct through tracks and hedges.Tea breaks were enjoyed, and on the last dig day they celebrated with some bubbles. Well done to all the people of Grit.

Once all the digging was done and the house kits installed on the walls, the fibre blows started. Frank Brown was our biggest support and David Foster went round with him to show him where everything was. It was a big area to cover.

The four As were definitely apparent in the Crook project.

The Activists got everyone going,

The Adopters got the jobs done.

Most of the Apathetic came on board.



A cold frosty dig.



Sunset approaches.



Tidy dig, keeping it clean.



Last of the summer wine?

Very few Anti's remained.

Take-up was high.

Boyd says everyone you talk to says how fantastic it all is, and what a fantastic experience it was to be part of it all. They love B4RN and the service is unbelievable.

Andy Brown kept people updated. On Saturday 30th September he wrote from the Sun Inn, 'Greetings to our B4RN community!

'Time has swiftly flown by, and it's with immense pride that we reflect on the incredible journey we embarked upon just a year ago.

'On the memorable 17th of August, Steve Foster, along with his trusty mole plough, initiated Route 1 from the Crosthwaite B4RN Interconnect, to Crook Memorial Hall. Little did we foresee the remarkable strides and challenges that would unfold over the subsequent months.

'From freezing fields on New Year mornings to rain-soaked fibre installations, our dedicated volunteers have faced it all with unwavering determination.

'However, our venture was not confined to the physical labour of the past 12 months. Back in April 2021, many of you were only becoming aware of the mountain of work required before the mole plough could start, including route planning, site assessments, and navigating the complex web of wayleaves.

'The first volunteer Zoom meeting on May 12th, 2021 marked the beginning of our united efforts. A heartfelt thank you is in order for each volunteer who stepped up, turning the improbable into the possible, even in the golden years of retirement.

'Our gratitude also extends to the exceptional B4RN staff and contractors who, despite juggling numerous concurrent projects, have diligently met



Swinny holding the workers up. Or maybe congratulating them?



Landscape dig.



Tea time for diggers.



Champagne instead of tea.

government policy deadlines, and ushered in a superior internet service.

'Initially, our target was to get 200 properties to agree to request a service and we find we have 211 who have already gone live, out of 340 who have requested a service.

'The finish line is in sight, with approximately 100 properties primed for a service rollout, notably within business parks and key locations like Plantation Bridge, setting the stage for the monumental link across the A591.'

Andy Brown 2024.

There are 310 + properties connected in 2025.

The cabinet at the village hall came in September 2022.



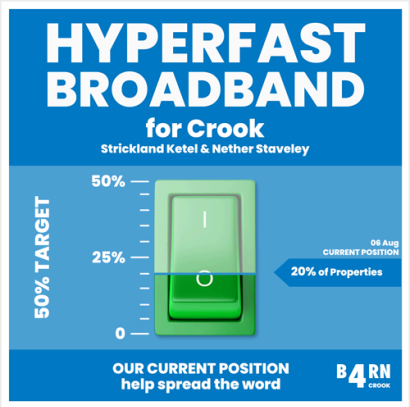
Crook chamber - David Foster said 'it was great to see it finally get there as we felt we were getting somewhere at last'.



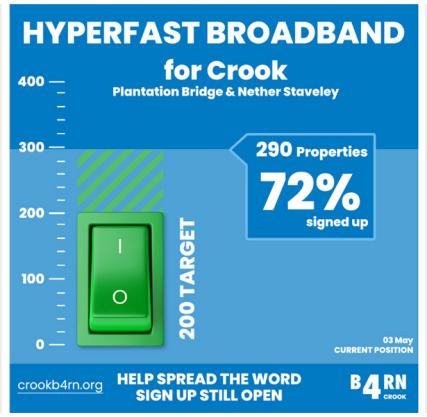
Sign updated regularly.



Public information signs.



Updated counters.



Sign up score.

Crook B4RN Overview

(by Nick Truch)

Like many other volunteers on the Crook project, we have long grappled with poor connectivity. The best BT could provide was a meagre 5 Mbps download and 0.2 Mbps upload, labelled as a Fibre to the Cabinet service.

We explored pricier alternatives like a satellite dish and mobile data SIM cards, but all proved equally inadequate.

Receiving a B4RN 'call to arms' volunteer leaflet through our post box filled me with hope, envisioning our rural and somewhat secluded property being connected to a full fibre network. I promptly volunteered, with no knowledge into what was about to unfold.

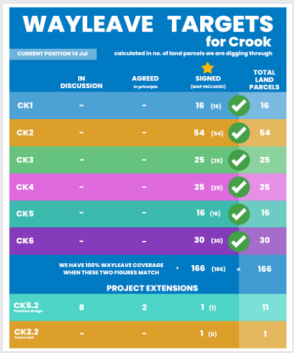
Fast forward 3 years, with just over 300 properties connected to B4RN's full fibre Crook Cabinet, I begin to grasp the incredible feat our community project has accomplished.

It serves as a prime example of how individuals who refuse to accept the status quo can unite and make a positive change in their local community.

It is also thanks to organisations like B4RN who have given us the opportunity to improve our area.

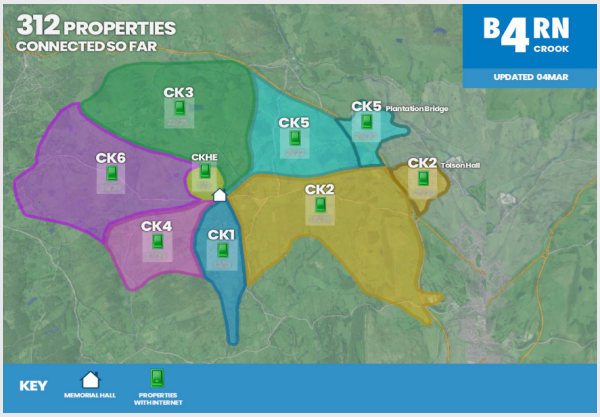
It hasn't been without its challenges, but we faced each obstacle together as a group and overcame each one to drive the project from conception to tangible plans, resulting in a fully funded and operational network.

The driving force behind our project has been a shared mission for improved connectivity, but a key success factor has been a flexible approach to volunteers. Allowing volunteers to contribute as they are able.



It's been amazing to discover the range of skills and expertise people of all ages and backgrounds have to offer; in a relatively small and rural area, and what can be achieved when those talents and skills are put towards a common goal.

From knocking on doors and designing leaflets to organising wayleaves, conducting site assessments, coordinating garden digs, router installations, and of course, essential cake baking to sustain our volunteers; we managed to cover all bases!



A moment of reflection and feedback to B4RN HQ: one of the biggest challenges, something we unfortunately didn't have, was a clear set of instructions on how to run a local B4RN volunteer project.

We all had the sense that we were re-inventing the wheel at each step, designing a leaflet, setting up a website, how to organise wayleaves, how to efficiently capture a Site Assessment etc.

Each time we would say to ourselves 'someone somewhere in another local group must have already done this!'.

What we lacked was a framework, similar to what you would expect if you were opening a fast food outlet, you would receive a franchise pack with branding guidelines, communication templates, checklists, procedures, and online tools and resources.

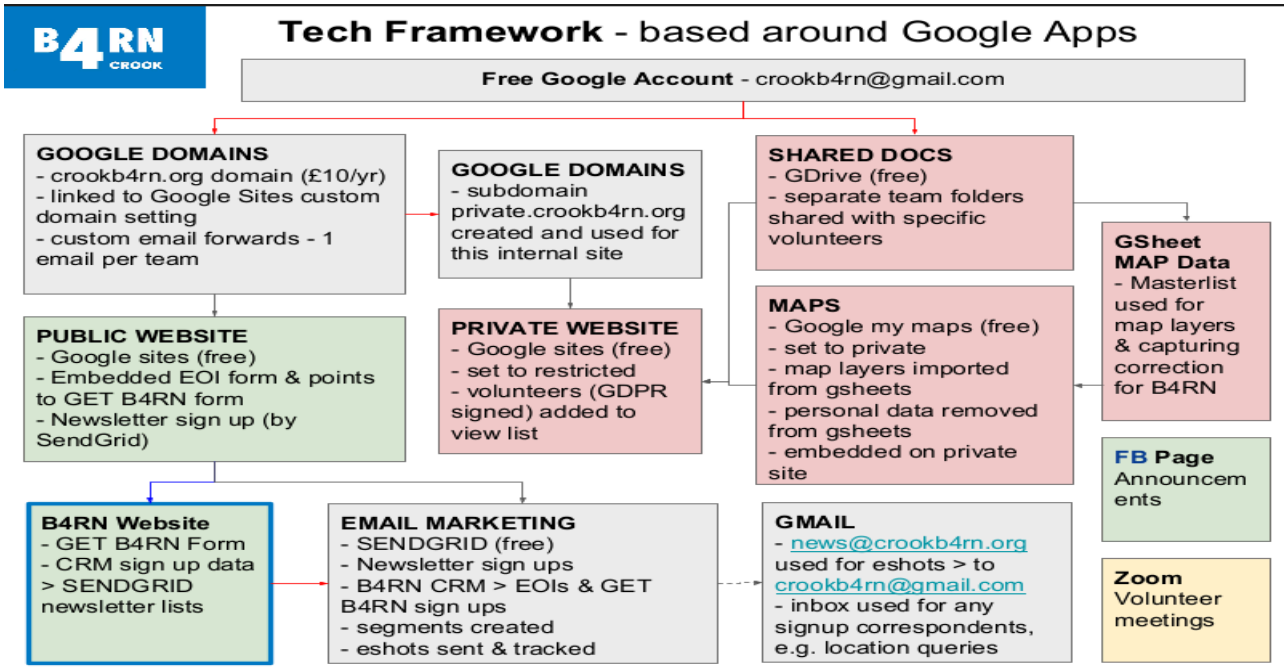
As a volunteer group we had to fight for the project's viability. B4RN HQ gave us specific targets we had to reach before they committed any resources and contractors to the project. We also found ourselves in the middle of a government funding policy change through the voucher scheme. As a group we've been through quite a few stressful and challenging times.

So, in case it helps anyone else wanting to avoid reinventing the wheel, this is what we did. This includes document management, online meetings, online mapping tools, website (public and private) and email marketing tools.

The most remarkable thing about it is all this cost us was a grand total of £10 per year, which was for the domain registration. Our Tech Framework is below.

Key: Green square: Public facing , Red square: Private, volunteers only

It's been thanks to this group's sheer determination that we smashed each target and deadline given to us. Well done everyone! You should be immensely proud of what we've achieved.

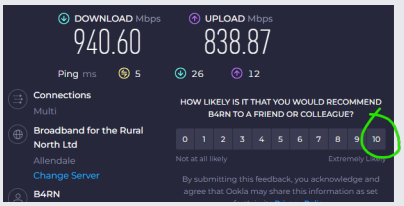


* Expressions of Interest: Target & Achieved 30%

* 'Get B4RN' sign ups: Target 200 properties > Achieved 290 properties

* DCMS Voucher coverage: Target & Achieved 70%

* Shares/ Investment: Target £185k > Achieved £240k



* Wayleave coverage: Target & Achieved 100%

* Site Assessments: Target & Achieved 100%

* Connected properties as of 04 March 2024: 312 properties

On this journey I've met lovely people, explored beautiful countryside, eaten delicious cake, made new friends, and can now work and play at supersonic speeds...

Thank you B4RN and thank you every amazing volunteer and community member for coming together to future-proof our rural corner of the Lake District.

Crook laid over 63 km of duct.

Beyond the book

The Crook website

Crook blogspot



The Jackson family.



Julian Lambton.



If we go that way…



Julie's team publicised the B4RN service.

Cartmel Fell

Signup phase

Dawn and Dan Jackson live at the end of Cartmel Fell on a farm far away from the main road. Dawn grew up in the area and is used to the struggles that come with living in the countryside. But in early 2021 during Covid they discovered exactly how difficult it was to run their business from home and for their young boys to be stuck at home instead of out at school and nursery on a patchy internet connection that was only giving them 9Mbps on its best day.

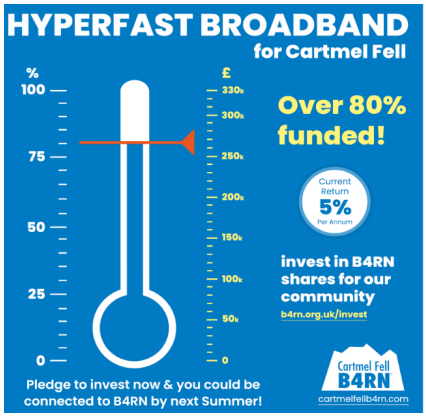
Dawn's neighbours Julian and Vanda Lambton were excited about the prospect of B4RN broadband. They knew it would be transformational for their little Lake District fell farm. They run events and courses at Hare Hill Barn, which Vanda publicises via email newsletters and social media outreach - again not an easy task without a reliable internet connection. Vanda and Julian's incumbent broadband connection was a line of sight transmission from a dish about seven miles away on the other side of Scout Scar - giving them nine megabits per second if they were lucky.

The farm is situated between 500 - 650 feet up the fell, which is quite exposed and very windy, and even in the summer the weather can be pretty severe. Julian said 'When the rain comes and the cloud comes down (which it does quite often) the connection drops to almost nothing and everything closes down - so not exactly resilient for the future.'

Dawn, Vanda, and Julian began to speak to their community to find out who would be interested in supporting a B4RN project. Cartmel Fell's community spirit came to the fore and at her local WI meeting, Vanda explained that a lot of properties on Cartmel Fell had no success when approaching the incumbent (commercial) fibre broadband supplier to



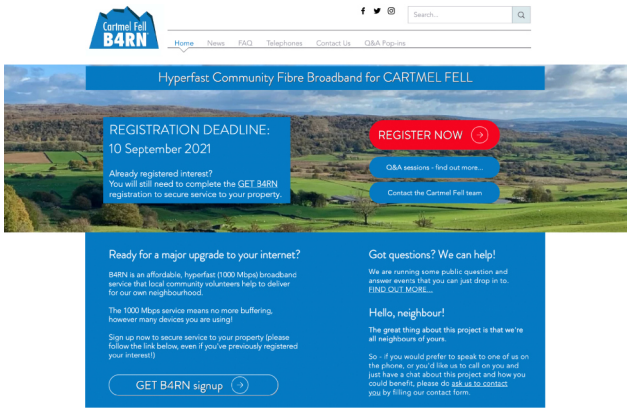
Sign up bean counters.



IB4RN shares and investment progress.



Our banners.



Website kept updated.

provide a service in such a rural area.

Julie Woodgate already had fibre broadband to her home (albeit with a provider charging double the price of B4RN broadband per month for a lower speed) and she was happy enough with her connection. However, knowing that most of her friends and neighbours on Cartmel Fell had shockingly poor connections or paid astronomical amounts to use line-of-sight data transmission, she knew she had to put her project management and digital media experience to use, and agreed to become the project lead for Cartmel Fell.

She got lots of advice and resources from volunteers at other local projects. Among them were Andy Brown (Crosthwaite & Crook), Nick Truch (Crook), Henk Muller (Crosthwaite), Simon Grey (Old Hutton), and Dave Rogerson (Levens). B4RN staff were on hand to answer questions, plus the B4RN User Group volunteers answered questions on Facebook and Zoom and also offered their time to attend community meetings. Dave also gave a demonstration of the fibre splicing technology.

Julie's Story

The help of other experienced volunteers at community outreach events was invaluable - the Cartmel Fell residents could talk to volunteers from other project areas, and they could explain better than anyone their experience of upgrading to B4RN and moving away from services that could be interrupted at any moment by falling trees or snow on the dangling lines (Storm Arwen cut off the internet for weeks!).

During the initial community sign-up phase of the project, the rules around government funding vouchers seemed to keep changing and the volunteers needed the community to re-apply for funding, but they maintained their project pace and



Meeting socially distanced.



Brew time socially distanced.



Diggers of grit.



Tony and Nell.



Angle grinding through rock.

dedication, doing as much preparation as they could before shovels could be put in the ground.

There were roadside posters, emails, Facebook posts, Instagram posts and a website, but the volunteers knew that the best way to get everyone involved would be face to face. The volunteers went out on the road and approached each household and landowner individually to explain why the project was so important.

A pie and quiz night held at the Hare & Hounds to get an update about the project also proved to be a great social occasion.

During Covid, people had moved to Cartmel Fell but this was one of the first times that they had been able to meet their neighbours.

With 7 miles of Cartmel Fell to cover, the team knew it would be quite a time-consuming task to raise the money they needed to get the project viable and to agree routes and wayleaves with landowners. They'd be asking every owner of a parcel of land the route would pass through, to sign a form and a map to agree to allow B4RN to lay its ducts - and there was no monetary compensation to offer, because this is a community project.

Yet - almost everybody they asked for a wayleave said YES.

Julian said his wayleave 'negotiations' with one of the farmers was particularly enjoyable, 'An hour and a half chat about his life history, how he got the farm, what it was like in the old days. Absolutely fascinating, wish I'd recorded it'. At the end of the conversation, when Julian asked 'about this wayleave...' the farmer simply said 'Aye, where do I sign then?'.

Dig phase

Finally in March 2023 they got the exciting news - they had all the necessary wayleaves, government



Tony and the mole.



The Tony Middleton team.



Tony with the mole in good land.



Overhanging eaves provided shelter from the rain.

and investor promised funds to go ahead with the Cartmel Fell project.

When digging commenced on 1st March 2023 there was much excitement amongst the digging volunteer team, who had recently received their necessary training from B4RN to be let loose on their community.

There was also some apprehension as the mainly middle-aged and decidedly unfit volunteers were already familiar with the rough terrain and obstacles they were about to have to negotiate and dig through!

Tony Middleton was contracted to dig the core duct in across the fields to the property boundaries in the summer months. It seemed like he worked at the speed of light, despite the incredibly rocky terrain that he had to work with!

Digging took place between spring and winter 2023. As always in the Lakes, working outside was glorious but we needed to dodge the rain. It made the simple task of digging and laying duct thoroughly unpleasant and it was better to take what shelter we could and wait for it to pass. Overhanging eaves worked well for this. Still - by some good piece of fortune, digs were mainly scheduled on days when it didn't rain or despite a dire forecast there were only showers.

The volunteer digging team had to excavate and bury duct from the property boundary to the point on a house where the service entered. This included driveways and parking areas as well as fields, gardens, rough grass, lawns, beds, and rockeries both natural and man-made. In some cases, more creative solutions had to be found to get the ducts where they needed to be... and the volunteers were more likely to be found with pickaxes than shovels.

They were keen and dedicated and with ingenuity, strength and care a way through was always found .





More walls to go under and round.





Mini diggers were often used.



Pull!



Keeping everything tidy and sub-ducting the 7mm in gash 16mm.

When they finished their work and went for a pint, oftentimes you could barely tell where they'd been digging.

The most extreme example of rock being overcome occurred when the only route from the chamber to a point where four houses could be served required 50m of overground duct.

Previous attempts to thread the duct in-situ had ended in failure, with only one duct completed after hours spent trying to overcome the friction by vigorous shaking. It was, however, very amusing for those of us who could only watch.

The problem was eventually solved when the individual orange services were pulled downhill through a suitable external grade black duct while it was laid out straight on the fell. The full duct was then lifted and threaded into position, curving it around the base of a wall, through a copse and under the eaves of an outbuilding.



In the meantime Dave Rogerson from Levens was busy fitting house kits for us and fusing the tiny fibres.



Dave Rogerson.



BDUK pick up a pick.



The BDUK dig team.



Rob Staveley showing BDUK the core blowing.



BDUK have a go at fusing the fibres in a bullet.

By the summer of 2023 the digs were progressing well and BDUK (the government funding team) came to visit Cartmel Fell.

They and the B4RN staff were all put straight to work on a garden dig so that they could get the full experience.

They helped volunteers to complete all the digging and make good, before a well-deserved sandwich and chat with the team at lunchtime.

They saw the efforts of the Cartmel Fell team to get connectivity to their fell, and it was an opportunity for Rob from B4RN to show how fibre is blown and fused.

Lighting up

When the cabinet and first connections came live in July 2023, the community celebrated in the Parish Hall with a B4RN cake cutting ceremony. From 'B4RN day' onwards, a steady stream of houses would get their own routers and go live on the gigabit broadband service.

For a few particularly difficult or long digs, the volunteers teamed up with B4RN contractors to get the work between the fields and the gardens completed as quickly as possible. The B4RN contractors often remarked how enjoyable it was to work with them to achieve so much in such a short time.



The BDUK and B4RN team photo.

Lighting up Cartmel Fell



Light up day.



Cutting the cake.



Happy customers get their router.



The cake.



The B4RN team. Peter Henderson, Elaine Barker, Flick Greenwood.



The Cartmel Fell ladies.



Happy customer's speed test.



The big day, the router arrives.



Local wildlife helping.





Under the wall.



Bit boney.



Gradient changes.

More digging

The local wildlife sensibly kept out of the way of the digging but occasionally a resident's dog or in this case chickens would take an interest, especially if we'd uncovered a nice source of food for them.

Some digs had to negotiate the land around properties comprising groups of buildings, some of which weren't in the best of condition, or where waste stone had been spread out around the site. Here the contractor's digger proved to be invaluable although even that struggled in some of the terrain.

On several occasions the route had no option but to pass close to trees, which always added time onto the digs. Avoiding damage to tree roots made digging through tree root zones a slow and arduous task, especially if the ground was also stony which turned it into a hand-dig and tunnelling operation.

But the dig that the team voted the most unpleasant experience was where the route reached a house via a drainage field from an old septic tank!

We became very good at punching under obstructions using a long bar that could be hammered through walls, hedges, and even a concrete driveway.

We chased duct under flower beds and landscaping to minimise disruption. The biggest level change overcome entirely underground was 1200mm, which was only possible because the soil behind it was soft enough to dig down.

The final dig, a late insertion to the programme in December, involved connecting up three houses. Although we were able to make use of existing ductwork, a substantial dig was still required through the driveway. The ice and snow were bearable but when the freezing rain started, we were very glad we had nearly finished!

Digging days



Caption competition.



Threading duct.



Hard hand-dig.



Sub-ducting.



Bitter cold work day ducting to three more houses.



Sunny work day.



Pickaxes to the ready.



Laying duct in the trench.

Blowing and fusing days



Volunteers fleeting core fibre.



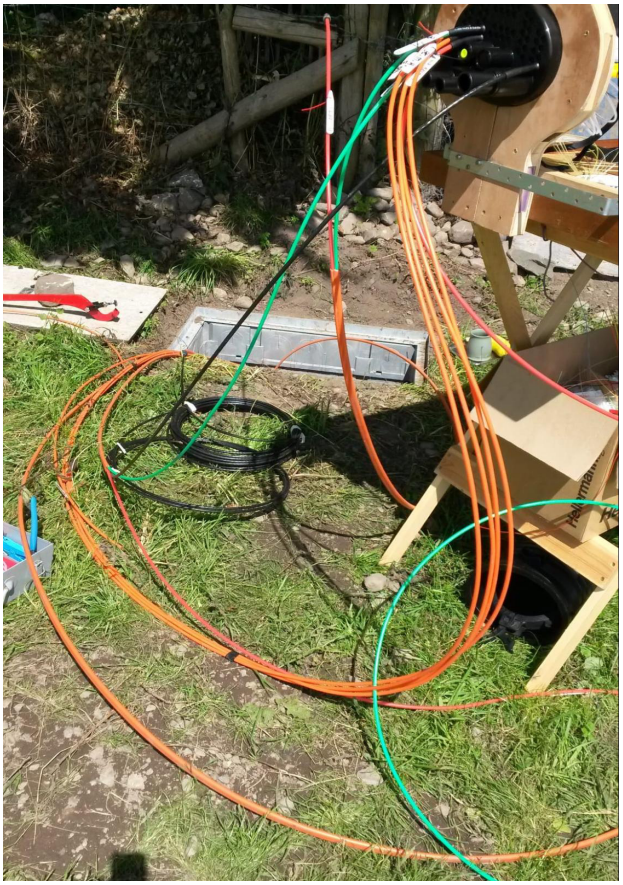
Frank Brown blowing house fibres.



Rob Staveley and Ronan Halstead blowing core fibre.



Frank sorts all the ducts and blows the house fibres.



Fusing the house fibres.



Digging volunteers.



We did it!



Yay, live at last.

The Cartmel Fell project dig and go-live phase was largely complete in just 12 months.

Volunteers received dig grants from B4RN where they did all of the garden dig. This has been paid to a community fund by B4RN and a community group has been formed to determine the best use for this money on projects that will bring a benefit to Cartmel Fell. One such example already underway is the maintenance of grounds near the parish hall and an area of managed woodland owned by the Cartmel Fell Community Trust.

The volunteers said they had enjoyed working on the B4RN project, and wanted to continue to work on other projects together, so one summer evening they attended the Parish Hall Committee AGM en masse to offer their services, and thereafter they set to work.

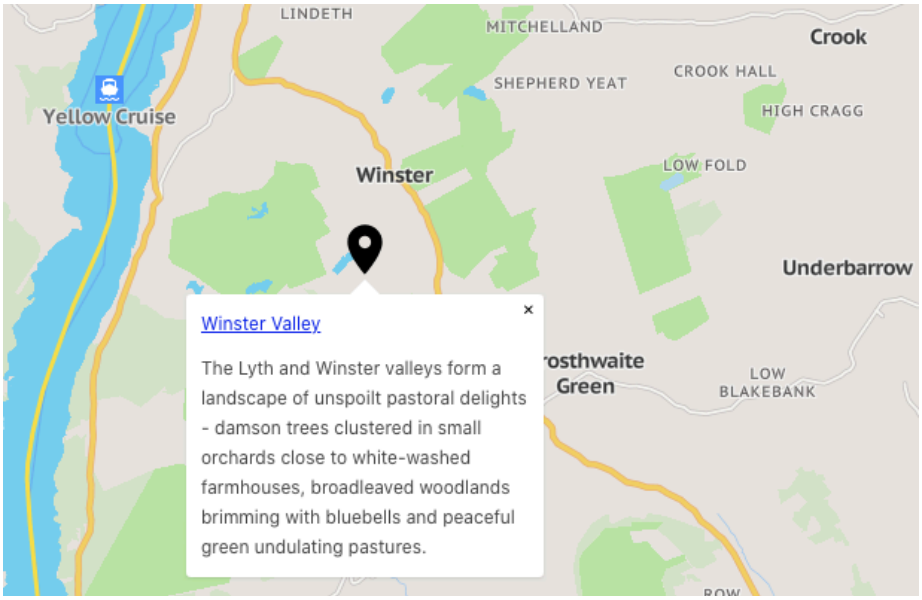
More members of the community have expressed an interest in joining the volunteers in 2024. We formed www.cartmelfellvolunteers.com and we now run community events. We have planted an orchard and nuttery and we hold regular volunteer sessions on the parish allotment.

Cartmel Fell laid 26 km of duct.



Some of the rigs Tony Middleton used on the project.

Winster



By Jane Crowe

The trouble with Winster, is B4RN took over 5 months to come up with a feasible scheme. which caused our committee to lose interest.

Dave Ryall appointed me as group coordinator at our second meeting in September 2022. We were part of the Crosthwaite scheme and needed to get all the properties in the Hubbersty Head area onboard, but as they had BT fibre to the cabinet already they were not that interested, even though some of our committee visited them all. Suddenly in February 2023 we learned that it wasn't feasible to supply Winster as there were no vouchers left for Crosthwaite properties. Also there were not enough spare fibres left on Crook so on 17 February 2023 B4RN decided to extend Cartmel Fell to include the 40 or so properties in Winster.

In May Alec Cartwright and Felicity (Flick) Greenwood took over the project. Henk Muller (from Crosthwaite) had been helping with all the map work. We (Flick, Tony Middleton, my husband John and I) walked the route making alterations to the map as we went. Julie had already got most of the Scowcroft estate wayleaves and Henk had walked the route with Christopher Scott, the other main landowner so it was left to me to get the wayleaves for the other properties. Henk helped me a lot preparing maps to go with the wayleave agreements.

On 12 July 2023, Winster Village held an open meeting. This was well attended. B4RN gave us an ultimatum to get all the wayleaves and the money by the first week in September. After the meeting I was having a small meltdown at home when there was a knock at the door and the person there told me not to worry as they and a friend would supply the money!! I was on top of the wayleaves so Winster got the official go-ahead on the 24 August 2023.



The holiday cottage dig.



Splendid work by Liam Swidenbank of TS Trenching.



Jane and John Crowe with Dave Rogerson as he fits the first house kit in Winster.



Winster church. Photo credit *English Lakes*.

We were away the first week in September when a neighbour emailed us to say Tony Middleton had started digging in the ducting, and by the time we got back he was already at Winster church.

We had discussed garden digs at committee meetings and Liam Middleton was prepared to do them all rather than just being left with the difficult ones. It was decided it would be much quicker as the few fit and able bodied men were too busy to do much. This worked very well and he was quick and very tidy. Early on he dug through a lawn on one of our holiday house gardens and John went down to see the result. He was met by the owner who said it was a real mess so John was a bit apprehensive as he went round the back, the bloke said 'Got you!' He was actually impressed by how little mess there was.

Dave Rogerson then followed on doing the house kits. I managed his appointments which saved time. He liaised with Frank Brown to blow all the connections through.

Elaine Barker then organised our date to install routers in most of the properties on the Cartmel Fell side of the road. James House and I were trained by Elaine and Flick so we could install routers at a later date. So half Winster went live on 27 November. The road crossings held up the other half to 19 December.

In the end we managed to get almost everybody connected in 3 months and everybody seems pleased with the speed. After speeds of 9mbps this is bliss. I can even watch catch-up TV.

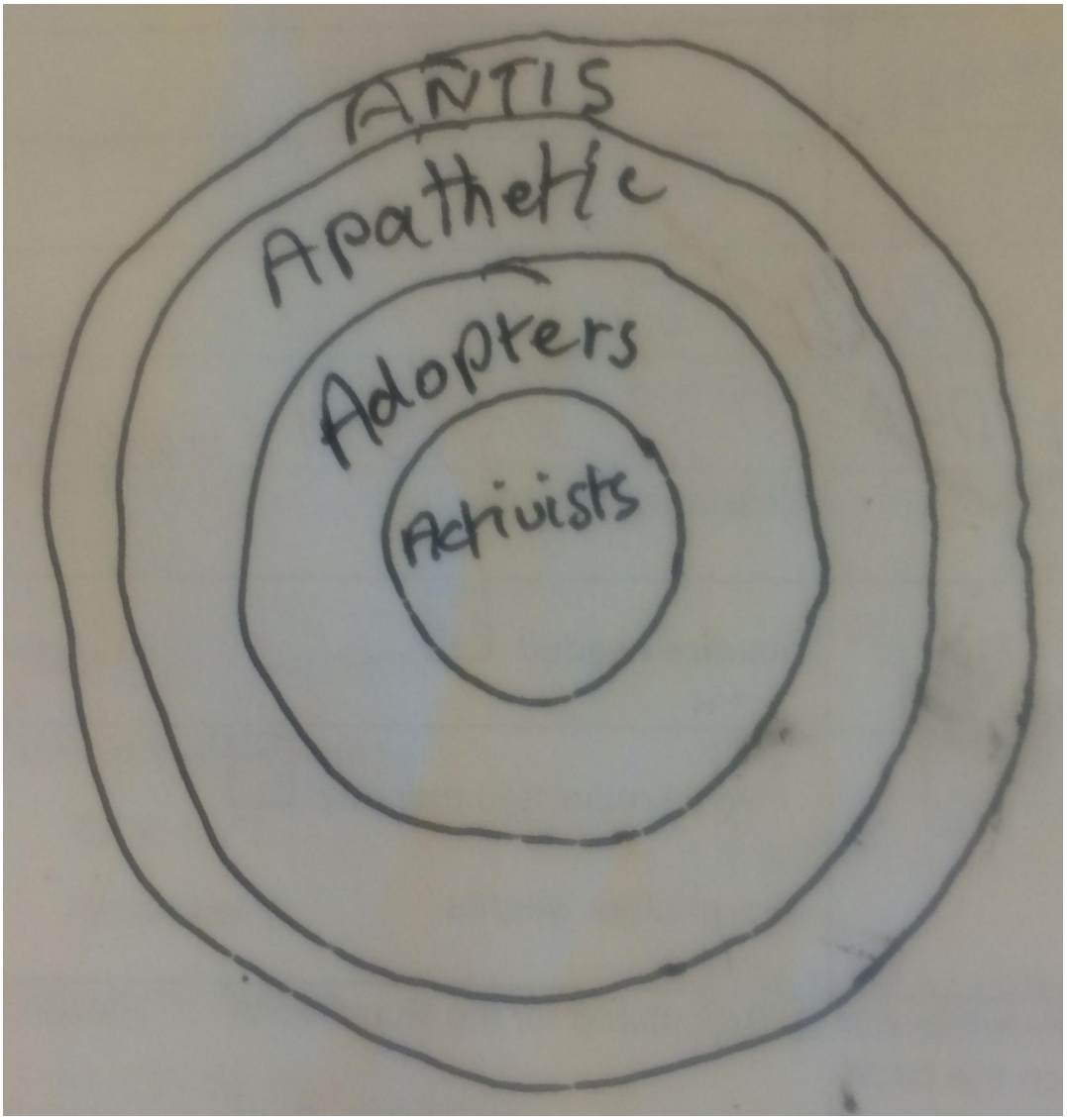
Thank you very much to all the B4RN employees and contractors who helped us so much to implement this project quickly and successfully.

Chapter 11

Showtell days

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The gigabus with a very apt numberplate.



The gigabus.



The gigabus trip.



James at Borwick showing the group how he levels a trench.

Showtell days

Nobody before B4RN had figured out how to build a commercially viable fibre network in the most sparsely populated and difficult countryside. By trial and error we did, and we were enjoying a lot of success.

We had been besieged with letters and emails, phone calls and direct visits from other communities wanting to join our network, and communities wanting to build their own, and even government officials. Other telcos also wanted to know how to do rural fibre.

Barry and the management team decided that, to save time and effort, and as we still did not have any staff that we would hold 'showtell' days, where all the questions could be answered in one hit, and the visitors could be taken on a tour to see everything in real life and real time.

These proved to be a great success and we held one or two a year up to Covid starting.

Emtelle, our duct and fibre supplier sponsored these events. They put up the finance to hire a venue and provide refreshments. Then when we got our own large enough premises we held them at Melling. Simon Wade was the organiser and he even had takeaway sample packs of the duct and fibres for all the visitors. Suppliers like Sumitomo, Fujicura, Hellerman Tyton and Mills also came and supported these days with demos and information.

Simon hired a coach from a local company and we were amazed by its apt number plate, GIG 4871. The bus was used for many trips out.

Visitors were shown active digs, and could meet and talk to the volunteers doing them. They also got to see fibre blows, both core blows and house fibre blows.



Simon Wade presents at the showtell day.



James Taylor on the core fibre blowing demonstration.



Tom and Bruce on the reeler on the core fibre blow.



As you can see in this photo it is Walter (in yellow) asking the questions!

Simon usually started the day's proceedings, and was a fantastic help on every showtell day, always good humoured, kind and patient.

Barry, and later Tom, would also give updates and answer questions. As time progressed and we got more staff, they would also do presentations about new developments, training, and health and safety. They also did blowing and fusing demos and let visitors have a go.

All the staff took part in one showtell day or another, and joined in with the action, answering questions and pointing things out. As we took on more staff they also benefitted from meeting the communities we visited on the day.

We knew that nothing could surpass seeing everything done in real life, so we always took people out on the bus to see the different stages of a network build.

Mills became our main blower supplier, and this was about the only time the machines could be seen in their shining glory, because, once out on the field trip you saw the machines in their everyday locations, sometimes covered in hailstones and often mud.

Craig from Hellerman Tyton was also very supportive and brought different bullets and explained the differences between them all.



The Mills blowers.



Walter from Surrey at Craig's Hellerman Tyton workshop.



Nick Hall doing a duct laying workshop.



The group watching Bruce blow fibre to the pub.



Keith Brady (Borwick) explains how to lay duct.

In the workshops the visitors could get their hands on the duct, and then Nick from B4RN would explain how to lay the duct.

On one trip out Keith from Borwick showed them how to lay multiple ducts in a single trench, and explained to them where it is going to.

We also showed them fleeting, and explained how to do it and why we had to do it.

We took them to see a site where blowing and fusing were happening on the same day, so that they could also see house installs and see how the duct got to every property from the chamber. To blow a house connection the blower often uses a 'fibre tail' with an air gap. This blows an extra metre or so of fibre before it stops, and that is enough to do a fuse in the outdoor box of then new outdoor boxes, or enough to feed the fibre through to the indoor box.

Everyone asked many questions, and there are lots of photos with groups like this around Bruce, and he always had the answers for the visitors.

We took them on guided walks to see how the land healed after the duct had been buried and also to see the fusing trailer in action once we had got it. We were very proud of that trailer.

We held a showtell at Aughton at the village hall, and the visitors walked a route looking at how we got



Chris Carr (Aughton) showing visitors how to get through or under.

Showtell blowing demonstrations



A blow at Clapham showtell day.



A long blow to a church, with the Cheshire tribe watching.



Walter taking photos at Borwick blows on the showtell.



Bruce explains how it all works



Bruce answers everyone's questions.



More questions at Clapham for Bruce.



Core fibre blowing to the left, house fibre blowing and fusing to the right.



Aughton hosts a showtell.

over obstacles, watched a blow and watched a house install at the local pub. The gigabus was there to do the road trip. Pat was there to serve tea. It was a great event and many visitors came, including some from the European Union government.

When we got back from our trips we had refreshments back at Melling. Next stop on the Aughton day was the pub, where Bruce blew the fibre in.



Full turn-out at Aughton.



Walter always contributed pies from the local butcher.



Chris Carr leads a walk to see if anyone can spot a trench.



Liza Huddleston (huddspuds) made us cakes.



Pat as usual on her tea duty at Arkholme.



Jacob's join back at Melling for lunch.



Aughton showtell, visitors watched the fibre blow and fusing at the pub.



Fusing the Red Well pub install, filmed by BBC Alba.



Barry explains how a cabinet works at the Arkholme showtell day.



One of the first showtells in the Lancaster House hotel.

Everyone crossed over the road from the chamber where Bruce had blown the fibre from, and it was fused and came live. As you can see from the shirts on the photo gallery page, Hyperoptic and other altnets had sent staff to find out what we were doing. The showtell was open to everyone, sharing our knowledge.

BBC Alba filmed the day at Aughton, and a Radio Wales interview was done in the field on that day.

Beyond the book

BBC Radio Wales

BBC Alba

Showtell days were held in many different venues. The first few were held in a hotel, then in our workshop when we moved to Melling in 2015.

Other altnets (alternative networks) have been to our showtell days, and have gone away and built their own networks. They have learnt from our good practice, as well as our mistakes. We hide neither, as knowledge is meant to be shared.

At one event we even got a demonstration of Ann and her quad measuring out the duct for a group of houses when we visited Clapham for a showtell day

Some have asked us why we share our hard-won knowledge. We work on the principle that if I have an apple, and you have an apple and we exchange them, we still only have one apple. Whereas if you



Ann at the Clapham showtell demonstrating duct reeling out.



Tom showing BDUK round the storage depot at Melling.



Jamie Potter talking to the volunteers at a showtell day.



Another day, another BDUK visit to Rathmell.



Iain Robertson taught William to fuse at Aughton 2013.

have an idea, and I have an idea and we exchange them, we both have two ideas.

The workshops bring together communities working to the same end, sharing knowledge and building the power of the people to do what the big companies cannot or will not.

Jamie Potter from BDUK came to a showtell in 2016 and described how government vouchers would soon be available. He then went to work for another altnet in the north taking his new knowledge from B4RN with him.

We had many visits from BDUK as their staff changed with amazing regularity, and we had to tell them all about it many times. Sadly, they did not seem to understand about apples.

We also found we had more site visits from BDUK once the voucher scheme started. Before then they had come to the showtell days and wanted to learn more.

William, a visitor from America, was shown how to fuse fibre and was very pleased with himself when he finished fusing an entire bullet.

We have had visits from all over the UK and Europe, and from Canada and Africa. All are impressed by our gigabit symmetrical service, and we also supply 10Gbps on request or more if needed.



William's finished bullet enclosure.

The showtell fibre hokey-kokey

The most popular demonstration at showtell days was the hokey-kokey, where Emtelle put a transparent duct round the room and through it blew a fibre lit by a red light pen.

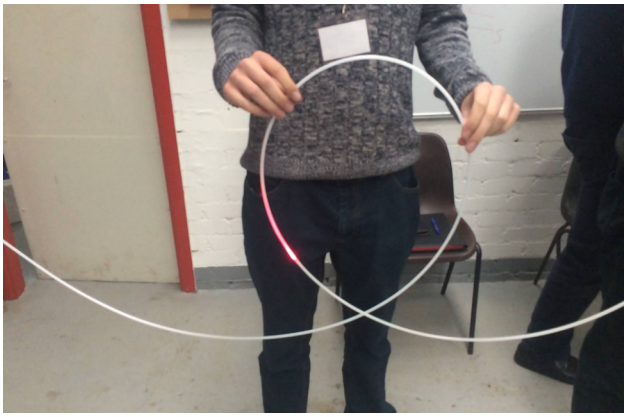
Mark Graham from Emtelle would set up the demo and everyone could see how easy it was to blow fibre down a duct, and how a bend in the duct would stop the fibre going through. The photos show the red light pen on the floor coupled up to the pan of fibre, and the red light showing its path in the man's hand in the loop of duct. The fibre will blow ok through loose loops, but a tighter bend will impede progress or even stop the blow. A practical demonstration explains it far better than words can.



The fibre hokey-kokey.



The red-light pen on the floor and the fibre light reaches the man's hand.



Fibre looping the loop.



Tom doing his presentation at a showtell day.



Rapt attention.



Showtell day Activists discussing duct.

Rural communities have to work together to lay fibre, if they want a future-proof internet connection.

In Summary

1. The capacity of local communities to achieve significant objectives without external financial support is very great, but could be even greater with support, of course

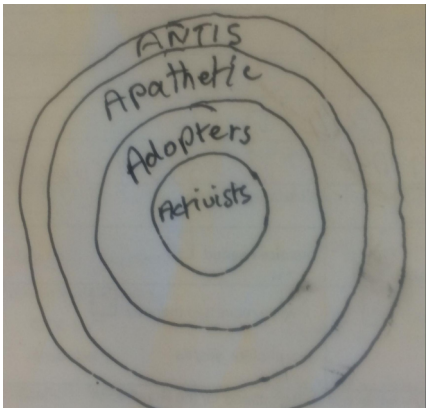
2. Clear, expert, ambitious vision and planning are essential to breaking the mould and leading the tribe.

3. Find public-spirited experts from your community: in our case, telecom engineers, accountants, solicitors and administrators, tea ladies. Train your diggers, blowers, fusers and DIY volunteers.

4. Do not rely on the government - they might help but probably will not. Do not believe what the ministry and civil service tells you; not everything they tell might be true, or it may only be true for a limited time, or it may not be the whole truth. And policies and goals can change overnight.

5. The B4RN project has proved what can be done in the face of very poor odds, and shown the social capital accrued, pride of ownership and social cohesion, which are not necessarily part of Establishment aims and objectives.

6. You need to want something badly enough to do something about it. So to repeat what we talked about at the beginning of this book, here is a call to action. Find your tribe and JFDI.



Story of the 4 As

The Activists

These are very passionate, motivated people, they cannot do it all themselves, but they can inspire and enable others.

The Adopters

These are smart, experienced, and skilled people, who want to help themselves and their communities, and can actually make sure 'stuff happens'. They are often, but not always, retired people.

The Apathetic

This is probably too strong a word, maybe Agnostic would be better? These are the people, who for different reasons are reluctant to commit. It could be that the project is of no interest to them, it could be they do not understand it, or it could be their own lives are so hard they do not have the energy to spare. A large percentage of them can be won over by Adopters, but Activists just drive them away.

The Antis

These are people who have a vested interest in preventing the project, or people in government who don't understand it and will not put any effort into helping it. The majority of them cannot be won over as the incumbent's lobby is far stronger than yours. The main job is to stop them upsetting the Apathetic, and from influencing your Adopters. Though, to be fair, most Adopters can see through them and choose to let them lie.

If you want to build a B4RN in your area, come and visit us, or watch the videos on our website, and join our Facebook group to see the community in action. If you have a question, we will try to answer it. If you have a problem, we'll work with you to find a solution. And perhaps we'll share the solution with others.

It is called Paying it Forward...

It can transform your life, your communities, your feeling of empowerment and your pride in the power of the people.

Chapter 12

B4SW-B4MS–Dad's Army, Mint and Sprint

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Old and New Hutton, Preston Patrick - Dad's Army

By Martyn Welch

For B4SW, the journey started with parish surveys that repeatedly placed potholes and poor broadband speeds at the top of parishioners' concerns. There were tales of children crying because they could not complete their online school homework, businesses struggling to work online and online home-working, video-calls or streaming practically impossible.



We lobbied about the potholes with some success. However, on the broadband front, we learned that Cumbria County Council had obtained a huge grant from the government to provide 95% of the



population with broadband. We contacted them for a grant only to find that all the funding was going to BT, and that we were part of only 5% of Cumbria that had been permanently excluded from the 'Connecting Cumbria' project, partly because of the very poor overhead (aluminium) conductors in New Hutton and Old Hutton parishes.

It was then, in early 2015 that fortunes started to improve. Paul Parsons, a member of the B4RN team and who grew-up on a farm in Old Hutton, gave a presentation to New Hutton and Old Hutton parish councils. In the presentation Paul described who B4RN were, how their network was delivered by communities, the speed of their broadband, and the key fact that the B4RN network was due to be available at the Auction Mart at M6 Junction 36 within a few months.

Knowing that only the parish of Preston Patrick lay between themselves and Junction 36, New Hutton and Old Hutton parish councils gave a presentation to Preston Patrick Parish Council, who accepted the proposal that the three parish councils should join forces to create a joint group to extend the B4RN

network throughout their three parishes.

In the autumn of 2015, an independent steering group made-up of volunteers, supported by the three parish councils, was established with the single purpose of bringing better broadband to the three parishes. At the inaugural meeting Martyn Welch was appointed project manager and chairman, Arthur Robinson the secretary, John Heap the treasurer and Jean Robinson the website manager. Choosing a suitable name for the group was difficult, but it was generally agreed that it would be good to have Westmorland in the title, and 'Broadband for South Westmorland' (B4SW) was born.

The group quickly formed a project plan, and set about fact-finding from several angles including meetings with B4RN, attending a B4RN 'Look and Learn' day and visiting several other groups to learn from their experiences.

Having gathered sufficient information, they established a communication plan which included a website created by Jean Robinson, and various social media sites created by Simon Gray. Once these were in place, public meetings were widely publicised and held at the village hall in each of the three parishes.

These meetings were very well attended indeed! Broadband was obviously a key issue for parishioners and they turned-up in their droves to the meetings. 'Expression of Interest' forms had been prepared in advance and were distributed at the meetings, along with details of how to access an online version. These forms captured key information such as contact details, if the applicant was interested in taking a connection, if they were willing to make an investment, and if they would volunteer to help the project. This proved to be a great way of capturing information, and it was quickly established that interest within the parishes was extremely high, and lots of people were willing to invest.

The chart shows how quickly this support was established.

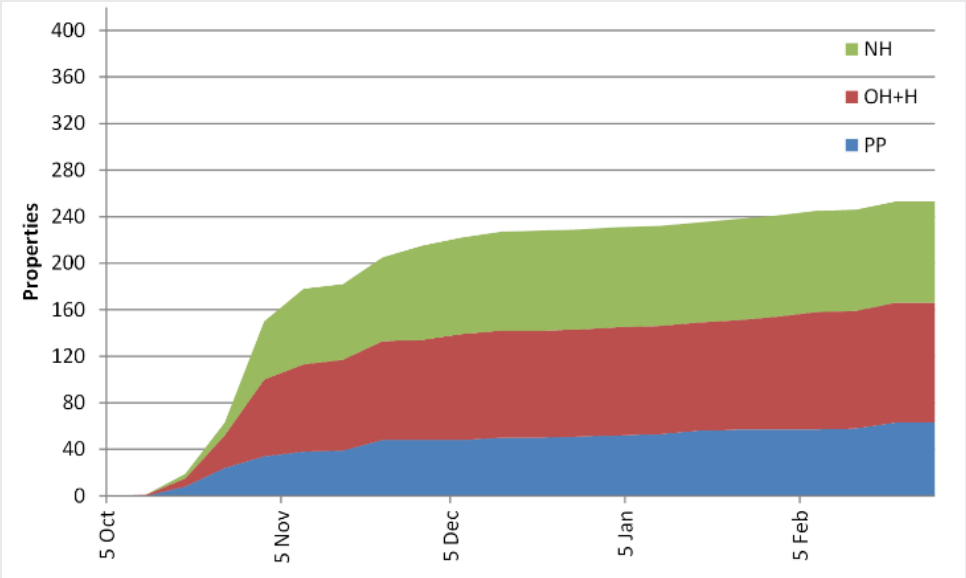


Chart 1 - Properties registering for a connection

When B4SW started their project, B4RN had three basic requirements that each group must meet before being allowed them to continue. These were:

Demonstrating sufficient initial demand for connections;

Raising sufficient initial funding;

Demonstrating the ability to deliver the project.

Having demonstrated the initial demand (see the above chart), we next needed to demonstrate that we could raise sufficient initial funding. In order to do that, we needed to know what the overall project costs were likely to be and, to do that, we needed a network design.

At that time B4RN had become a victim of their own success and were extremely busy designing other groups' networks, and did not have time to develop one for our group. However, we had a secret weapon, Martyn had spent an entire career working in utility companies, of which a significant portion had been in network design. So he spent late 2015 and the Christmas break designing a network based on B4RN's network principles, making it ready for approval by the beginning of 2016.

The resulting design was a resilient figure-of-8, with the bottom loop starting at the Auction Mart near Junction 36 on the M6 and crossing at the Old Hutton cabinet and with the top loop passing through the New Hutton cabinet. The lower loop needed a line running up each side of the M6 motorway to reach all the customers, because the M6 could be crossed only in very few places. Running out of this figure-of-8 were spurs towards Lupton, Preston Richard, Stainton, Oxenholme, Kendal, Skelsmergh, Grayrigg, Junction 37 on the M6, and Killington. The total length of trunk line was about 38 km (24 miles) and the spur lines added about 30 km (19 miles) in length.

B4RN accepted the design in principle, and it formed the basis of the initial estimate for project costs. At that time the estimated costs were around £300,000. By the time the design was signed-off this had risen to approximately £500,000, but at least we now had a target for the raising of funds!

When raising funds we were able to rely on the data captured through the 'Expressions of Interest' forms, which identified those people who were willing to invest. The next task was, therefore, to visit them, and convert their interest into a meaningful pledge or better still, hard cash. This task was split between members of the steering group, each of whom visited a number of potential investors with pledge forms (which included a disclaimer notice explaining that we were not qualified to provide any financial guidance). This was very successful indeed as it allowed all potential investors to ask more detailed questions about B4RN, the project, and any concerns they might have before making their investments. The money soon started rolling in.

The most popular method of investing was for people to pledge to buy shares in B4RN. This money was ring-fenced for use on the B4SW project. Most people we visited were happy to buy shares, and many provided cheques to back up their pledge made out to B4RN on the understanding that the B4SW group

would hold onto them on their behalf until such a time as the project got the official 'go ahead', and they would become shareholders and members of B4RN.

At that time, investments in B4RN qualified for 30% tax relief under the Enterprise Initiative Scheme (EIS) run by HMRC. This was very attractive to many of those who paid income tax. B4RN also provided a free connection (which normally costed £150) for each £1,500 invested. The combination of these two initiatives proved to be a 'sweet-spot' for many people and, therefore, investing £1,500 (or multiples thereof) became very popular indeed.

The group soon accumulated over £340,000 of share investments, something the group felt was an amazing response in such a short time from their three small rural parishes in South Cumbria.

People were also allowed to make loans to B4RN to be used on the B4SW project. Although the group was aware that some loans had been made, the details of those loans were confidential between B4RN and the investors and, therefore, we did not know how much was raised through that avenue. One loan that we were aware of, however, was from the community fund from banks who operated the Armistead Wind Farm. That fund provided a £10,000 loan to B4RN for use on the B4SW project.

A third source of funding was for the group to obtain grants. Peter Thornton was the leader of South Lakeland District Council (SLDC) at the time and was also the ward councillor for New Hutton and Old Hutton. Peter was very supportive of B4RN in general, and the B4SW project in particular because it was the first B4RN project to be undertaken in South Lakeland. He, therefore, fully supported an application to SLDC for grant funding towards the B4SW project. It turned out that the B4SW project qualified for funding under their Locally Important Project scheme (LIP), and the group was awarded £20,000 for use towards the purchase of the New Hutton electronics cabinet. This cabinet was a larger one than most in order to accommodate a link directly into the national North-South fibre which runs along the western edge of New Hutton.

By mid-2016 over £370,000 had been raised through the various mechanisms, an amount which represented around 75% of the expected costs of the project. This was sufficient to meet the B4RN requirement for initial funding.

Having satisfied the first two B4RN requirements (sufficient demand and sufficient funding), the group set about demonstrating its ability to deliver the project. We already had a well-functioning steering group which had managed proceedings to date. This was further supplemented with a network of champions who looked after each small group of houses (hamlets), and resolved tricky issues like working with each resident to determine where the B4RN equipment would be located in their house, the route the service would take to get there and, most importantly of all–who would provide lashings of tea-and-cake. This together with over 100 volunteers who registered to help with the project, meant that our ability to deliver was demonstrated in spades.

We next turned our attention to the thorny issue of wayleaves (the legal agreement to lay a cable or pipe across somebody's land). The B4SW network covered quite a significant area of around 20 square miles

(51km^2) and, when disregarding private gardens and lawns, it crossed land owned by around 130 landowners. Now, landowners are normally reluctant for utilities to lay pipes or cables across their land unless there is a significant financial return for them –a position which is very understandable. Add into the mix the B4RN principle that wayleaves should be free for their 'community led' projects, it quickly became obvious that obtaining landowner permissions was going to be a major task. But we had two major factors up our sleeve that worked heavily in our favour:

It was the community, the parish, their community, their parish who would benefit for allowing the network to be laid across their land, and we had Arthur Robinson. Arthur was a well-respected gent from a farming family in New Hutton, who was either related to many of the landowners or had known them for many years.

Talking to land owners about wayleaves involved an awful lot of sitting around kitchen tables drinking tea and eating cake. With our acknowledged expertise in this area we knew that we were in with a chance, and so we embarked on Mission Impossible to obtain continuous wayleaves for the whole of the network. We needed to get them all before we could start because there is no point laying across one landowner's land only to find that you cannot cross into the next one due to lack of permission. On the occasions where permission was not given, we had to re-design that section to ensure we had a route with continuous permissions from start to finish.

The responses of landowners varied enormously. At one end of the spectrum we had landowners who could not do too much to help the project. Not only would they agree wayleaves but they were more than willing to use their own equipment to lay ducts across their land and otherwise to help us all they could. At the other end of the spectrum there were landowners who were reluctant to give permission. We even had one who stated that, in their view, the internet was "the work of the devil", "it had gone far too far and needed to be stopped". Understandably they were reluctant to let us across their land and we had to go round.

When obtaining wayleaves, Arthur took Old Hutton, Martyn took New Hutton, and Preston Patrick was split between various people. When problems were encountered, Arthur would help out where he could and, in most cases, that was sufficient. In all, we had a really high rate of success with only 8 significant landowners out of the original 130 who would not let us cross their land.

There were, however, some key areas which presented really big problems. One major landowner in Preston Patrick was very keen on the B4RN principle of ensuring that service would be provided to every property within the parish who wanted it, for no extra cost, no matter how remote it was. Now, this was, indeed, one of B4RN's key principles and something they were absolutely sure to provide. However, the landowner was very keen to have this position established in some form of legal document before allowing any network to be laid across their land. Although this was a highly laudable position, it did not half cause our group a lot of heartache! After making suitable representation to B4RN, the situation was eventually resolved by Barry Forde having direct conversations with the landowner and providing a letter of assurance to the landowner's satisfaction, and they finally gave their permission. We were mightily

relieved and the project was back on track.

A second area of major difficulty was in New Hutton where a number of landowners were reluctant to let the network cross their land. The location of their land proved to be particularly problematic, because together they prevented any cables being laid to or from the electronics cabinet positioned at the village hall without going along public roads (which was against B4RN's business case). This problem was eventually resolved by heart-to-heart talks across kitchen tables in which it became clear that everyone (including the landowners' families, friends and relatives) would benefit if the project could go ahead. Those were serious tea-and-cake moments. The landowners gave their permission, for which we were very grateful indeed, and we were back on track again!

The pattern of remaining refusals enabled us to reach everyone who wanted a service, but it needed us to lay an awful lot more core network than originally planned (and costing much more), right up to the northern border of the parish. Also we could not complete the top loop of the original design because of a 120m gap in the south-western section where wayleaves could not be obtained or got around. Overall resilience was not compromised, however, because alternative feeds were available through the significant number of spurs connecting with other networks.

We were then in a position where we had satisfied all B4RN's initial requirements (sufficient demand, sufficient funding and ability to deliver) AND we had obtained all the wayleave agreements necessary for a continuous network. The last thing we needed to be able to make a start on-site was for final sign-off of the design, but this proved difficult due to B4RN's other workload. So we waited, and we waited, and we waited. Eventually as it got nearer to autumn it became clear that some very important fields in the design would shortly be ploughed and seeded for crops, and would become unavailable for duct-laying for a long time, and still we waited. After lots of representation, B4RN allowed Tony Swidenbank (Swinney), to lay ducts in one of these important fields in Old Hutton on 26th August 2016. We were off!



Paul Parsons and Frank Brown moleploughing.

Very shortly afterwards the Fantastic Frank Brown, who was a farmer himself (and a senior volunteer who did lots of ploughing for B4RN), made an emotional plea to be allowed to lay similarly important sections of duct in Preston Patrick.

After much discussion it was finally agreed that we could do it, and the very next day, those essential ducts were installed. It was a VERY Close-run thing



Tea with waitress service.



Cheers.



Arthur with his buttie box of fruit.



A welcome tea break.

indeed, with the ploughing/seeding contractor turning into the fields to start his ploughing as we were turning out.

Community volunteers turned-out in massive force on both of those initial days, with everyone eager to be involved in the project that they had seen maturing for many months. In Old Hutton (the first day) the turnout proved to be somewhat embarrassing for the organisers, with more volunteers available than there were tasks to undertake, but everyone had a great day, not least because they could all say that they were involved in installing the first section of ducts in the project. In Preston Patrick the turnout was similar but, learning from the experience in Old Hutton, we were better prepared and matched people to tasks in a more professional manner. Most importantly, we had organised much better supplies of tea-and-cake!

And so it began, the marathon that was constructing the network.

Now, the skills required by volunteers are numerous and varied. The obvious skills that stood out on a project like this was the ability to dig. To dig consistently, for long periods, in good weather and bad, up hill and down dale, without fame or fortune, to just keep on digging. After digging trenches came the skill of 'smoothing the bottom' because, as we often liked to point out, when laying ducts, "we do like a smooth bottom". Once a suitably smooth bottom had been obtained, there was the skill of running out the duct–sometimes one duct, sometimes many ducts, but no matter how many, no matter how far, or however complex the route taken, it was always accompanied by the much-chanted mantra "MIND YOU DON'T KINK IT".

Yes, indeed, as previously mentioned, the skills required were many and varied, but above all else, to be a true volunteer 'worth their salt' everyone needed to be able to drink lots of tea (other beverages are available) and eat lots of cake, something we practised day-in, day-out and, in the fullness of time, we became reasonably good at it.

Indeed, the provision of 'refreshments' became quite the thing for some. At one end of the spectrum we had people who never provided anything.One day we installed a service across a field, under a wall, across a track, under a second wall then across a lawn, all in the same day, in constant driving rain in the middle of winter and we were never offered so much as a glass of water. At the end of the job, it was all the customer could do to answer the door to acknowledge that we were leaving the site.

Thankfully, that kind of experience was very much the exception rather than the rule. It was more the norm for those residents who could not do physical work to make sure that we got hot drinks in winter, cold drinks in summer and always, lots of biscuits and cake. At the best end of the spectrum, however, there were some ladies (and it was always the ladies) who seemed to make the provision of refreshments a matter of conscience, pride and honour. We liked those ladies–we like them a lot!

As a result we had shed-loads of bacon butties right across the parish, particularly from Irene aka Mrs Graham the Mud Angel, who never failed to provide heaps of bacon butties every time we called round. And we seemed to call round quite a lot for some inexplicable reason. We had hot lasagna delivered to the field in big Pyrex dishes, we have had ladies carrying trays weighed-down with pots of tea and heaps of cake, arguing with each other in the middle of the road over whose turn it was to deliver sustenance to the emaciated (NOT) workers. We had one kind soul (Sheila) who turned up day after day with a wicker picnic basket loaded to the brim with individually wrapped sandwiches, pots of tea and heaps of freshly-baked cakes. What an angel! And none of us will forget, in the middle of the winter of 2017, when Barbara said we could have lunch sat in her garage at Rawhead Cottage. We were just glad to get out of the piercingly cold wind and driving rain, and to sit in a relatively warm environment. We were just about to break-out our 'buttie-boxes' when Barbara emerged from her house with bowls of piping hot broth and a stack of crusty bread. Suddenly, the butties made with our own fair hands earlier that day did not quite 'cut the mustard' and they were hastily returned to our kit-bags. Having eaten our much-appreciated fill of broth and bread, you can imagine our surprise and delight as Barbara re-emerged from the house with piping hot bowls of home-made apple-pie, complete with lashings of hot custard. We liked Barbara. Oddly the job at Barbara's house, which should have taken a single day, somehow seemed to last for several days - - very mysterious!

We could go on and on reflecting on the fantastic hospitality shown by dozens and dozens of appreciative folk around the parishes, but the point has already been well made that tea-and-cake was VERY important indeed and was always gratefully received.

As construction took hold, a recurring pattern of volunteers started to emerge. The nearer to people's houses the work was, the more volunteers turned up to do whatever was needed. The further away from people's houses the work was, the more likely you would find the work being done by the same stalwart



Arthur Robinson.



Arthur in a hole.



Martyn.



Colin in a chamber.

band of retirees who became affectionately referred to as 'Dad's Army', a disparate band of prior-strangers, thrust together by the same driving desire to see the project through to the finish.

First there was Arthur, our secretary. Arthur, from a New Hutton farming family of many generations, was a tall, slender chap, strong as an ox and with more staying-power than a garage-full of Duracell batteries. A very experienced dry stone waller and related to many of the landowners on our patch, Arthur was our 'secret weapon' on many fronts. He knew an awful lot about fields and walls and, because he was clerk to two of our parish councils, when it came to mapping, paperwork or for applying for grants, Arthur was the man! He was also completely safe with a pickaxe.

There was Martyn, our project manager. With a career in utilities centring on telecoms, electricity and water, Martyn was well-versed in the rules and regulations around building a network and managing a utility construction project. He was chair of New Hutton Parish Council and, together with Arthur, was responsible for getting the project off the ground.

There was Colin, a retired farmer from Gatebeck. A stocky, strong chap with dry, cynical wit who loved nothing better than to 'wind-up' Martyn at every opportunity, and then the two of them would argue like an old married couple all day long. Colin was a great dry-stone waller but definitely not in the style of the Dry Stone Walling Association. Colin would wall anything, good stone, bad stone, bricks, concrete, in fact anything that looked hard and durable, but when he'd finished, it was as solid as anything that promises to outlast the pyramids of Giza. He too could graft 'till the cows came home' but, give him a chance, he would watch others working all day long. Colin was the star of



Big Dave.



Little Dave.



New Dave.

our group and all the ladies loved him.

Then there were 'The Daves'. First there was Dave. We were fine with Dave. He was just about the fittest chap in the group, notwithstanding his age. A small, slim chap whose stature belied an incredible inner strength. In a previous life he had been a PE master, and his fitness told that story well. Dave could dig trenches all day long and had a great ability for the digging needed to get under dry-stone walls and 'squaring-off' holes for chambers. Whilst others stood around debating how it should be done, Dave would be in there, getting the ground out.

Yes, we were fine with Dave in the group. But then another Dave turned-up. As we'd already used that name, we had to add some kind of refinement to distinguish between the two of them. The recently arrived Dave was very tall, well-built, with a strong stature, a real big chap, which was quite the opposite of the original small, slim Dave, so the answer became blindingly obvious–the newcomer would be named Big Dave which meant, by a strange puff of logic, that the original Dave would henceforth be named Little Dave. Big Dave was really good at installing house-kits and so, after installing a few kits together, Big Dave gave up being part of the core group and set out on his own, relentlessly installing house-kits whenever he could spare the time.

So there we were with the two Dave's, Little Dave and Big Dave, and all was well with the world until, after we'd been working like this for a while when another Dave arrived. At this point we were a bit flummoxed. What should we call this new Dave? We'd already used 'Little' and 'Big' and it seemed a bit churlish to call him Middle Dave or In-Between Dave. The question of what to call him was eventually solved by admitting the facts as they stood, we already had a Little and a Big and so this

new Dave was that - he was the 'New Dave', and the name stuck. New Dave was good at just about everything; give him a job and he'd get straight on with it. He was gutsy, reliable, never let you down and, like Little Dave, was superb at digging. One memorable feature of New Dave was his bike. New Dave was a keen cyclist and working 7-days a week digging on the project wasn't going to rob him of his cycling, oh no, not New Dave. He would turn up on his bike wherever we were working (sometimes in Lycra) and change into his working clothes on site before putting his shift in, then getting changed again and cycling home. Because of the size of our patch, this could sometimes add a good 10 miles of cycling onto his working day. Given that situation, it didn't take a lot of imagination to understand why New Dave might have been reluctant to move site several times in a day, but he just got on with it quietly, and then cycled home.

So that was the core team or 'Dad's Army' as they became known to some – Martyn, Arthur, Colin, Little Dave, Big Dave and New Dave. After the team was established, they could usually be found on site, somewhere on their patch, pretty much every day of the week throughout the year other than a week or two over Christmas.

Then there were the regular helpers who turned up, wherever work was being done to put a shift in. Some would come a day or two every week, some once a fortnight, but they could always be relied upon to turn up when asked, for those big days when more labour was needed. Because they came regularly, they knew what was needed, they knew what the regime was, they knew how to do it and just got straight on with it. By the end of the project there had been many dozens of volunteers helping with the project ranging in age from infants to octogenarians. In fact, a significant portion of the area population played some part in achieving the overall result, just as it should be, self-help at its best.

But the best days were those when we got close to small hamlets of houses and the champions helped to arrange 'boon days' when everyone turned out to help each other. There were huge quantities of work completed on these days and generally, most importantly, there was huge quantities of food in all shapes and sizes including, of course, lots of tea and cake.

When the project was first proposed, the intention was to build the network as an extension from the electronics cabinet at the Auction Mart at Junction 36 of the M6 motorway. As we inexorably got closer to making a start with construction, it became clear that B4RN was having problems making that cabinet 'live'. Meanwhile the Mansergh group had made massive progress and got a 'live' circuit to within a kilometre of the eastern edge of the B4SW network. Although always in the plan to include a link to increase the resilience of both networks, it was never in the plan that it would become the main, initial source for B4SW. But there we found ourselves, Junction 36 was not available to us, but the Mansergh one was. It was a no-brainer, and so off we charged towards Mansergh!

Our first planned day for proper digging of the main route was not one to remember. It was one of those days when daylight is timid and most sensible folk stay indoors. It was a cold day in February 2017 at Barkin House with constant rain that tested every seam. Only Arthur and Martyn had the misplaced devotion to turn up, and there was a dry-stone wall to dig under. Arthur took charge because Martyn had no experience of digging under walls. Together they battled against the elements and by the time the



Chalky.

milky daylight gave up, they were under the wall and had a sleeve installed. They were both cold, wet-through and Martyn's waterproofs turned out not to be, every stitch he was wearing was wet-through and cold. No, that day was not one to remember. It could only get better. And it did.

As construction got underway, we anticipated the need for some basic tools and some more specialised tools. To help with this the parish councils provided funds for the group to purchase a few mattocks, battery and mains-powered hammer drills, a petrol-powered stone saw, a petrol-powered whacker-plate, a tool-box, some small assorted hand-tools and a few other items.

Many of these tools took up residence in Martyn's beat-up, ugly old MkII Toyota HiLux pickup, that they named 'Chalky', and which he had acquired from a previous utility company where it was used for off-road jobs. Chalky became the workhorse of the project, ferrying people, tools, materials, chambers, sleeving, drums of duct and anything else that was needed to wherever it was needed, whenever it was needed. It became identified as a focal point of the group with people from the parishes waving us on when we passed by, even when we didn't always recognise them . But they always recognised Chalky and the team. Chalky was a rugged old beast that took one hell of a battering over the lifetime of the project, but he made it through to the end, just! He now sits on the car-park next to Martyn's house, which he has done since the project finished, resting and quietly reminiscing about the 'good-old-days' when he was the centre of attention. Sitting, reminiscing, quietly waiting for the inevitable.

Amongst our first big jobs was to install the electronics cabinet at Old Hutton. An excellent location had been agreed with the Youth Group Trustees on a piece of their land right in the heart of the village, behind the school, public hall and church. We approached a local retired builder and asked if he could help with the casting of the plinth for the cabinet to stand on. We had the plans from B4RN but felt that we needed the expertise of someone who had done that sort of thing before, and Old Hutton resident John Shorrock was the perfect choice.

When shown the plans and asked if he could help, John replied, quite naturally 'Well, I suppose I could work out a price for you'. It was then that we explained how a voluntary, community project operated and, after a moment's confused look, John's face lit-up and with a big, beaming smile he went on, 'Right then, we'd better get on with it'. That was the spirit of the project, that was the B4SW spirit right there, and that's how it continued most of the time. We cast the plinth on 10th September 2016, and we also had droves of volunteers helping dig trenches for the ducts. Everyone was aware that the cabinet was the hub of the network, and they wanted to play their part in getting it established. Some were keen to make sure their children took part in something they considered to be memorable for generations to come. We also remember the great food that was provided and that we managed to get in some good practice at drinking tea and eating cake.



Tractor mole.



Digger pneumatic mole.



Another tractor moleing.

The cabinet was delivered to site by B4RN on 19th September 2016 and local farmer Raymond Robinson arranged for it to be carefully lifted into position with his telehandler. It was a proud moment for all those who had played a part in getting us to that position.

Whilst our attention was focused on Old Hutton, Mark Meth-Cohn was rapidly getting the Hincaster route ploughed in by contractors. That route included a duct carrying our services to Millness at the south-western tip of our network. So by early October 2016, and as soon as it was available, we diverted operations to that end of the territory and started building out from our new provided duct. After doing the tricky bits with pick-and-spade and digger, the local farmer used a borrowed plough to finish the stretch across his land using his own tractor. After leaving a section that passed under the A590 for Approved Contractors to do, we finished that circuit ourselves with the same borrowed plough and with Paul Parsons using his dad's tractor. At this point we realised how essential it was to have access to a mole plough, so we had local blacksmith Frank Parsons make us our own plough that we could lend to farmers who were willing to lay duct across their own land. This was very successful and lots of farmers took up the challenge and installed ducts across their land. We were now starting to get some good lengths in the ground–and it felt good.

We even had one farmer (Raymond Robinson) who had a vibrating mole-plough that attached to a digger in place of a bucket. He used this to great effect by attaching it to a 15-tonne digger which laid duct as it tracked backwards over the entire length of his farm.

It was around this time that Colin Wightman joined the group and made his presence known by helping to unload some soil from a trailer. With

great gusto he jumped into the trailer and, after shovelling a good few spadefuls, tried to step backwards, tripped over the trailer side and promptly fell out, rolling gracefully as he went down. Once on the ground in a crumpled heap, he simply sprung back up again, brushed himself down and declared he was fine. That was the first time we saw Colin fall - - but it wouldn't be the last. Never had we come across a chap who could fall as often as Colin, in as many varied ways as Colin, and as gracefully as Colin could, and did.

This was just one of Colin's many talents that, over the lifetime of the project, we came to know and love.

By now, B4RN was starting to recognise that 'Dad's Army' was a force to be reckoned with and that it was making rapid progress. This became apparent with the constant phone-calls, persuading, cajoling and outright nagging for the use of one of B4RN's drum-trailers and CAT scanners. When B4RN's drum-trailers were unavailable, and we were desperate, we would throw ourselves on the mercy of Raymond Robinson's plant-hire company who would always, out of sheer altruism, lend us one of theirs for short periods. But that couldn't go on for long.

As time went on, B4RN let us borrow other groups' drum-trailers by negotiation, for a few days here and a few days there. This was quickly followed by B4RN lending us one of their centrally held drum-trailers for a week here and there. It quickly became obvious that this was a drag on progress for both our group and for B4RN themselves, and so Tom Rigg allocated B4SW their own drum-trailer for the duration of the project. Not only that, B4RN had recently taken delivery of a couple of brand-new drum-trailers, and it was to be one of the new ones that we were given. It was wonderful - - everything was intact, everything worked, there were no leaks, and it was a clean, bright yellow!

In a similar vein, in the early days of construction we would beg, borrow (but definitely not steal) mini-diggers from anyone who would let us. Having access to a digger helped progress and raised morale enormously. A digger carried on all day, never got tired, and didn't complain about the type of ground. As someone once said, 'it doesn't matter how big yer digger is - it's always better than a spade'. Having access to a digger, however, came with the attendant problem of transporting it around from site to site. Not having our own plant-trailer resulted in another bout of begging, borrowing (but not stealing). We always managed to get one by hook or by crook, but it took time and effort that could have been spent on better things.



John's digger and trailer.

We were incredibly lucky when John Dewhurst lent us his plant-trailer one day. A robust twin-axle plant-trailer made from thick, steel checker-plate, it was almost as strong and indestructible as a British Army battle-tank, and weighed almost as much. The tailgate was a two-man lift unless you had someone the size of Jeff Capes on hand, but the trailer suited our job down to the ground and we loved it. We remember asking John if we could borrow it for a



JCB 8008 CTS.

while. 'About how long do you think you'll be needing it?' John asked, 'Might be a couple of months or so,' we replied (honestly at the time). Nobody expected it would be almost 3 years!But John never complained or asked for it to be returned, only that he could 'borrow' his own trailer every now-and-then, when he had an urgent need. We always kept the trailer fully maintained and replaced parts when they became worn. It wouldn't be an exaggeration to suggest that when we returned the trailer to John it was probably in exactly the same condition (or better) as when we originally borrowed it, which is only as it should be. We would always be indebted to John for his kindness.

After begging, borrowing (but never stealing) diggers for a while, we started to feel a bit like we might outstay our welcome by continuously begging for a digger off the same kind souls. Now, we knew that B4RN had a digger which they couldn't lend to us because nobody in our group had a ticket to operate it, so the group paid for Martyn to take his Digger Exam and qualify to operate diggers up to and including 10 tonne (the subject of Martyn's dreams).

When he had passed the exam and got his ticket, however, B4RN were still very reluctant to lend their digger out, and so we started to hire diggers. These diggers were great. Always nearly brand new, everything always worked and some of them even had a 'go faster' button so they could race across fields to get to jobs quickly, but they were expensive. The group soon came to the conclusion that, given the likely timescale of the project, we simply couldn't afford to hire diggers the whole time.



JCB 8008 CTS.



What an outfit! (Oh, and the other thing is a McLaren.)



Chamber install.



Under the wall.



Through the wall, with Arthur's bar.

The solution was simple in principle, if not a little more complex in how we went about it. Eight members of the steering group each agreed to invest a small amount of money and to establish their own limited company. We named it South Westmorland Broadband (yup, we squeezed the name Westmorland into another title, good, eh?). We then approached each of the three parish councils and asked for a grant from each of them on the understanding that, if there were sufficient funds left when we sold the digger and closed the company, they would get their money back. It worked. With the company established and the funds in the pot, we had enough to buy our own digger. It was delivered in April 2017, and it was glorious. It was a JCB 8008 CTS micro-digger, it was yellow, and it was ours.

Now, the good thing about a micro-digger, and in particular, OUR micro-digger, was that, because of its small size, it could go down garden paths and through garden gates and it could (a bit like Heineken beer) reach those places that other diggers couldn't reach. On this kind of project, that was very important indeed.

Unfortunately for the operator (usually the hapless Martyn), it did not come with an enclosed cab, heater, piped music or drinks-fridge, so there needed to be constant words of encouragement in cold, wet weather when he was frozen to the seat to 'man-up', and remember that 'All you need to do is to pull the right levers,' whilst the others wielded picks and spades (or stood and watched, as the case may be). So there we were, with the 'full shebang'. We had the beat-up HiLux pick-up, we had the battle-tank trailer, we had our own plough, we had the new drum-trailer and we had our own little yellow digger. What an outfit.

With everything in place, the pace of construction stepped-up a gear and we started to really crack

on, going under walls, installing chambers and doing all the tricky bits to give contractor Swinney and his team a clear run at getting the big stretches of open fields done. And we were good at it. We could get a square chamber installed within an hour from arriving on site with everyone knowing their role and getting stuck in as soon as we pulled-up on site.

When it came to going under dry-stone walls, occasionally they had fallen down before we arrived which made it easier to dig through. Colin and Arthur would sometimes offer to go back and re-build them for the farmer out of gratitude for letting us cross their land.

It was, however, going under structurally sound walls that became a speciality. Each one was an individual challenge but, after we'd done quite a few, we developed a technique and rhythm that served us very well. On arriving at site we'd all help to unload the digger from the trailer and whist the digger was 'tracking' to the job, Arthur and Colin would assess the wall and declare the safest position for going under. Little Dave would then spring over the wall using the powers of his inner gazelle and commence digging with pick and spade at the back of the wall. New Dave would join him and together they would dig like their lives depended on it. By the time the digger arrived and made a start at the front of the wall, the Daves were normally down to about the right level. Once the digger had dug an access trench and was down to the same level, out came Arthur's bar. Sometimes we used the digger to push the bar under and through, but sometimes we used a method we named the 'Call The Midwife' technique where someone, usually Arthur or Little Dave, whilst staying well back from the wall, would force the bar through by hand whilst everyone chanted 'push, PUSHHH, PUSHHH'. By the end of the project we could get under a typical wall in a little over half-an-hour, something that we were quite content with.



The mighty mole.



The wheeled mole.



Tony, Graham and Liam moleing.

After we had gone under all the walls, installed all the chambers, and done all the other tricky bits needed on a section, we would start asking for some time from Swinney. When it was eventually our group's turn to have Tony Swidenbank

ploughing for a week or so, everything was usually in place. Swinney's team were fantastic at what they did, even if it was cloaked in a shroud of irreverence. Their arrival on site usually followed a distinct pattern. First you would hear rumours that our group was next in line for Swinney. Next, after frantic phone calls to add credence to the stories, it would be confirmed, and a debate would ensue over the best section of the network to concentrate on. We would have our view based on where we'd done preparatory work and B4RN would have theirs based on a range of factors including where Tony had been working last. When that was all sorted, we'd make our way to the agreed location taking drums of duct for Tony to carry on his machine and to run-out those ducts that he couldn't.

Tony's entrance was always pre-announced by the arrival of Graham and Liam in their van pulling a trailer with a gorgeous, almost new, 2.5 tonne, Kubota digger complete with enclosed cab, heater and quick-hitch bucket attachment (no digger-envy here, honest.) Immediately on arrival, they would unload the digger and hurry around assessing the lay of the land to find where any more access holes were needed. It wasn't long after that, in the distance, you could hear the raucous sound of a huge Massy Ferguson slowly grinding its way inexorably towards the scene. He was coming, with a flurry of grandeur, Tony would roar onto the scene with his chosen mole-plough beast in tow (he had several) and, after lightly springing from his machine, the tirade of sharp, sarcastic abuse would commence. Tony enjoyed nothing better than to belittle anyone and everyone, to criticise and abuse anything and everything, and to spout a million reasons why what we had planned for him was either impossible, wrong, difficult or outright stupid. The tirade would continue whilst he offloaded his plough, parked-up his tractor and trailer, got the plough set-up and ready and had been taken through the job in hand. Only when everything was set, and Tony had delivered his fill of abuse would he deign to set off. But when they did, when they eventually coaxed the plough into life and they actually set off, it was a marvel to behold. It was a cacophony of throaty roar from the engine and impossibly loud clatter-bang from the plough. Tony's skill at reading the land and his masterful control of this wild raging beast of a machine was unquestionable, along with that of Graham and Liam following on foot, all the while stabbing and jabbing at the plough to chop tangled sods of grass from the blade. It was an outright assault on the ears and a great wonder for the eyes to see the team in action, to watch them inch-by-inch, yard-by-yard, rattle their way into the distance and out of sight, punctuated at intervals by Tony's voice rising above the racket with one more tirade of self-styled encouragement. It truly was a contender for the eighth wonder of the world. Video of Tony and Graham in action.



Martyn fixing an FTU (Fibre Transmission Unit).

With the network growing quickly and services being available only if properties had their house kit installed, the importance of installing house kits rose rapidly up our list of priorities. Big Dave was knocking 'em in whenever he could, as were Champions in their hamlets and individuals at their houses. While champions like Roger Millray, Dave Wightman, Simon Gray, Andrew Biggs, Keith Richardson and others had their patches pretty much

sewn up, some others needed a bit of help and so 'Dad's Army' swung into action and started installing houses at every opportunity. This was usually done at the same time as laying the service duct to the property but some followed-on shortly afterwards. Whatever the case, we all knew what was needed and, after we'd done a few properties, we got into a rhythm, and it ran like a well-oiled machine.

After arriving on site, first out of the traps was the SDS hammer drill and, after a bit of measuring (Arthur was good at the measuring) and checking for buried pipes and wires, through went the drill-bit, then back went the copper sleeve, sometimes accompanied by frustration, cursing, wiggling-and-whirling, twisting-and-turning and the odd expletive. Once through, the internal and external parts were attached and, towards the end of the project, within 30 mins of arriving on site, it was all done, dusted and we were away again (unless, of course, there was tea and cake, in which case we would make the odd exception, only to be polite, of course).

Once properties were ready, B4RN would blow house fibre and arrangements would be made for the famous, the incredible, the fantastic, the one-and-only, Chris, 'The Whirlwind' B4RN volunteer to swoop in and fuse the routers. Now, it was widely acknowledged that Chris was geographically challenged when finding a location for the first time. If you got her onto her natural topic of 'poor service from national providers' or 'government schemes for funding broadband projects' or 'the finer points of how the B4RN system worked', there was no-one better. But getting her to find her way to somewhere that she'd never been before, well, you might as well try plaiting sand. So, when making arrangements for Chris, you had to include very detailed descriptions of how to get to the first property. After the first visit there were no problems - - definitely no problems after the first one, it was always the first one that was the problem, every time, without fail. The pattern of events on the 'day-of-the-match' would normally start with a heartening phone-call from Chris with the calm, reassuring words "Where the hell are you?" closely followed by "Well, how do I get there from here?" and other words of general encouragement.



Martyn learning to fuse.

Having eventually 'talked her in for a landing', things generally picked up as she swung into action. First she decanted her equipment from her van (along with her famous carrier bag) and talked constantly whilst being guided to the first router location. Once in position and under way, it was like poetry in motion to see her well-practised fingers delicately stripping, teasing and positioning the gossamer-like threads and, within minutes, she was all done-and-dusted. With form signed, payment explained, and equipment all packed into her famous carrier bag, she was back in her car, ciggy in hand, and being guided to the next property - - without ever pausing for breath. She was a wonder to behold.

After he'd been helping for a while, Chris started training Martyn to fuse routers and, after being tested by Tom Rigg, B4SW were allowed to borrow fusing equipment from B4RN and become self-sufficient.

In our experience, Chris was always the best at fusing houses - - without doubt a true enthusiast and absolute expert at what she did. She held the record for the most houses fused in a single day, 30, a huge number indeed. But we were getting better. The well-oiled machine that was 'Dad's Army' was becoming well-practised at smoothly and efficiently fusing routers.

We were quite proud of what we did, to the point that, one day, we decided to have a go at the record. It was obviously something that needed planning, not something that you just happened upon. The first piece of the jigsaw was to have sufficient properties to fuse and so we worked towards a reasonable number and eventually had around 40 properties available. The second piece was to make sure that we had unrestricted access to those properties on the 'day-of-the-match' and to make sure people would be in at the right time of day. The third piece was to have the right process in place. First, the access team got to the router position and moved any obstacles to ensure unrestricted access. Then, Martyn swooped in to fuse the router whilst the others got the form signed and did any explaining. Once the router had been fused, the 'fuser' moved on to the next property whilst others tidied-up. And so it went on.

After a slow start in the south, things started to pick up before – disaster! Possibly due to the over-enthusiastic delivery of a particularly interesting sermon, the service at St Patrick's church finished a little later than planned. This resulted in a very restless bunch of chaps standing outside the church, anxiously waiting to get in, probably for the first time in their lives. This delay had a 'knock-on' effect at the St Gregory's nursing home where we arrived after a round of refreshments had already started and we had to wait until the residents had finished before we were allowed in. But on we went from one chamber to another, slowly working our way northwards, fusing properties as we went with all the precision of a military manoeuvre.

By the end of the day, at around 6pm, we had covered the full length of the patch (about 8 miles long), and fused 33 properties fed out of 15 different chambers (should have been 35 properties but couldn't get in 2). We'd done it, we'd 'pipped' the previous record - - quite an achievement, given the size of territory and spread of the properties. But, although we may have had the bragging rights for a short time, in our eyes it is Chris the Whirlwind who will always remain the Queen of Property Fusing. (After being goaded by our challenge, her record is now 35 in a day. But not over the same mileage or as many chambers.)

The same pattern applied for blowing fibre. After some training and a bit of testing, the group was pronounced competent to blow house fibre and allowed to borrow one of B4RN's small blowers (a Nanoflow). With this addition, it wasn't long before B4SW was doing just about everything within their patch except blowing core-fibre and splicing bullets in chambers.

After blowing house fibre for a while, similar to other activities, we started to develop a well-honed pattern of working. As we approached the end of each house installation, out would come the Nanoflow, tripod and fibre, and off Colin would sprint (or, more usually, drive) to the receiving chamber, complete with label and 'tail' in hand. When he was set up with label and tail in position Colin would phone Martyn and the blowing would start. First would come some air to make sure we were all working on the same

duct (awfully amusing for everyone except Colin if he was on the end of the wrong duct) and we'd listen for a signal from the chamber-end that all was well. This would normally take the form of some loud grunt of satisfaction from Colin to confirm that he'd received the air on the correct duct. Then off would go the 'sponge' to make sure the duct was clean. This would be expertly (not!) caught by Colin in a bottle or in his hand, followed by a frantic search to find it again. Once the sponge had been retrieved, we would get a more excited shout from Colin on the phone along with some short, barked instruction to "send the fibre". Once under way we would all gather eagerly around the Nanoflow watching the numbers on the machine as the fibre shot down the duct like fishing line with purpose.



The B4SW depot.

Usually, as the distance travelled by the fibre went up, the speed of travel went down. This information was analysed with great solemnity by everyone present, all great experts in the science of fibre-blowing, who would each pronounce wisely on the chances of the fibre getting to the far end without coming to a complete stop. Comments like 'Blimey it's fairly flying' or 'It's started to struggle a bit now' were commonplace but were always brought to a shuddering stop with an earth-shattering bellow from Colin announcing the fibre's arrival at the chamber. 'WHAAAAAAY!' would come the signal down the phone (although why he used the phone for this we'll never know because people for miles around could hear it completely un-aided). After confirming the fibre's arrival (rather than some other event more fitting for a sound like that - - such as a cow landing in the chamber with him), we would allow ourselves a moment of 'smug-mode' before starting to finish the job off and pack everything away.

On one occasion (at North Lodge) we knew it was to be a particularly long blow and so everything was laid out very precisely so as to aid easy blowing. As the blow progressed, the speed started to slow as normal and as we passed 500m the air volume was increased and the pace picked up again. By 750m we were on full pressure and still progress slowed until by 900m it was creeping along at an alarmingly slow rate. By 950m there was a concerned body of men stood around the Nanoflow, hanging on every metre of progress whilst contemplating the need to dig-in and blow again from halfway. 990m - 992m - 994m - 996m - 998m - 'WHAAAAAAY!' Never before or since had we been so pleased to hear Colin's gentle tones - - with or without a phone.

All this work, whether it be undertaken by 'Dad's Army', Swinney, group champions or residents, needed supplying with a constant supply of materials. There were two sizes of chambers, drums of various ducts, coils of sleeving and, later on, the miscellaneous multitude of bits-and-pieces needed for installing house kits. And it all needed to be available at the drop-of-a-hat for anyone who needed it, so that progress was not hampered. After a short while it became common practice to leave materials at Martyn's house and it wasn't long after that Martyn's house became an out-and-out depot with materials, vehicles, trailers, machinery, plant, power-tools and hand-tools.

Maintaining the correct stock-level to keep the construction-animal well fed needed constant visits to B4RN's depot at Melling, something that Colin absolutely loved to do. His trusty Honda CR-V was equipped with 4-wheel drive and that very essential tow-ball. Colin loved nothing better than to be asked to go to Melling with an empty trailer and to come back with it stacked with chambers, duct and various assortments of house-kit bits-and-pieces; in fact he was constantly asking if another Melling run was needed. He assured us that it was out of a complete sense of duty and that the free-vend coffee and opportunity to chat with the ladies in the office had nothing to do with it, but the spring in his step and wry smile when he returned constantly suggested otherwise.

By August 2017 the New Hutton cabinet was nearing completion and almost ready for its ceremonial landing on its plinth at the Village Institute. Only trouble was - - there was no plinth! In fact, there was a dry-stone wall running right through the middle of where the plinth and cabinet were to go. Len Atkinson, an unquestionably kind farmer whose large stature was only exceeded by his generosity, had freely donated a corner of his field to site the cabinet. What we needed to do was to take down that part of the wall that formed the outside-corner of the field and replace it with an equivalent one that formed an internal corner so that the cabinet could be housed in the space created. This was a job that had Arthur's 'Skilful Waller' name written all over it in 6-foot-6 tall letters!



Knocking down and building up the wall.



Working on the wall.



Cabinet arrives.

When we started dismantling the old wall we had lots of help. After all, dismantling a dry-stone wall is fairly rapid, not very skilled and you get a great feeling that you've achieved a great deal with not much effort. Next came digging-out. Martyn set to with our trusty yellow digger and before long we had the wall down and the ground dug out. Soon after that we had the chamber in place (always need a chamber when there's a cabinet) along with the ducts running from the chamber to where the cabinet was to be - - three big, important, 110mm black corrugated monsters with a life of their own that could only be tamed by backfilling with soil and compacting it down.

Progress was fantastic. After trailering away the

excavated soil, the route of the new wall was laid out and the original massive foundation stones dug out and positioned ready for installation in their new location. It was at this point that, whilst digging-out for the new foundations and delicately 'pawing' at the ground in a manner similar to that of a charging rhino that Martyn, with great panache, dug straight through the corrugated monsters and ripped them up again, to the ecstatic delight and enjoyment of his 'Dad's Army' colleagues. After all, if you can't have a jolly good laugh at your mate showing himself up in full view of everyone, with such panache and style, what can you laugh at?? This was one bit of digging that the 'Army' will never let him forget, no matter how time fades the memory.

After replacing the unfortunate ducts, the work of casting the plinth and building the wall could begin again in earnest. The undoubted skill of the group's two dyed-in-the-wool wallers came sharply into focus on this job as both Arthur and Colin swung into action supported ably by a number of other very capable volunteers. What we never expected was the diametrically opposed styles of our two walling experts. Arthur was steeped in the tradition of walling. Being a proud member of the walling fraternity, he was very particular about the quality of the wall, its structure, its visual appearance, how it was planned and executed and able to perform its intended function for decades if not hundreds of years into the future. Each stone was considered and chosen because it was the perfect stone for that position; if it was not, then it was devotedly sculpted with a few well-aimed blows from his hammer until it was flawless. Colin, on the other hand, would wall anything, big stones, small stones, kerbstones, house-bricks, concrete blocks, just about anything that came to hand. Colin's skill was in his ability to do just that, to be able to manufacture a sturdy, functional wall out of almost thin-air, using whatever was available, a skill that had been honed by years of building and repairing walls on his farm and others far and wide.

So, given the diversity of walling skills available to us, it will come as no surprise that, while building our new wall for all to see, Arthur took charge of the front of the wall where it would be on display to all and sundry who visited the Institute. Colin, however, took charge of the rear of the wall, where it could be constantly admired by grazing sheep or cattle for decades to come.

Having finished installing the plinth and building the splendid new wall, the cabinet could be delivered and lifted into position - - a drab green coloured box that was the mother of modern life for so many people. On October 2nd, 2017, the cabinet was lifted carefully into place by local farmer Arty Pickthall using his tele-handler. No need to hire cranes or lifting equipment, just the power of a community, working in concert for the benefit of everyone. By mid-December 2017 the core-network to 'light up' the New Hutton cabinet had been installed along with the network and house kit of most properties and so, on December 21st after Alistair and his B4RN team had completed the splicing of cables into the cabinet, 'Dad's Army' was invited to make the final connection to bring the cabinet on-line. As their New Hutton representative, Martyn made the connection and at around 5pm a significant number of New Hutton residents received a slightly early Christmas present as their 1,000Mbps broadband connection to the rest of the world burst into life.

So on they went, day after day, week after week. Weeks turned into months and months into years as they dug, laid, blew and spliced their way across South Westmorland, a merry bunch of chaps pulling each

other's legs as they went whilst drinking as much tea and eating as much cake as they could at every opportunity.

On some occasions it was just too warm to dig, such as when we were laying a bunch of service ducts across a particularly 'boney' patch of ground at Low Audlands, Old Hutton. It was a mid-summer day, with scorched, dusty ground and a sun that beat down relentlessly from a cloudless, azure-blue sky. On returning from another job, Arthur was surprised to find the site lifeless, like the Mary Celeste. Chalky. the beat-up HiLux was still there with the trailer attached, tailgate down. The little yellow digger was still there, sat at the end of an open trench stretching half-way across the planned route. Mattocks and spades were strewn randomly across the site. Ducts were laid-out, ready for their imminent internment. Everything was in place, just as it should be - but there was nobody to be seen! It was just like someone had arrived with a tray-full of tea-and-cake and all tools had been cast quickly aside in the rush to be first at the feast – just as it should be. But there was no tea-and-cake, and no merry bunch of chaps sat around eating, drinking and chatting amongst themselves. There was nobody. The site was lifeless. Just the sun baking down onto a motionless scene. As Arthur approached cautiously, wondering what could possibly have happened, all became clear when, as he rounded the back of the trailer, he found several unresponsive workers sheltering in what was a vanishingly small patch of shade behind Chalky's bulk. After a brief greeting it quickly became clear that there was very little enthusiasm to continue for quite some considerable time.

On other occasions it was perishingly cold. On one occasion when we were captured on video at Hayclose sitting round a patio table, enjoying tea-and-cake during a snowstorm. Well, we were a hardy bunch and consuming tea-and-cake was a serious business, and someone had to do it. But the coldest period of them all was the one referred to as The Beast from the East when an icy, polar vortex of heavy snow and particularly low temperatures blasted us from Siberia. We knew it was cold when, not only was the ground so hard that we needed to use picks and mattocks to chip through the turf, but the tracks of the digger froze hard to the ground and the first job each day was to rock it gently backwards-and-forwards, slowly ripping the tracks out of the grip of mother earth bit by bit, inch by inch. On days like that, progress was painfully slow. Moving around wearing the layers needed to keep The Beast out was cumbersome and exhausting, but we always maintained progress so that whenever we had the chance of Swinney, there was enough work to make it worth his while coming to our group (and we knew that the cold never stopped Swinney).

One day the snow had drifted overnight, and everything had frozen absolutely solid. It was one of those days when the numbing cold grew icicles from the breath on a moustache (mainly the lads) but, with the sun shining down on a winter wonderland, it was great to be alive. Having finished a section the day before we decided to re-trace our steps and compile a 'snagging' list of jobs that needed finishing off before the route could be deemed finished. So off we went, walking the route at Butterbent, making note of where holes needed finishing off, where ducts needed tidying-up, where records needed amending.

As the hapless group trudged from field to field compiling their list, leg-pulling as they went, they came to a field gate where the snow had drifted and frozen and the gate couldn't be opened. They knew that

they had recently gone under the wall, and they were all fairly sure that, at the other side of the wall, there was a hole that needed filling in now that the fibre had been blown - - but they had to be sure. Quick as a flash, Arthur was up the huge snow drift that had formed on the lee side of the wall and was peering over the top, surveying the scene. After relaying all the necessary information, much to the satisfaction of his admiring compatriots, Arthur turned to come back, let out a yelp, broke through the icy crust and shot downwards at a great rate of knots until he was waist deep in the best snow that The Beast had to offer. Such a great and obvious misadventure was obviously received with the customary roars of sarcastic laughter that are reserved for the dearest of friends. Nothing better.

We had hot weather, we had cold weather but, more than anything else, we seemed to have wet weather and mud, lots and lots of mud. Like the time at High Butterbent when it had been raining for what seemed like forever and our little yellow digger got bogged down in a patch of soft, claggy ground. After around an hour of attempting to dig herself out with all the best 'experts' at the controls, she was declared well and truly plugged and surrounded by a battlefield of muddy ground with not a bit of grip to be found anywhere within reach of her flailing bucket. In the end we resorted to using a series of straps anchored round a big tree and part-winched her out whilst she continued to pull as much as she could with her bucket. After a fair amount of effort, cursing, and more than a few choice words, she was out. Safe to say that, when she came out, she wasn't quite as yellow as when she went in.

On another occasion, we were putting a duct under a wall near Hayfellside and, again we were surrounded by a sea of mud. It was the kind of mud that covered your welly each time you put it down and then tried to suck it off your foot when you picked it up. It was exhausting work, with every step sapping ever more energy as the day went on. But our spirits were lifted in an instant when Graham, one of our more regular team members, got one of his wellies well and truly stuck in the bog of sticky black ooze. Try as he might, his welly was not for budging. Then, in his slightly off-balanced efforts to dislodge the immovable footwear, his second welly became just as stuck as the first. His fate was sealed when, with both wellies caught in the relenting grip of the mud, he lost his balance and, in a scene reminiscent of a well-crafted Charlie Chaplin movie, he tipped backward, stepped smartly out of both wellies, staggered, and fell full length in the sea of oozing mud. As you can imagine we were all full of sympathy for this unfortunate mishap of one of our close colleagues – NOT. After this he was referred to, with great affection, as Graham the Mud Angel.

It was in this environment of never-ending rain and mud that our merry band of chaps was approached and asked if we minded being filmed by an Australian TV company who wanted to report on how B4RN was helping volunteers roll-out gigabit broadband to their communities. After agreeing to help out and arranging the date, we were told that the TV company was keen to film work taking place somewhere muddy and asked if we knew of anywhere. Well, did we? DID WE!? You bet we did. We knew just the place at Canny Brow. Looking great in summer, the location we had in mind got paddled-up by cattle when the weather got wet, resulting in the kind of thick, claggy mud that ate wellies for breakfast. To be fair to the film crew, they got on with the job in hand with enthusiasm and, after deploying the drone and hoisting huge cameras onto their shoulders, filming commenced.

As things progressed it became clear that wallowing around in claggy mud wasn't high on the list of an Australian film-crew's skills, and things started to get serious when the mud suddenly grabbed hold of a welly belonging to the chap lugging the heaviest and most expensive-looking camera. Up to that point he had been doing very well at tottering around in the gloopy mud, as far as tottering in gloopy mud went, he wasn't half bad – for an Aussie. But suddenly it all changed. As soon as the mud grabbed hold of one of his wellies, panic shot across his face, and he started to give a distinct impression of someone who had only a tenuous relationship with being vertical. After a few moments of sheer terror and an impromptu (and yet highly amusing) performance of an Australian, one-legged, stamping jig, balance was regained and another international diplomatic incident avoided. We were all mightily relieved that his expensive-looking equipment was spared the pleasures of a fresh Cumbrian mud-pack - - but we were all highly amused at the same time. After all, they did ask if we could take them somewhere muddy! (If you want to see the film they made, you can find it here: Unlikely tech hub fuelling an internet revolution

Amongst other media fame, (Oooo, the bright lights!) the BBC spent half a day filming and interviewing our merry band of volunteers working at Little Brunthwaite. The material was used for a programme about choice in broadband providers for their series Rip off Britain hosted by Angela Rippon, Gloria Hunniford and Julia Somerville. We were assured that we were the good guys in the story which was broadcast in May 2018.

We were also recorded by BBC Radio Cumbria whilst we were working to connect Bendrigg Trust, a wonderful activity centre for disabled people. On that occasion Colin was taken completely by surprise when, without warning, the interviewer swung round and stuck the fluffy mike in front of his face and asked him a question. Without so much as an um or an errr Colin gave an eloquent and well-reasoned response – something that shocked us all, because he never normally did that! BBC Radio 4 got in on the act with a piece (link), as did Border TV. But we never let it go to our heads - - well, perhaps just a little bit.

Things did not always go right or as planned and, as time went by, we amassed a small list of things which could have gone better. Like the time at Hutton Gate, when one of our band of merry men was joining seven small 7mm service ducts onto a particularly chunky monstrosity, that had seven individual 7mm ducts all bundled together inside a single fairly rigid outer sheath. Being so big and so rigid, it was very difficult to handle, and particular care was needed when joining the individual ducts. Having travelled to the job with just the right number of connectors to do the job, our top man (don't tell 'em yer name Arthur), laid everything out neatly and cut the ducts exactly to length. Well, that's not quite right. Knowing how awful this stuff was to deal with, the service ducts were carefully cut a few millimetres longer than necessary so as to give a degree of security if something went wrong. Unfortunately, (and I think, dear reader, that you may well be ahead of me by now), the few millimetres had been measured the wrong way and the ducts had all been cut a few millimetres too short. Now, if only he had taken more connectors, he might well have got away with the mistake by inserting small pieces of duct and not mentioning it to anyone. But, having just the correct number, he needed to return for more and had to endure a 'walk of shame' to get them. I think we were all very supportive and that nobody even thought about 'pulling his leg' - - but, knowing our sense of humour, I cannot be certain.

And then there were the rodents. On one occasion, a hamlet of customers started to display really odd faults soon after being connected. Some customers' fibres stopped working completely whilst others were absolutely fine. Even adjacent fibres in the same tubes were displaying different properties. It was all very mysterious. After spending a couple of hours tearing his hair out trying to get service back for customers Paul Parsons (a superb B4RN engineer) emerged triumphant, with a most confusing record of how he had needed to cross-splice fibres between tubes and spares to get any semblance of service for everyone. He had also, using his trusty Optical Time Domain Reflectometer (Colin loved trying to pronounce that), pin-pointed where the odd goings on were taking place. On digging down at that point to find the duct, all became clear. We quickly found that there was a nest of rocks lying innocently beneath the sod providing a 'des res for rodents' in which Ratty and his extended family had set up home. It was right through this humble abode that we had arrogantly ploughed our duct without even so much as a by your leave. Given the circumstances, Ratty (and, going on the evidence, all his relatives) had taken the opportunity to accept this unexpected gift of bright orange food and decided to have a banquet. However, being discerning connoisseurs of only the best fibre, they had decided to eat only a random selection of individual strands leaving the others for a later feast. Having discovered this and now knowing the source of the problem, there was only one solution - we reluctantly accepted Ratty's prior claim on the real estate, left him the food source that he loved so much and re-laid a new duct away from his estate.

A similar problem occurred not long afterwards when a customer lost service at Birks. When locating the fault, all seemed fine when B4RN tested at the nearest chamber, but nothing was getting to the customer. Out came the OTDR (optical time domain reflectometer) and a break in the fibre was pinpointed to a few metres before entering the property. When we followed the service-duct back, it was found to go underneath some decking. When we hoiked it out it was obvious that yet another family of ravenous rodents had helped themselves to some of B4RN's finest. After a quick duct replacement, fibre re-blowing and re-splicing (along with backfilling with particularly unpalatable aggregate) another satisfied customer was back up to full speed and singing B4RN's praises.



Eric Proudfoot, Chris Winders, Jamie Normington, John Shorrock, Roger Millray, Colin Roberts, Paul Parsons, (Big) Dave Whitcombe, Simon Gray, Stephen Capstick, Arthur Robinson, Martyn Welch, John Heap and Colin Wightman.



Lots of cakes.



The special B4RN cake.

As we neared the end of the project, work started to become very piecemeal with individual services being requested here, there and everywhere, usually long after we had moved on from finishing those areas. In a realisation that we needed to bring things to an orderly finish so that everyone (including our long-suffering wives) could get back to something that resembled normal life, we issued a Final Date for people to get their service requests submitted. After that they would need to either dig their services themselves or go through the normal B4RN channels (except for the odd, very special case).

Whilst progress was made through the expected flurry of last-minute service requests, we started making plans to wrap up the B4SW operation. This included some unexpected but obvious tasks. There was the collection of the outstanding GPS tracks so that they could be committed to permanent records, the return of B4RN's drum-trailer, unused drums of duct and other materials to Melling, the return of John's battle-tank trailer (along with our eternal thanks), and a final run round the routes to resolve any final outstanding jobs.

We also closed down South Westmorland Broadband, the limited company that owned the little yellow digger and plough. This involved billing B4RN for all the ducts laid, walls gone under, chambers installed, etc. The income from this, along with those from selling the little yellow digger and the plough, enabled the company to return all the funds (plus a little bit more) to the parish councils who provided the money in the first place, so that it could continue to be put to good use in the parishes.

As the winding up of the project was progressing the villagers of New Hutton and the villagers of Old Hutton each arranged a special Thank-You celebration for all those who had taken part in any way. This included not just the members of 'Dad's Army' but also the regular helpers, anyone else that helped out, landowners who allowed network across their land and, especially in the eyes of the 'Dad's Army' team, those that provided tea-and-cake and all manner of other delicious sustenance along the way.

The celebrations were very well attended, showing just how popular the project had been.

A significant quantity of tea-and-cake (including a very special one depicting volunteers hard at work laying duct) was consumed - - particularly by Little Dave, New Dave, Arthur, Colin and Martyn - - but, then again, they had had so much more practice than anyone else. Colin Wightman, got his MBE spade (Member of the B4RN Empire) and went on to get a Certificate of Recognition for volunteering, issued



Colins MBE spade.



Colins certificate..



Colin in the news.



Colin wins a FTTH (Fibre To The Home) council T-shirt.

by the Mayor of Lancaster. Colin was 'person of the week' in the Westmorland Gazette for all his hard work on the B4SW project and then going on to help Preston Richard get connected once the B4SW patch was finished.

A further celebration was held in 2022 when, unknown to Arthur and Martyn, some very appreciative parishioners nominated them to receive a civil honour for their work on the project.

As a result, on 8th June 2019 it was announced in the Birthday Honours List that Her Majesty Queen Elizabeth II had conferred the British Empire Medal to both Arthur Robinson and Martyn Welch for their voluntary services to the community in South Cumbria.

To say that they were surprised and yet blown away at the same time would be a gross understatement indeed.

As a result they were presented with their medals by Mrs Claire Hensman, the then HM Lord-Lieutenant of Cumbria, at a special ceremony held in New Hutton Institute, attended by family, friends, volunteers from the project and, most especially, the other members of 'Dads Army' who, again, made short work of the tea and cake.

Arthur, Martyn and their wives were also invited to attend a Garden Party at Buckingham Palace, something they all enjoyed enormously (although, obviously, cucumber sandwiches at Buckingham Palace isn't in the same league as tea and cake in the Cumbrian countryside.)

Beyond the Book

Australian news article

BBC radio 4 story

Tony and Graham moleploughing



Mrs Claire Hensman, Lord Lieutenant of Cumbria, presented Martyn and Arthur with their BEMs.



Martyn's BEM.

In summary, the project started in the autumn of 2015, and, through various means, parishioners raised around £500,000 to allow their network to be built. The first ducts were laid on 26th August 2016 and, by the end of the project, 30 kilometres of duct had been laid through New Hutton, 35 kilometres through Old Hutton and 42 kilometres through Preston Patrick. The first house service went live in January 2017 at Millness and, by February 2018 it was estimated that 51% of all houses in the project had been connected. In total, 97% of the houses and businesses in the three parishes were connected. 'Dad's Army' formally disbanded at the end of October 2018 but has worked occasionally since then. In January 2019, B4RN reported that there were 496 connections.

But this short summary doesn't even start to tell the tale of the real project that was the bringing together of communities to work tirelessly in delivering a worthwhile project whilst making new friends, having great craic and enjoying lots and lots of tea and cake. Tally ho!

Dad's Army MBE spade awards.



Brian Rigg.



Dad's Army – (New) Dave Richardson, Arthur Robinson, Jean Robinson, Martyn Welch, (Little) Dave Stevenson and Colin Wightman



John Shorrock.



Roger Millray.



John Robinson.



They have it in spades.



Martyn's MBE spade and the B4RN digging cake.



Millennium Clock.



The Crooklands dig.



Measuring out the duct.



Hard dig with the civils team from B4RN.

Preston Richard (Endmoor)

By John Lyons

There had been a couple of previous attempts to launch B4RN in Preston Richard parish neither of which got off the ground mainly because of the time demands.

In late 2018 a trio of retired businessmen, plus Colin Wightman, a seasoned B4RN volunteer, got involved.

It took almost a year of planning, working with local landowners, B4RN staff and engaging with the local community, raising funding before we were able to put spades in the ground.

The first location was Crooklands. This had been planned as part of the Preston Patrick project– and it was there where we first came up against the bureaucracy of CCC Highways–but at least it gave us some valuable experience of crossing water obstacles.

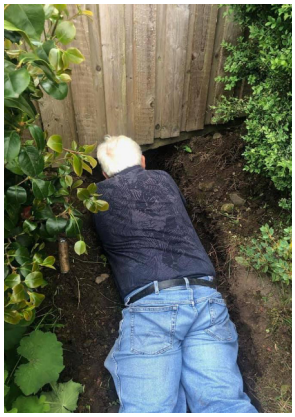
The main digging started in January 2020 to create the link to the main B4RN route via Preston Patrick, and from there to the Head End location at the village hall.

All of that was comparatively easy – mainly digging through open fields

However, it soon became clear that Preston Richard would be a hybrid project with a varied terrain. This consisted of open fields, mixed with urban areas of small estates, gardens (people are very protective of their gardens) and the tarmac of pavements / roads, so we had a variety of workers–contractors for the fields, local volunteers serially hand-digging and B4RN for the hard dig.

At times the varied terrain was challenging for our





Colin at work. We have to go under…



Colin helping the volunteers lay duct in the trench.



Three of the Big Hitters.



Multiple ducts in the trenches.

health and safety experts.

We had a core group of volunteers supplemented by ad hoc help and found that it was more effective to split into specialist groups – the 'techies' installing house kits, Big Hitters (a group of four needed when a lot of digging was needed in a short time), and Neat Diggers for navigating through gardens. It looks messy on an organisation chart but it worked.

Problems? We had a few – BT OpenReach grabbing all grants for certain postcodes, multiple changes in government funding (Colin still comes out in a cold sweat if you mention GBVS), and including the possibility of complete withdrawal of funding.

And of course, Covid.

What are we proud of? Obviously making B4RN technology available to the parish, but particularly the hubs of village life, the bakery, the club, the Crooklands hotel, the village hall and the school. And maybe it's the last of which we are proudest.

The availability of hyperfast broadband had made a big difference to the school especially during Covid–but children had to share Chromebooks.

We had some cash left over so were able to fund the purchase of more. It meant each child in a class had their own. The head teacher said 'You won't know what a difference this makes.' We probably don't but it seems a good legacy of the B4RNPR project.

Beyond the Book

Chromebooks for school



Dad's army came to help. Martyn and Colin.



25m done 10m to go.



Getting there.



Keep fit in furlough B4RNland style.

John and Glenn kept everyone updated on progress through their Facebook page:

A few entries read as follows:

On behalf of the B4RNPR steering team

'On a very warm August day, these lovely ladies (and men), all volunteers, gave up their Saturday to help bring hyperfast broadband to the village.

'Thank you to those who provided cakes and refreshments. The volunteers are always very grateful for these. If you see them at work near you, an offer of a tea/coffee goes a long way as they are giving up their time for you.

'Hyperfast broadband is only made possible to your property by volunteers like these ladies. If you would like to help, please do contact us.

'We spent a couple of hours today assisting (from a very sensible distance as you can see) a B4RN (B4RNPR) trench dig. 25m done, 10m to go.

Even dogs can help 😂

'It's still an ideal time, especially for those furloughed. Do yours or help a neighbour (safely).

'If you need to know route plans etc, please shout up on here or to the steering group; Hey even ask me if you want and I will pass your questions on.

#SocialDistancing

#DigToAGig #B4RN #B4RNPR

On behalf of the B4RNPR steering team

LAST WEEKEND

'Great turn-out and decent weather meant we completed laying core and service ducting in Sycamore Close. Thanks to all who kept us



Garden digging..



Round the flowerbeds.



Even dogs can help.



Fin, as part of his Duke of Edinburgh award, digging through the woods.

supplied with drinks, cakes and chip butties - much appreciated and some of the best coffee I have tasted in years.

'NEXT WEEKEND

'No group dig planned, fortunately as the forecast isn't good, but we will be trying to finish off any outstanding individual properties.

FELLYs FIELD (and others)

'The "ring main" around the village (East of DoveNest Lane/Main St) and around FELLYs Field is complete except for a small section south of the Club Inn. This means that anyone living next to the ring main can connect to the service.

And a willing youngster, Fin, as part of his Duke of Edinburgh award, helped them dig through the woods to reach open fields.

Changes with the voucher system were ongoing, but they kept everyone informed as best they could. News from their website:

'POSSIBLE CHANGES TO GOVERNMENT FUNDING

'We understand that DCMS may be changing the current funding arrangements. Full details are still to be clarified but what is definite is that anyone wishing to take the B4RN service MUST register their interest with B4RN by 10th September, and the installation work MUST be completed within the following 18 months.

'Not the best of news but we are in the hands of he DCMS and will keep you updated as we get information'.

'Hyperfast broadband built for the community by the community.'





Sub-ducting when needed. Some careful work to avoid existing utilities.

Preston Richard's village hall came live on 2nd August 2020.

They dug over 10 kilometres of trench.



Digging team with Colin.



The village hall comes live.



Mint and Sprint.

(B4MS)



A duct man at the signpost.

Dan lived off the beaten track near Selside in Cumbria. He had seen reels of orange ducting in and about 'Dad's Army land' at Old and New Hutton, and had got chatting to them. At the time he was trying to produce a document for work - a guide book for rock climbing–and downloading a photograph was a nightmare. His business was struggling due to emails not arriving in time and not being delivered and one night he had just had enough.

He knew Martyn Welch from Dad's army at the Old/New Hutton project, as Martyn had been his old youth club leader, and he knew Tony Swidenbank (B4RN contractor) as he had worked with his grandad, and now he needed to find the community help he would need to build a network.

He phoned B4RN, and based on what he had picked up from 'Dad's Army', he bypassed the normal routes and got to speak to Ed Wilman. Ed, who was the chief planner at the time and a totally brilliant source of information. Dan in his own inimitable way started on his plan. In May 2018 he called a meeting with 6 people at his home. 26 turned up. They looked at their area, and it made sense to do the watershed, all the land between the Mint and Sprint rivers, and that is where their name was born. Initially this had been 11 parishes, but with boundary changes was now amalgamated into 8, so about the same size as the original phase 1 of B4RN.

Dan took the plan to Barry. He was told it would need half a million pounds of investment from the community to enable B4RN to buy the materials needed and pay contractors to dig it all. About 78km of trenching was needed, with a further 47km for the Grayrigg join to 'Dad's Army' land at Docker. The first part of the project at Selside would have its own breakout point and cabinet but the Grayrigg one would be needed for resilience.

They did public presentations in the four village halls, Selside, Grayrigg, Skelsmergh and Longsleddale. Dan told them all they had to be 'light and fast', and they needed a champion for each area. They also needed volunteers to deliver home-made leaflets to everyone, and for everyone to 'DIY if you want it'. By the time they had done the four meetings they had had massive sign-up and promises of investment. He needed this information by June to get the ball rolling with B4RN.

He designed and ran a website with masses of information on, and a register an interest form that asked landowners for permission to work on their land, etc, which greatly speeded up the process of planning routes. All the landowners in Selside were very keen for the service. Ian Robinson did Route 6 to Skelsmergh Hall and sorted the wayleaves, and Dan coloured-in the map of all the area. Debbie Williams took care of Longsleddale with brisk efficiency. The story is on their website and the following information comes from there. This is the only project so far that has documented everything online for their community updates.



Swinny's team arrives.





Digging out the chambers and plinth.



Duct in, plinth ready.



5/9/18 Head End gets lifted in.

Mint & Sprint begins – Selside Head End

Dan Robinson's stories from the Mint website and facebook pages, and Dan's recollections: 'I love it when a plan comes together! Less than 4 months after the initial meeting in my kitchen, a road trip of village hall presentations, a huge number of emails, conversations, meetings, then a massive amount of support from landowners and folk buying shares and we have done it!

'The green light, the contractors digging, the cabinet site nearly completed, and a huge number of property owners digging to the fields in time for when the mole plough comes round the hill.

'A big thanks this week went to: Chris Taylor, Ricky Yates, Logan Tomm, Mark Jennings, John Howson, Eggan Bland and Swinny and his team.

'Chris Taylor was a hero and let them put the cabinet on his land and all the routes going out of the cabinet went through his land too. The cabinet is right next to the Geo fibre breakout point so it couldn't have been better. They are very grateful to him, and he sold the land to B4RN for £1. He is the only landowner who has been paid a dime, and that was just for legal requirements.

Chris also got the MBE wooden spade award.

'B4MS could not have happened without the help, generosity and good will of Chris Taylor!'



Chris and his spade award.



TS Trenching, Tony Swidenbank and Graham cracking on.

Swinny and his fleet of mole ploughs and men cracked on in the fields.

Mike Packham was awesome; he sorted out all of Docker, which was where 'Dad's Army' handed over to Mint and Sprint. He had a few problems with wayleaves but they got sorted when Grayrigg got done.

Their website was updated with the following information on 28th August:

'Property works complete – Well ,what a busy weekend folk have been having. Property 7mm spurs have been laid from property boundaries to walls, holes have been drilled and FTUs (Fibre Termination Units) have been fitted.

* Edge Bank have been out with a mini digger and opened trenches for ducting.

* Garnett Folds will be threading 7mm ducts through existing ducting under roads.

* Tarn Bank have been finalising their dig plans and are imminently about to dig.

* Goodhamscales seem to be too busy planning a fibre network rather than digging.

* Garnet Bridge ducting laid in during the early 80s has been threaded.

* The rest of Longsleddale are either ready for the mole plough to go past or a few will be within a week or so or when road crossings are confirmed.

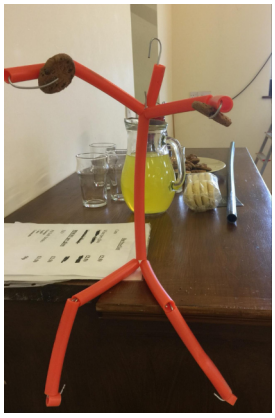
* Kiln Croft have been grafting away picking at builders' rubble – not the easiest of going.

Contractors Booked – Wednesday the 5th is official start day with work by contractors in the field. Tin Cans on the end of strings will be tied to Swinney's mole plough with a sign "Just Buried" on.

Talk through your dig plan or core route – The offices at Meal Bank are open every Thursday night 7-9pm, pop in and see us, collect materials, learn things and meet folk. P.S. if you have offered to make tea and cake, bring some along with milk. Thanks' . Dan Robinson

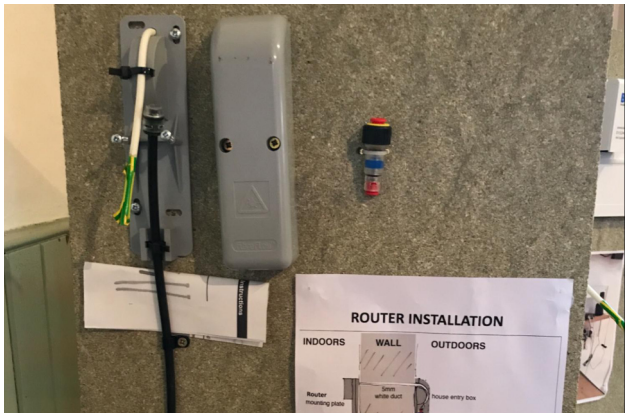
They had training sessions in their own workshop, which was kindly given free of charge by Paul Procter in Unit 3 at Mealbank, which was empty at the time.

Activities in Unit 3, training sessions and duct man workshops





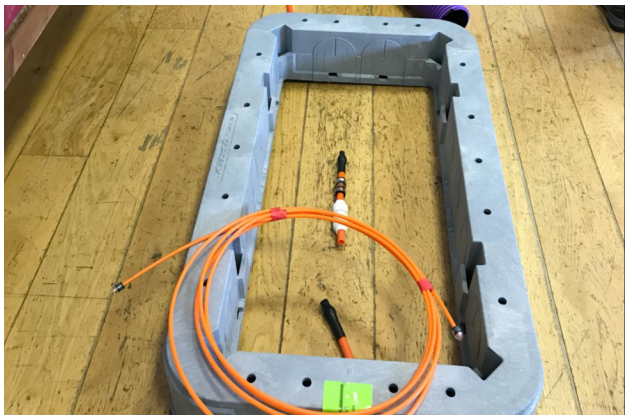
Duct man construction.



Premise equipment demo kit.



Way-marker painting.



Chamber ring and samples of duct and joiners.



Duct men appeared everywhere.



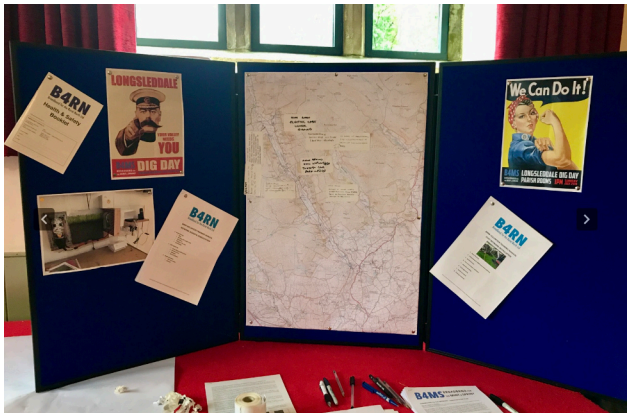
Stones at the ready to deploy as way-markers.



The Stone workshop.



The headquarters.



Map with stickers.



Dan, Logan and Tony on their way to install electric feed to the cabinet.



Trench ready for levelling and duct placement.

They had group sessions at their industrial unit and they assembled duct men, made with gash (waste duct from Melling skip). The duct men appeared all over the area.

Dan had a big map at the office and put stickers on the houses that had registered, and this encouraged more to put their stickers on and not get left behind. It also meant he could see where people had not registered and volunteers could call on them to explain it all.

They started digging in houses in August after their first meetings took place. September saw the start of the cores. That short delay is a record in the B4RN history and a testament to Dan's organisational skills and the grit of the community.

Route SE6 – Part 1 Completed 13/9/18 f(rom their Facebook page)

'Well big it up for Tony and his crew–in just 6 days of work they have completed Route SE6 from the Head End through to SE604 (Kiln Croft). After the weekend the last 4 or 5 FTUs (fibre termination units) will be on the walls of the properties. It will then all be ready for blowing and splicing the fibre.

'If you are on Route 1 or 2 then please get digging and drilling so you are ready for when Swinny flies past your house.

'Swinny and his team are on the way Longsleddale, passing; Crake Hall, Poppy Farm, High Thorn, Watchgate then split off either side of the A6. Route SE2 begins at Garnet Bridge.

'Oh the Irony! Am trying to upload video on a 0.25 Mbps upload speed. That was a challenge for the copper. Bring on symmetrical 1000Mbps up and down load speed... x4000 faster than what I am on now!



Kiln Croft have been grafting away picking at builders rubble.



Mole Ploughing to Longsleddale 16th September 2018.



Tea break.



A duct man.

'If you live along this route and haven't already signed up or dug in your connection to the field then get digging.

Impact Mole

Impact moles are powered by compressed air and hammer their way through the ground from trench to trench. They can make a hole under walls, hedges, minor roads sections of wooded areas, patios etc. They come in 3 sizes – tiny for single multiple 7mm or single 16mm duct or medium for multiple 16mm or XL.

Here is a link to a short video of tstrenching.co.uk working magic under walls and minor roads on SE Route 1 with an Impact Mole.

Duct Man Gallery - The Duct Family have grown, pop along to the Duct Man Gallery to find out more...

If you have a member of the Duct Family living near you and it's not in the gallery, send in a photo to dan@real-adventure.co.uk and I'll pop it up on the site.



The Unity in Community – A perspective from a resident



by *Hilary and Phil Robinson*

Having previously lived in Skelsmergh as a child, it was with both excitement and trepidation that I looked forward to living there again, although this time it would be with my husband Phil.

Over the years there have been many changes to the place I used to call home – Skelsmergh Hall Farm. It is now no longer a farm housing a whole host of Taylors, but almost a whole hamlet mainly inhabited by people who were strangers to us both, and now called Kiln Croft. However, we need not have worried because, with perfect timing, along came B4MS.

From our first contact with our soon-to-be-neighbours at a social event we felt welcomed, people took time to chat and we made our initial introductions and ate cake! At this same event we first heard of B4MS and the potential opportunity for us and our new neighbours to have hyperfast broadband. For us it was a no brainer and we signed up.

'It's a 'community' project' they said, 'you work to help those who can't do their own digging, everyone has a role and can do something', they told us. Well, Phil and I could physically dig, so we said we would help our nearest neighbours at Kiln Croft and off we went to purchase some trench spades.

The first community dig day resulted in no digging but lots of talking, planning, sharing of contact details, introductions, reacquainting ourselves with friends from days past and eating cake–not necessarily in that order.

Plans were made as to which routes to dig, both to connect our soon-to-be new home and all the other dwellings in the Kiln Croft area, and slowly but surely the first tentative trenches were dug. And we ate cake!

Phil and I supported the Kiln Croft team as much as we could by measuring routes, cutting cables to length, rolling metre after metre of cable, getting it in a knot and rolling metre after metre of cable back up again. We dug, drilled, barrowed, stone-picked, carted soil back and forth and sweated companionably. Oh and we ate cake.

But throughout this whole process we chatted, taking time to really get to know everybody, and people took time to get to know us. Now, when we do move in to our new home, we won't just say 'hi, what's your name, where do you come from?' (a poor version of Blind Date) as we wave from a distance. We actually know our new neighbours, we have been invited into their homes, they have shared food with us, made us cups of tea and biscuits, happily let us borrow their tools and equipment, and told us about their families as we have told them about ours. We have made friends.

Without B4MS we would never have really had this opportunity to fully know our nearest neighbours, and we know, as the community dig progresses, our chance to make new friends and acquaintances will continue! Something we look forward to (as long as there is cake!)

B4MS Update – 5/10/19

'Zayo – On Tuesday 2nd, I had a meeting with Tom from B4RN and Neil from Zayo and there is now a plan for what exactly needs doing for the connection from our head end / node / big green box to the world wide web (Zayo Line). Work will be carried out at some point in the next 3 to 4 weeks at the dead of night when the internet is less used. Team B4RN arrived and drilled our ducting into the chamber and our fibre is ready to be spliced into the Zayo line.

Network Digging Progress – So on Route 1 (SE1) is complete to SE108 Watchgate & along Spur SE108b (High Above Park). Swinny and his team have nipped over the A6 and are now down the back of Garnet Bridge. Next week they will pop back and drill the A6 once the 3 days notice is formally in with the council. They will then be gone up Longsleddale for a month or two, going up the west side from Cocks Close first. 90% of the properties up Longsleddale have their connections dug and drilled and ready for completion to the chambers when the team fly past. 90% of the community have also invested in B4RN; some have counted coppers to scrape the £100 and some have invested heavily. Hopefully a good proportion of the valley will be live by mid. December. It won't be long now until Swinny deploys Thunderbird 1 – the big tracked beast that leaves minimal trace on wet ground and can travel anywhere in any weather (as long as the team behind it have tea and ginger bread).

Materials – We have yet to take delivery of the promised large order of duct and chambers, so between myself, Swinny and a couple of other volunteers, we are collecting materials in an inefficient, time consuming way, but we are just about coping. If anyone has a large trailer and can pop to Melling for a load or 2 let me know and we can send you on a hunter-gatherer mission.

Fibre Blowing – We had been booked for fibre blowing early October but this has now been put back for a week or so.

Electricity – Our cabinet for the electric meters and switching gear has arrived at B4RN and is being kitted out and should be in place next week. Thanks again to Logan Tomm for his work laying the foundations and ducting. We are just waiting on Electricity North West to finalise paperwork and then send the contractors to get the spark off the pole and down to the cabinet. After that we will be live and ready to equip the head end.'

Getting hold of duct and supplies was a thorn in Dan's side and also a major issue at that time for B4RN. Too many groups were digging at once, and when supplies came in they 'just disappeared' and Dan got a lot of the blame because he had a van. A big van. When a group had committed enough money for B4RN to buy enough supplies they assumed there would always be sufficient stock, but the market had other ideas. First there was a hold up with the house kits and routers, as the company making them was over-stretched. Then there was a complication with a shortage of fibre in the world market. B4RN suppliers expected reasonably large orders, so a big (for us) investment had to be made in fibre one month, ducting another month etc, and stock had to be regulated. B4RN decided it was time to employ a proper store manager and system, and they did that during the Mint and Sprint project, and the thorn



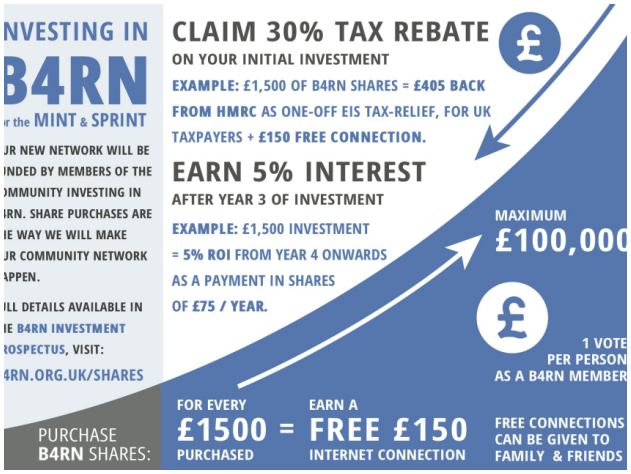
Logan Tomm gets his spade award.



The Lindsey spade on the signpost above Logan's head.



The cabinet gets a new wall round it and a special stone.



pricked Dan even harder. He always managed to work around it somehow and his digs went on. Katie became the new store manager and soon had everything organised and things got better.

'Network Design – I have been working hard surveying the land and tweaking the routes. After another visit to B4RN today we have a selection of changes now in for re-drawing with local knowledge applied. Many an hour has been spent looking, talking, thinking, walking and remapping with B4RN. Route 3 is now nearly ready for release. We have a confirmed way into the school and again Logan not only laid ducting in the 80's over Garnet Bridge but had laid at the school a spare duct into the boiler house from the car park. This means that we won't have to dig through the tarmac'.

(He must have a crystal ball. Logan got the MBE spade and the Lindsey spade on the same night of installs on his patch).

Terrace Houses – Today down at B4RN I have been asking and learning a few finer details about how rows of houses can be best served. We now have some ideas to bounce around and finalise for the city of Watchgate, Mealbank, etc.

Knowledge Corner – a 12-fibre cable can be blown short distances through a 7mm duct. Surface mounted fibre splicing boxes can be mounted on property walls and serve up to 6 properties. Wayleaves are required from all properties that have adjacent property connections attached.

SEHE – Ground works at the Selside head end are near completion. The dry-stone wall is complete (tidy work, Mark Jennings) (thanks for all the stone, Chris Taylor), gate is hung, (thanks Will Hodgson), land is levelled, (handy digger driving Ricky Yates), grass seeded by grandma and Tom & Ari Robinson, Parking area to finish off, and hardcore to fill the compound, (thanks John Howson) and then we will be ready for a party once it is live. Not long now.



Norman's spade award.



Paul's spade.



Graham and Dan.



Mark's spade.

Shares – I am contacting everyone by e-mail requesting permission to submit their shares applications to B4RN and only doing so when I have had confirmation. I am doing this batch at a time so look out for an e-mail over the next week or two directly from me (Dan Robinson). If this is not fast enough and you would like your shares to go to B4RN then e-mail me and I'll send them on.

B4RN_Invest-2 Investment Still Needed – We have met our initial target to get the green light but by no means does this cover the full costs. SEHE is estimated at £473,000 and GRHE at £312,000. If you can and are willing to buy more shares or haven't and can afford at least the minimum of £100 of shares it all counts to the total we will need.

The EIS tax relief was coming to an end in this project's life span and it was dropped in like a bolt from the blue. It upset many people who were going to invest. A year later the voucher scheme came in, which helped projects get started but involved a lot of paperwork, and extra admin staff for B4RN.

Dan and his teams got all the houses ready for service and it all ran very smoothly. Spades were awarded.

Tony Swidenbank is an excellent digger, and all the farmers up there knew and trusted him: many wayleaves were signed because of Tony's reputation.

Digging continued, and he bored up both sides of Longsleddale, aided by Debbie who sorted out all the properties. When the duct was in and fibre blown by Frank, Will and Bruce, it was time to get the fusing done.

The core fusers arrived and joined the main fibres in all the chambers up the valley.

The team of volunteers had got all the house kits fitted and so the house fusing was started at Kiln Croft. A rainbow shone that day. This was a combination of new and old build properties, and

Fusing days at Mint and Sprint



Core fusers Alex Colton and Hugh Tamlin the trainee.

Dan escorted the fuser round to speed up progress. He had arranged access to them all and knew where everything was. Within the first hour he had learned how to fuse and took control of the fusing machine.

A lot of customers were fused that rainbow day.

Typical Dan.



Kiln Croft rainbow.



The property isn't finished but the fibre goes in.



Dan lights up for the fuse.



Dan installing the router in the eaves.



Fusing in the new properties.



Dan's on a roll now.

Dan's summary from Facebook:

Thanks to:

Route Champions Selside Head End

* SERoute 1: Selside – Dan Robinson & Norman Winter & John Howson
* SERoute 2: Longsleddale – Debbie Williams & Logan Thom
* SERoute 3: Selside – Dan Robinson & Caroline Holden
* SERoute 4: Patton – Dan Robinson
* SERoute 5: MealBank – Clive, Tony & Angela, Herman.
* SERoute 6: To Kiln Croft- Matt Woods & Graham White, Mealbank West – Ian Kell, A6 West – Ian Robinson
* SERoute 7: Garth Row and beyond – Tim Maggs

Grayrigg Head End

* GRRoute 1: East of Grayrigg – Chaz Stock, Tim Guest
* GRRoute 2: Whinfell – Jen Hesmondhalgh & Adam Rubinsein
* GRRoute 3: Lambrigg – Mike Brown
* GRRoute 4: South of Grayrigg linking NH4 – John Ellis

NewHutton Head End

* NHRoute 4: Docker – Mike Packham, Bill Loyd.

Core Team

* Second in command – Debbie Williams, Tim Maggs
* Navigation – GPS Tracking – Tony & Angela Brand-Barker
* Support – Matt Woods, Paddy Finn, Hillary Robinson, Logan, Bill, Simon & Jill Frost
* Office networking and internet supply genius – Tim Maggs

Other Volunteers

Many many people have helped in many ways to make this project happen, you know who you are, you have helped paint rock, deliver leaflets, assist at meetings, make the wheels turn in councils, etc, etc.

Duct Man Creators

Also thanks to my boys Tom & Ari for inventing Duct Man after we made a stickman out of duct from the popular Julia Donaldson book. The original Duct Man was created in proportion to Tom. Thanks to Eggan Bland for his many creations of Duct Men for the area, and to all those who have created them in support of the scheme. It helps as that little daily reminder that the fastest internet in the world is on its way to the 8 parishes of the Mint and Sprint river catchment.

Contractors

* Main Contractor: TSTrenching – Tony, Liam & Graham
* Property Digging: Ricky Yates (mainly by mini digger)
* Property Digging: John Howson (mainly by mini digger) – 07789 857441
* Property Digging: Stephen Bateman (mainly by hand) – 07947 567604

* Property Digging: Tyler Knowles – 07784943332
* Property Drilling: Ian Robinson – 07770 690094
* Property Drilling: Dan Robinson – 07816 870756
* Drystone Walling: Mark Jennings
* Cabinet Bases: Logan Thom

Special Thanks

Chris Taylor & family need a special mention; they have been legends and a cornerstone for the works at the SEHE. All the rock for the cabinet compound has been sorted and delivered, not to mention selling the area for the grand sum of £1 to B4RN. Thanks Chris, and let your whisky supply never run dry as none of us would have had this without you.

Thanks to Kapellan Animal Rescue for hosting the Grayrigg head end.

A big thanks also goes to Paul Procter and family for the FOC use of Unit 3 Meal Bank for the 6 months start-up period and continued support into the future.

The last and the first thanks goes to my family for supporting me and tolerating the constant demand this project has had on my available time.

So, A big Thank You to you all, and if you are keen to get involved then please get in touch.

Dan Robinson



Dan Robinson, centre, with B4RN volunteers

Is there anything more irritating than a slow internet connection?

Just when you want to sit down and get on with some work, the internet decides to decelerate all the way to glacier pace; downloading a picture takes an age, you may as well forget about watching a film and a Zoom meeting is a pipe dream.

Many businesses in Cumbria know the pain of a slow connection all too well, lives online during the pandemic.

In May Openreach announced plans to connect around 100,000 more homes across the county to full-fibre broadband over the next five years.

It followed an announcement by BT that it would create 7,000 new jobs as it strives to bring full-fibre broadband to 25million homes nationwide by 2026.

Full-fibre broadband, which offers speeds of up to transport data at the speed of light – connect directly to homes and businesses.

Openreach says a total of 21 exchanges across the county are being upgraded, with the majority of homes and businesses in places such as Appleby, Carlisle, Keswick, Longtown, Shap and Whitehaven set to benefit.

However, communities and fibre providers have been taking matters into their own hands to bring gigabit connections to some of these

North (B4RN), which began life 10 years ago as a community project spearheaded by founder Barry Forde MBE and installed its first connection to the Quernmore area in Lancashire. Over the years it has grown to employ 74 people, with a network stretching from north Lancashire into many parts of south Cumbria and plans to grow much further.

B4RN, based in Melling, near Carnforth, installs new

Contractors or local volunteers with the necessary skills and equipment lay the cable across land from the cabinets, but it is up to property owners to organise digging the necessary ditches and drilling a hole in their wall for the fibre to enter.

In practice people can engage contractors to do this, while local champions will often come forward who will carry out the work for their neighbours. Chief executive Michael Lee says the key step is for rural communities to

"The volunteers help us with the build literally end to end, so everything from the planning, to securing the wayleaves across the land, and helping advertise and leaflet and actually installing the kits in the house," he says. "What they get back from us is we promise to connect every property in a community – not just the ones in the village centre but the one that's 600m up the hillside – with a full-fibre gigabit connection."

Households and businesses

rising to £60 a month for businesses with up to 15 staff and £150 for those with over 15.

Last year OFCOM said the average internet speed in the UK hit 64 megabits per second.

Michael says that although such a connection may allow people to do things like stream movies with ease, these speeds are at the top end of what can be achieved with fibre-to-cabinet and other non full-fibre technologies.

become more advanced and require more data usage.

B4RN's network currently passes 17,000 properties in Lancashire and Cumbria, with 8,600 connected, and is in the process of gaining consent to build in many more areas of central, southern and eastern Cumbria.

Under its current plans it will grow its network to pass 52,000 properties.

As a community benefit society, B4RN cannot pay a profit and has to invest any money it makes back into its communities.

For now this investment takes the form of putting money towards creating networks, but in time could be used for community projects.

It is also possible for local people to invest in B4RN up to a maximum of £100,000, which is held for a minimum of three years with a five per cent return.

Anyone who invests over £1,500 in a single transaction gets their £150 connection fee waived and can claim up to four waivers for every £1,500 they invest, with people often choosing to gift the free connections to local organisations such as schools or churches.

Dan Robinson first became involved with B4RN in 2018 on a voluntary basis as a frustrated citizen vying to improve connectivity to his own home near Selside, north of Kendal.

"I knew that there was a fibre optic cable that ran 100 metres away from the house," he says. "But I didn't realise I could tap into it until I spoke to B4RN. B4RN said yes, you just need to get your neighbours involved."

Dan got his own property connected just before Christmas 2018 and has continued connecting others in



Debbie cat scanning and measuring duct to go under the wall.

Longsleddale Valley

By Debbie Williams

BEFORE B4RN

In 2015, when we bought our house in Longsleddale, one of the first things we checked out was the internet connection. We both worked remotely so a decent, reliable connection was a must. But the new house was 6 miles from the nearest town, down a blind valley with a single track road with zero mobile signal, and we'd heard that the internet connection could sometimes be an issue. BT insisted that we could get their super fast service at our postcode so we went ahead with the house purchase. A month later we were tearing our hair out.

The first engineer took one look, laughed and told us that not only could we not get super fast at our house he couldn't even hook us up to the not-so-fast service and we'd have to get someone else out. Thus began a stream of BT engineers to our home, all of whom swore blind that we were connected, when in fact, we weren't. We sat in Morrison's car park to work, phones tethered to our laptops, or we begged for the use of a friend's flat and their internet for important deadlines. And then Storm Desmond hit and we were totally cut off from the world for 4 days when the entire valley flooded and became completely impassable.

So the next BT engineer to arrive got a bit of an earful. Happily he was a local man who fully understood the issues of living in rural Cumbria and amazingly he went above and beyond to get us connected. Donning a pair of waders he walked the full length of the line through the receding floodwaters, some 6 miles or so, to diagnose the fault. He reported back that there were sections where cable that should have been below ground was above ground and vice versa, that the line zig zagged back and forth across the river, that at one point it was being held up by a dead tree and elsewhere by an old leather belt. 'I think the tree is your problem though', he told us, 'but I'll have to come back with another engineer to sort that out'. Sort it he did, and we were incredibly grateful to him while at the same time totally dismayed by how shockingly awful our whole BT experience had been.

BT's internet service continued to be appalling. We were lucky if we got half a megabit and once the valley kids got home from school it would plummet into non-existence. I used to dread seeing the school bus coming up the valley if I had a work deadline. There were many occasions where there was no connection for days at a time. We were relatively lucky though , living halfway down the valley; at least we got some internet. But copper phone wires were never designed to carry an internet connection, and as the signal degraded with distance from the nearest box, our neighbours at the top of the valley got nothing. It still amazes me that there are rural residents in their 50s who have never used the internet and never had an email address, but it's not uncommon in areas like the Lake District. And the many

thousands of pounds quoted by BT for a connection were beyond the reach of well, pretty much everyone. We started to talk about selling up and moving elsewhere after I'd had to turn down a contract because our internet connection made it impossible to do the job.

We'd heard about B4RN in passing and thought it a great idea, but they weren't in our area so it didn't seem worth pursuing. Then my neighbour Peter, a local counsillor, told me that a man named Dan Robinson was trying to get a project off the ground. I sent my husband along to the meeting since his technical knowledge was much better than mine. He came back with good news; the project had legs and Dan subsequently came round to talk to us both. The project was split into parish-sized areas and he was looking for volunteers to spread the word and get expressions of interest. Since I was currently unemployed largely due to our awful BT service I jumped at the chance to help. The year that followed was intense, frustrating, at times incredibly stressful and a very steep learning curve. But ultimately it was also one of the most rewarding things I've ever done.

THE MINT AND SPRINT PROJECT

Broadband for the Mint & Sprint (B4MS) was a community project that aimed to bring gigabit broadband to eight parishes in the South Lakes area of Cumbria: Longsleddale; Fawcett Forest; Whitwell & Selside; Lambrigg; Skelsmergh & Scalthwhaiterigg; Whinfell and Greyrigg – a total of 707 properties.

The project as a whole was run and overseen by Dan Robinson, a man with an amazing amount of energy and enthusiasm, who worked his backside off to get things up and running and to keep them on track. Without his desire to drive things forward the project would never have happened. Although I had some involvement in a few parts of the wider project, such as helping with funding, writing emails and preparing budgets, the bulk of my focus was on the valley (and parish) of Longsleddale, so my story really deals only with that.

Compared to many other projects that I've heard about, Longsleddale was actually pretty straightforward, though had you told me that at the time I wouldn't have believed you. For a start, it's a linear valley that dead-ends at Sadgill with only one road in and out, 35 main residences, a small Outward Bound centre, a handful of holiday cottages and a centrally located church and community hall that used to be the local school. It's the sort of community where everyone knows everyone else, where you can count on your neighbours for help when you really need it, and where a simple short dog walk up the road can take an hour or more depending on how many of the local farmers you run into and how long they want to chat.

The calendar here very much runs on the farming year, much of the talk centres around the weather and the latest sheep prices, it's a bit like living in the 1950s, but in a good way. The fact that I already knew most of my neighbours well enough to stop for a short chat gave me a huge advantage over those parishes that were more spread out. There was a small complication in that the hamlet of Garnet Bridge at the bottom of Longsleddale Valley wasn't part of Longsleddale parish so Logan Thom took over as the main contact point there. His amazing technical skills and foresight proved invaluable to the wider project.

FUNDING THE PROJECT

In order to get the green light to go ahead we needed sufficient funding. In those days this was achieved by investing in B4RN. There was a great scheme called the EIS (Enterprise Investment Scheme) whereby anyone who bought £1500 worth or more of shares in a community interest company could claim back 30% in tax relief, so this was a massive incentive to people to buy shares. In addition, B4RN would also give a free connection, waiving the £150 connection fee. And when you added in the fact that shares in B4RN meant that you had a say in how the company was run too, well, it was a no-brainer for many people. We needed 30% of the funding in place for the project to proceed and a sign-up rate for taking up the service of 60%, and we hit this target easily. I'm fairly sure that we raised enough to cover the cost of our part of the project entirely, in fact.

Unfortunately, the government suddenly withdrew tax relief for B4RN and community internet providers part way through the project. This caused a lot of issues, and we were worried that the project would be pulled at one point. But the introduction of a new voucher scheme where residential properties got £1500 and Businesses £3000 to help with the cost of getting a superfast service meant that ultimately we were ok. The voucher scheme didn't come in until right at the end of the project though, and it was a mad scramble to ensure that everyone had their vouchers applied for before they could be connected to the service.

Additional funding was needed to build the box (or head end as I believe it was referred to) so many emails were sent out at this point by Dan, myself and our parish chairman, John, looking for community funding and planning budgets for the wider project of which our valley was a part.



Chris Dilger, Debbie Williams. Discussing installation at Cock's Close. *Image by Dan Robinson.*



Chris Dilger and Tony Swidenbank hard at work.

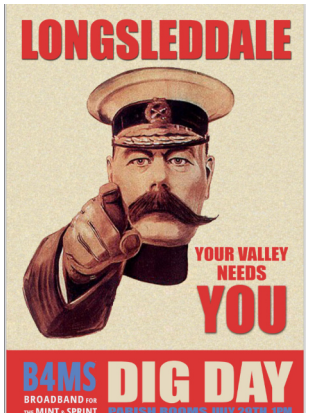
FIRST STEPS

Aside from funding, my first job to get the project off the ground was a leaflet drop with information about the project and expression of interest forms. Since most of the residents here are farmers, retired people or working from home, I found that as soon as I appeared, leaflet in hand, I was invited in for a brew and a chat, and in some cases a glass of wine and a chat. Ducting and chambers were installed at the





Some of the posters.





More posters for Longsleddale.



The presenter and her glamorous assistant *(image by Diane Hubbard)*.



Dig Day information display *(image by Dan Robinson)*.

head end first while Chris was conveniently renovating his property. The task took close to a week to complete, instead of the single afternoon I'd planned for, but was well worth it as I got the chance to explain things properly and answer any questions in a way that a leaflet could not. Pretty much the entire valley was on board by the time that first task was complete.

Wayleaves came next. Farmers and landowners are all familiar with these but were less familiar with the idea of offering wayleaves for free in order to keep project costs down. Longsleddale is linear, so any landowner refusing permission for ducting to cross their land would effectively block the rest of the valley from accessing the service, but with everyone on board this wasn't a problem.

Since we were the first parish in the project to get all our ducks in a row with wayleaves and funding sorted, we got first dibs on the contractor who would be laying the ducting as soon as B4RN gave us their proposed route map and the green light to go ahead. We were aware that many previous projects had chosen to keep costs down by doing the digging part of the project themselves with volunteer labour, but we really didn't have anyone available to do this and the cost of a contractor had already been factored into our budget, so this made sense.

Our contractor was Tony Swidenbank (known locally as Swinny) and he and his small team of son and brother-in-law were amazing.

DIG DAY

But before that, we had to look at the proposed route on the ground, and explain to residents that they'd need to connect their own properties to the main route. Dan was keen to hold a number of Dig Day events at locations across the project area to get everyone fired up, and we decided to use this as



Working on the chamber at the community centre.



Discussing a suitable spot for the ducting to cross the road.



Longsleddale residents painting boundary marker rocks in the community hall.

an opportunity to discuss the next phase of the project.

I plastered the valley with a bunch of different posters that I'd made, prepared a presentation armed with a couple of large route maps, printed instructions and borrowed a range of B4RN paraphernalia from the main project office at Mealbank, such as different types of ducting and conduit, a model router and a length of fibre cable for my 'glamorous assistant' (my husband) to hold up and demonstrate for me as I talked. Afterwards, the landowners got to look at the route map and flag up any potential issues. Meanwhile the residents asked questions about the dig plans we'd prepared. We'd asked them to make their plans so that we could check they were taking the best route from their house to the property line to connect with the main route. I still have a bunch of those dig plan drawings. Some of them were absolute works of art, especially the one drawn in wax crayon!

We also painted flat rocks gathered from the sandbanks at the head of the valley and deposited at the community centre by tractor bucket. We painted them white with B4MS in blue, and people took them home to mark the point where their house connection met their property boundary. This let Swinny know where to look when he connected them to the main route. Others used the rocks to mark where the main ducting crossed under walls and fences, and I'd often come across them when I'm out walking the dog. This makes me smile.

FULL STEAM AHEAD

After that, things got really hectic and more than a little stressful. Every evening was spent taking phone calls, poring over and annotating maps, arranging contractors for those unwilling or unable to dig their own trenches or fit their own routers, and writing or answering emails - so many emails. A



Part of the route through the valley as planned by B4RN.


Planning the actual route on the ground on that buttock-bruising quad bike.


The award for the neatest hand-dug trench goes to Mike.


Swinny takes ducting across one of Longsleddale's bridges.

typical week saw me visiting people to discuss their dig plans and measuring and dispensing various types of ducting and conduit from the two large reels sitting in my driveway. I still have the empty reels, by the way, as they make great garden tables.

Other days were spent on the back of a farmer's quad bike examining the proposed route and making notes of any changes. Unfortunately, when the B4RN mapping guys prepare a proposed route for a project it's done on Google maps. They aren't really seeing the exact lay of the land, nor how rocky and steep it is, so a number of changes were needed. Also, I discovered that farmers are very protective of their field drains and don't like them being cut up with a mole plough. Longsleddale is a fairly typical lumpy, steep-sided Lake District valley, so I would come home after a day spent on the back of a quad bike and gingerly lower myself into a hot bath while I waited for the bruises across my backside to develop. Painful though that was, I got to know every nook and cranny in what I now thought of as my valley, rather than just the valley where I lived. It was quite a turning point.

Swinny took the ducting across Longsleddale's bridges. Longsleddale has a lot of bridges plus one of the fastest-rising rivers in England so bridges were one of our biggest issues.

THE INEVITABLE SNAGS

I was really pleased with how smoothly everything was going. So of course we immediately ran into a major snag. Just a couple of weeks before the contractor was due to start I was contacted by a farmer who asked whether he would need a derogation for the ducting to be mole-ploughed across his land. Not being from a farming background I was clueless until he explained that

his Higher Level Stewardship grant needed advance permission for any work taking place on his land. This would apparently require the filling out of many forms and a long wait for approval, which would substantially delay the start of the project, and there were at least 5 or 6 others who would be affected. Any delay at this stage meant we would lose the slot for our contractor and we needed to avoid that at all costs.

It seemed pretty hopeless until one farmer suggested I speak to a man he knew at the Environment Agency who might be able to help. I promptly emailed to explain the issue, asked for suggestions on how to proceed and was invited for a meeting. Armed with a bunch of pre-prepared diagrams, one for each landowner. I explained who would be affected, showed him maps of the overall route, videos of a mole plough in action so he could see the exact impact of the process on the land, answered questions on the depth that the ducting would be laid and the process for running ducting under the river (directional drilling) and across our many becks and gutters.

To my absolute delight he said he would be happy to issue a blanket derogation for the entire valley without the need to fill in any forms. It is so rare to meet this type of person who is willing to listen and to help in any way that they can and to make reasonable suggestions and solutions. Unfortunately we've lost touch and I don't have his permission to name him here, but I am forever grateful to him for making my life so much easier in what could have been a disaster. The only tiny issue was a small concern that the proposed route was a little too close to the River Sprint at one point and he wanted me to talk to Natural England about this.

Enter snag number two. The River Sprint at Longsleddale is a SSSI (site of special scientific interest) and houses a nationally important population of native white clawed crayfish. You're not even supposed to pick one of these guys up without a special crayfish handling licence, let alone cut through their habitat with a mole plough. There followed a series of mildly panicked emails between myself, Dan and B4RN. Apparently there was some doubt as to whether we would need a permit to work so close to the river, as well as concerns about the wildlife.


Crayfish.

The native white-clawed crayfish, seen here on the photo, walking up the valley road after Storm Desmond. It is at risk from the introduced American red signal crayfish which carries both plague and outcompetes our native species.

Meetings were arranged. By this time Swinny had already started work lower down the valley so we were really hoping everything would go smoothly. After a couple of site visits and several discussions we were asked to produce an environmental method statement. To my surprise B4RN had nothing suitable on file so I ended up writing one. I learned rather more than I'd expected about the lifecycle of the crayfish, the protection of aquatic species, plant pollution control and biosecurity, but the report was deemed acceptable. A friend of Dan's with a crayfish handling licence did some surveys for us, didn't find



Paul Parsons fusing a chamber enclosure in the field.



Fusing photo taken looking down from the chamber.



This pele tower house dates to1426.

anything of note, and we were allowed to continue as planned. I have to say that B4RN weren't particularly helpful with any of this, but we got there in the end

After that it was pretty straightforward though still very hectic. Having Swinny as our contractor was an enormous benefit since he was local, knew the valley well and knew all the landowners too. So if there was a problem with the route at any point generally it could be resolved pretty easily with just a short chat. I'd go out to see him most days, sometimes with cake or sausage rolls and he'd let me know when he was running low on supplies so that I could get in touch with B4RN and order more. And finally it was mostly done.

The rest is pretty much a blur of chasing up people to get their contracts signed and Gigabit vouchers applied for, arranging visits for Will and Frank to do the fibre blowing and helping Chris to do the house fibre splicing. And emails. I can not stress just how many emails there were...

Once we were live there were a whole new raft of things to do such as helping people to set up VoIP, or using Mesh systems to improve their wifi, setting up smart TVs and devices and helping those who'd never even had an email address to connect to the internet for the first time.

We have very old properties around here and getting wifi round them was an issue. This pele tower house is dated 1426. Other people came on board to do this, namely Heather Fitzsimmons and my husband Guy, so I was able to take a back seat and have a rest. I think this was the point where I realised just how stressful the whole thing had been, even though I'm aware that my account above perhaps makes it sound easier than it was.

WRAPPING THINGS UP

The initial meeting about setting up a project for the Mint and Sprint area in Dan's kitchen took place on 9th May 2018 and the Longsleddale Valley was fully live by March 2019, a mere 10 months later. I had

to go back and check these dates in my email folder as I couldn't quite believe that we had managed to do what we had done in such a short time, but we absolutely did.

When I look back and when I hear about how other projects had fared and the problems they ran into, I realise that we were actually very lucky. Everything just fell into place for us. Dan at the helm driving things forward; me being at a loose end and being able to devote myself to the project full time (and believe me, it was a full time job and then some) and having the skills from previous jobs to be able to undertake it in the first place; a good community spirit and people who were always willing to help whenever they could, either by investing money, time, granting free wayleaves, or donating goods or services into the project; having the right help at the right time from those organisations like EA and Natural England who could have easily thrown a big spanner in the works. And Swinny and his team were absolute stars who just got on with the job without any fuss or bother. The fact that the Longsleddale community is contained within a linear valley was also a big help because they were easier to get around than they would have been in an average nucleated rural village, as was the fact that I already knew pretty much everyone in the valley before the project began.

SO WHAT DID I GET OUT OF THIS?

Well, I got a lot of stress, that's for sure! But that comes with the territory of running any project so it wasn't surprising. There were many benefits too. I learned an awful lot about networks, most of which I have promptly forgotten. I truly bonded with my valley during this project. I learned so much about the land and I got to know all my neighbours too. I can now say that I've drunk tea, coffee or alcohol in every house in this parish (sometimes all three) and I also know pretty much where everyone's spare house keys are kept!

My main reason for doing this was basically so we could continue to work from home and wouldn't have to move house, but since there's no such thing as an unselfish act, my community benefitted along the way too. One of the most telling things is that two houses that had sat on the market for ages sold pretty much immediately after we went live, which shows how valuable decent internet is.

We completed the project one year before the first Covid lockdown, almost to the day, and I dread to think how that would have gone without the internet, especially as we have no mobile reception here. And since most of the valley now own smartphones we have two thriving WhatsApp community groups, so it's easy to keep in touch, put out alerts during flooding or heavy snow, check up on dodgy vehicles or poachers and of course send each other amusing memes. All really important things. And now the farmers among us can watch the sheep auctions on live streaming while staying warm by the fire. This also makes me smile.

Although I am very much a northerner I'm not a native Cumbrian and I hadn't lived in Longsleddale for more than a few years before this project started. It is rare that an offcomer like myself gets the opportunity to do something of this magnitude for their community. It's rarer still for that community to give their trust to someone like me and to have faith that I knew what I was doing, because there were certainly times when I wasn't so sure myself. For that alone I am truly grateful.

So, a massive thank-you to the following people without whom the project could never have been completed:

* My husband Guy for advice, missed meals and for putting up with my complaining and whining

* Every single Longsleddale resident for their help, support, patience and trust

* B4RN volunteers for blowing, splicing, hand holding, explaining and advising

* Tony Swidenbank and his boys for being no nonsense and just cracking on with the job

* Dan for getting the project off the ground and driving it forwards

* B4RN staff for support and advice

* The farmers and landowners

Thank you all. You were awesome and we did a great job.

I'm proud of you all.



Editor's note, Deb also got a silver Simon spade and MBE award.



Graham, Liam, Debbie and Tony celebrate with cake.



Tim Maggs with his spade and MBE award.

Skelsmergh

By Tim Maggs

Tim Maggs of Garth Row, Skelsmergh joined Dan Robinson's small team quite early on in June 2018. Sometimes notionally referred to as Dan's right hand man - as well as champion for Route 7 (serving Stocks Mill, Otterbank, the sprawling hamlet of Garth Row & the newly evolving Holme House development of about six new properties).

He recalls that Dan didn't delegate anything of substance regarding project planning or development, so he was initially deployed primarily as IT and network support for the impressive, temporary B4MS offices established at Mealbank Mill (generously "donated" for one year, by owner of the industrial estate, Lucian Proctor). He also assisted new grant applicants with planning their individual property installations, and as the routes went live, helped resolve wifi problems, networking and additional wifi infrastructure requirements at individual properties - including in the churches and village halls etc.

As the last of the first six routes were nudging towards completion, Dan's omnipresent involvement in the project declined. There were ever-growing project delays and time-slip over the winter of 2019/20, exacerbated by exceptionally wet ground conditions and Covid. With the entire scheme covered by GBVS grant funding, the completion of the B4MS project effectively moved in-house to be managed by B4RN. Their newly appointed Hannah Robinson (entirely unrelated to Dan, despite the shared surname, but actually the goddaughter of a prominent Selside farmer) introduced herself in May 2020 as network build project co-ordinator for the remaining Selside routes. Tim worked with Hannah (and Cath Halstead), as primary community contact and coordinator within B4MS, for the installation of Route 7, which finally went live in the last days of October 2020. Hannah and Cath then moved on to the Grayrigg/Docker routes, parts of which still had significant outstanding way-leave issues.

For a few months, Tim continued as the residual B4MS quartermaster for duct and basic installation materials, also providing Grayrigg early adopters with basic in-community, duct installation training.

Tim also learned to fuse the houses.

His relatively short time, not quite a year, as B4RN's principal B4MS community volunteer contact for completion of the initial seven routes of the B4MS project, wound-down as Hannah and Cath



Tim wrapping the fibre in a customer connection.



Tim fusing customer connections.



Drilling under the A6 at Stocks Mill for Route 7 - September 2020.



Drilling under the A6 at Stocks Mill for Route 7 - September 2020.

established lead contacts in the increasingly galvanised Grayrigg/Docker community. Tim supplied the following photos of Swinny doing directional drills under different things to get routes joined up.

They then reached the Grayrigg cab.

Route 7 was the first B4MS route to use Zyxel free-standing routers, with an enabled, built-in ATA (Analogue Telephone Adaptor) providing dual channel VoIP support (unlike the wall-mounted Genexis router issued to all previous B4MS routes). Tim's B4MS swan-song was custom-configuring numerous Zyxel routers for a good number of Route 7 subscribers and assisting them to port their existing BT Openreach-supported telephone to SipGate Basic hyper-low cost VoIP.

It's a little sad, but also the greatest back-handed compliment, that only three years on, nobody ever mentions B4RN or B4MS in our community. Presumably because the network and the service it provides is so rock-solid and reliable that it's become entirely transparent and taken for granted!

Tim Maggs (office networking and internet supply genius) was involved all through the project and he says' 'We owe so much to Dan and to B4RN for the amazing service we all now receive. '

The Selside project (Mint and Sprint) had been a standalone project at first, with its own feed from the Zayo fibre. As time has moved on it has joined up to the surrounding ones, providing resilience for everyone. It has eventually joined up to 'Dad's Army'.

Mint and Sprint dug 77 km of trenching.

Grayrigg photo gallery



Swinny drilling under Gurnal Bridge Lane.



B4RN civils building the base for Grayrigg cabinet.



Cath Halstead from B4RN, Tony, Graham and Liam, aka TsTrenching.



Tony Swidenbank and one of his mole ploughs. He has different machines for each type of terrain.



A great blow, 1750 metres of 192f, blew like a dream with good fleets.



The Grayrigg cabinet.

The Grayrigg cabinet, above, is the end of the branch of the mighty Mint and Sprint project, which eventually joined to the cabinet on the right, which 'Dad's Army' (B4SW) were showing to Peter Thornton from Longsleddale at the start of the project.



The 'Dads Army' cabinet, with the dads and Peter in the middle.



Zyxel router.



Tim's mug.

Chapter 13

Goosnargh / Bleasdale / Inglewhite / Oakenclough / Chipping / The Hodder Valley / Calder Vale / Nether Wyresdale

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Goosnargh

Going way back to 2005-6, a group of people and businesses in the geographically large parish of Goosnargh struggled to get internet access despite being close to Preston. The main problem was old aluminium telephone cables, which BT would not replace. The businesses in the area were very rural, and despite much pleading and lobbying over several years, there was no help available for them. The BT engineers spent months trying to patch up the lines but to no avail.

A connection speed of half a meg was possible only with a fair wind, and then only in some small pockets of habitation.

David Ford had relocated to the area in 2005. He had bought a lovely property, intending to do it up and work from home. He assumed (wrongly) that he could get some form of broadband there, as he was used to working on the internet. It was horrendous, there was no broadband service at all. Just dial-up and even that at just 56k was poor!



David Ford with a brew and his treasured B4RN spade.

Talking to locals, David learned about Paul Vinson from Goosnargh, also known as Billy Broadband, a local fixer-upper. Paul had built his own wifi network in the area to supply businesses that were desperate for the same reason David was. Paul had single-handedly built several masts for line of sight and bought a broadband connection via several phone lines to serve the masts. Then, from the mast, the message is sent to the customer using Ubiquity wifi transmitters and receivers. Between them, David and Paul devised a plan to get a connection for David. It originated in Broughton, and used three 'hops' to get it up to David's house. The first hop was on a farmer's grain silo, and two more got them to David. They managed to get a 30Mbps download feed to him, but as is usual with BT, the upload was dire. The latency was poor, about 80ms. At least it worked, and David could get on with his job.

David was managing a large business with 950 staff and had a large team of people supporting a business rescue and turnaround, revitalising and relocating a company. Access to the team was essential if he did not want to stay in hotels, and multiple sites were involved, so online meetings were integral to the regular update process. He was also responsible for online products and catalogues and constructing a new multi-million-pound facility. With schematics, construction drawings and marketing/branding materials, the low BT upload speed became a severe problem for communicating, especially with the contractors.

David and Paul had relocated the antennas when people moved, trees grew or weather interfered with the signal, etc, but when other Goosnargh and Inglewhite residents discovered what they had done, more and more people started wanting a wi-fi feed too.

By 2009, Paul had about 30 customers on the service, all fed from their own link in another village. They worked together and Paul put masts up 'everywhere' to get connections to different remote locations, including even sending the service 16 miles over to a business at Glasson Dock, which could not get service

any other way. Paul's son, Andy, joined in as he was a techie, and David, who by training is an electronics engineer, also helped with the networking. They became inundated with requests.

Another wi-fi company in the area offered a service, but it was patchy and cost more.

David eventually realised even his wi- fi connection was not good enough, especially the slow upload speeds. In 2007, he had been appointed executive director of the British Standards Institution (BSI), and had worldwide responsibility for the business, including the renowned "Kitemark" stamp of Quality Assurance. Running a global business with over 80% of his time involving global travel. David preferred to work from home as much as possible and not in London.

In his offices on the 17th floor of the BSI building in London, he had a blazingly fast fibre internet connection due to the BSI office's location directly over Gunnersbury tube station. This made him even more aware of just how poor it was in his home area, and he vowed to do something to improve it.

Other businesses he visited as head of BSI told him of their internet problems, and being often in London and with regular connections to the government anyway, he became very active in the political arena, using his position to talk to the politicians, local councils, and social media. David even gave evidence to the House of Lords and other government committees, but his evidence and that of other professionals appeared to be ignored, as BT's lobbying of government and ministers to allow the company to "sweat their copper asset" was constant and effective. Meanwhile other businesses he visited across the UK told him that with the poor internet in the UK they could not compete effectively and were falling behind competitors in other countries.

By 2008, David had already realised that broadband would become the fourth utility. Around Goosnargh and Inglewhite, he had got to know many of the local businesses due to helping Paul with his wifi network, and these businesses were all crying out for more. David bought industrial 3G access points with outdoor antennas and trialled these, but they were not very good. He found out about the WenNet network, a wireless network further north, which had laid the first rural fibre themselves, so he got in touch with Chris Conder, and she told him about B4RN. He immediately contacted Barry Forde, who said that regrettably, it would not be possible to connect B4RN with Goosnargh. It was just too far away. B4RN was just starting up, so Goosnargh was not in any of their plans. David was still very keen to understand what was possible for his local area of Goosnargh and Inglewhite. He had been attending many of the same conferences Barry attended and had repeatedly nagged Barry on behalf of his local businesses.

Barry did want to help, but there were just not enough hours in the day to help the whole country, and he had to concentrate on the network he had planned out. Goosnargh was over 20 miles away as the crow flies and the other side of fells and a big river or two.

So Barry still said no.

Undaunted, David and Paul had also heard about Craig Brass from further north at Lonsdale Net and asked him if they could share his breakout point on the Geo (now Zayo) fibre. But unfortunately he needed too much money to make it worthwhile.

Using the connections he had made while at BSI, David went straight to Geo/Zayo, where Annette told him



Paul and his son Andy, at the showtell day.



David at a showtell day.

they would have to raise £17,000 to make the join, then pay £1,600 a month, then £400 a month for rack space at Telecity to go out to the internet. David knew the tiny network could not ever afford that operating expense, so in September 2014, he negotiated a 'charity rate' using his business skills and secured this advantageous rate for three years.

It was great to finally get the backhaul (internet feed) they needed, but this now created a huge problem. Paul and David had to quickly and cheaply build their own fibre network from scratch...

They had attended several B4RN show/tell days, and picked the brains of the people in B4RN they met to find out what they did not already know. There was a lot!

David and Paul realised soon after these visits that they simply could not afford most of the equipment or infrastructure types that B4RN had, so they would have to make something work with only what they had, very basic tools, and importantly, on an extremely thin shoestring of a budget.

Goosnargh was also a challenge, mainly because it is a very rural and huge parish (one of England's largest) but without any real focal centre or village to this huge area. That meant there was little organised community spirit.

So in a huge leap of faith, in 2014, David and Paul formed a company that became a community interest company, Gigabit CIC. They created a website and gradually assembled a small working group of enthusiasts. They worked hard over the next 6 months to find the money within the community to pay for supplies. Adrian Rhodes, Graham Kirkham and David put in lots of money and other resources, and others put in whatever they could.

They initially raised about £100k to get going. Paul did all the digging with David, and David used his old tractor to do the moling. David had already engaged with some key suppliers at the conferences, and with their enthusiasm (and some persuasion from Chris), they also persuaded Barry to tell them about some other suppliers which they did not know about.

At first, all of their ducts were 20mm alkathene water pipes, which they could source quickly and locally, but they worked well. They could not at first blow the fibre through as they had not got the money for the equipment needed, but they could manually push/pull fibre or blow string through with a vacuum cleaner and then get the fibre through.



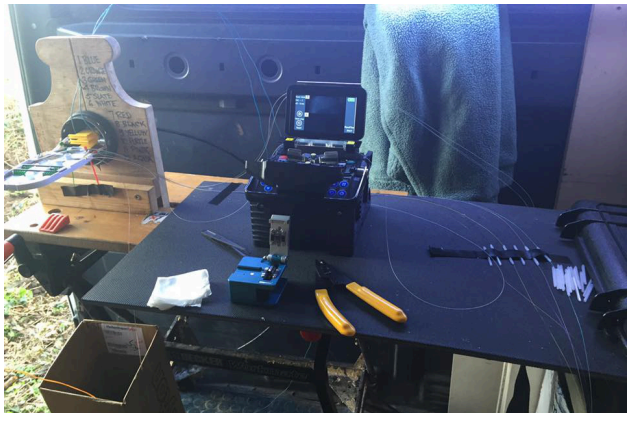
David's Steyr tractor and a borrowed mole plough.



January 2016 · Th' 'ut. Kitted out by Paul, was soon cladded and cosy.



Tom Rigg doing the splices to bring Goosnargh hub live.



David got his own fuser, fusing many of the bullets and customers' fibres.

Their main plan was to connect three cheese factories and a cheese distribution business with Paul's main mast. The companies would provide the base load to support the connections to any houses along their route.

They decided that, seeing the B4RN speeds, they would build it as close to the B4RN model as they could, with no GPON (splitters), no throttling or limiting usage, but managed switches and honest point-to-point connections for everyone.

Barry advised them to buy Genexis routers, which B4RN was using, so they did exactly that.

David says Barry was brilliant and very helpful (if sometimes a bit frustrating!), but officially B4RN was not involved at this stage.

They just cracked on as fast as they could and got 10 businesses and at least 25 homes built out. A local farmer, Fred Riding, let them through his land to get the Zayo fibre feed over to the cabinet and supported the project.

A photo shows the first mole plough on the back of David's old tractor they used to get from the Zayo (was Geo) breakout point to the cabinet. They built their own cabinet out of a shed that Paul had sawed in half, and thanks to the generosity of Adrian Rhodes, they had erected this on a small patch of Adrian's land. As well as being a significant investor, Adrian has supported the project throughout, wanting to give back something to the community.

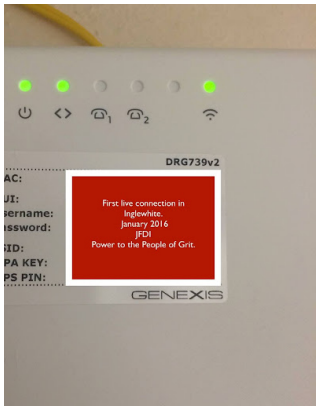
Paul put a rack in the shed for their switches and trays, and it had a chair, a table and heater, plus the all-important kettle. It was possibly the best and cosiest cabinet yet!

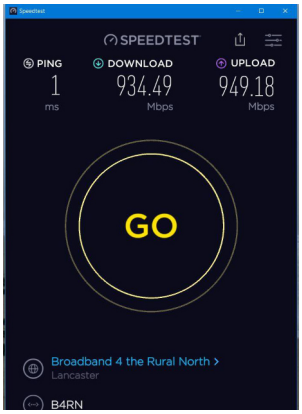
David and Paul dug over to the breakout point on the Zayo fibre and were then ready to be connected.

Tom Rigg from B4RN was a fantastic help technically, and also made the final fusing, working



The only cheese press with a spade. The first live customer's business.





First customers went live in January 2016. Great ping.



David and Adrian Rhodes testing the new live connection.



David doing an unconventional install.

late at night to bring Goosnargh live.

David and Paul then went around installing the boxes into the properties and splicing all the connections to bullets and into the properties. The local volunteers started helping in some areas, and gradually, the Gigabit network took shape.

Gigabit CIC had then begun to set up their own billing system and customer services etc. (a real problem for this small group) and needed to quickly get more customers to be viable.

Barry was aware of all this but could not join them into the B4RN network as Goosnargh parish was not contiguous to B4RN, and there were no digs anywhere near them. It was simply too far away from Quernmore at this time.

The first business to come live was Carron Lodge Cheese - a great celebration, an award of the Lindsey spade on the cheese press outside, and the obligatory speed test to prove it had happened.

They were delighted with the results of all their hard labour. The latency alone proved how good it all was.

There was, however, a B4RN breakout point nearby at Bleasdale.

David also noticed that B4RN's rack at Telecity was next to the rented Gigabit rack, and he thought that might help B4RN.

By this time, Tom Rigg had become COO at B4RN and he helped tip the balance towards including Gigabit's network, so between him and David they eventually persuaded Barry to take them on.

The mechanism to transfer the network over to B4RN was complex, primarily because of the CIC-regulated structure, which needed to be dissolved without liabilities. In the end, David and the other investors in the Gigabit CIC ensured that B4RN could more easily buy the infrastructure by gifting

much of their equipment to B4RN, and by putting their network on the B4RN system, thus exchanging their investment in Gigabit for long-term investment in B4RN.

David and Paul had effectively snuck into B4RN by the back door. However, B4RN had also by then seen this as a quick way to get significantly more resilience into the network by having additional breakout points feeding the network in different directions, so it ended up as a significant win-win for both parties.

It was not the ideal way of building a B4RN network though, and lengthy negotiations were needed between Gigabit CIC and B4RN due to the low-cost shoestring network - which was actually quite reliable but completely non-standard!

However, lessons were learned and everyone then realised this was a good thing to do.

The new B4RN Goosnargh entity was called B4BIG - and covered Bleasdale, Inglewhite and Goosnargh, hence BIG! After some meetings held by David and Paul in the Bleasdale parish hall, B4BIG extended their network up to Bleasdale with the invaluable support of Jeremy 'Jake' Duckworth.



B4BIG sign.



The Bleasdale village meeting.

Paul and David did the initial work to plan and ensure the Bleasdale routes could be dug, and ensured that it also joined the connection to the other existing B4RN/Zayo breakout point on the fell road at Bleasdale - for that added B4RN resilience.

David did the first chunk of the moling right across the fell to that Zayo breakout point. Roger Clark soon joined to do much of the rest of moling/digging work right across the Bleasdale estate. Some

other local farmers joined in, and together they had a hard core of at least 6 volunteers.

David continued to act as the local B4RN evangelist talking to the various local groups, going over to Chipping to inspire them, and Paul Hunt, the local Longridge postmaster, then capably took up the challenge and spread the word even further. He laid the plans to get a cabinet about five miles away, at Chipping village hall.

Roger Clark, Jake Duckworth the estate owner, with Paul and David's initial help then got the dig back down towards Beacon Fell. Edward Hibbert joined the tribe, and, with Paul helped extend the network north from Whitechapel and on to Loud Bridge and Bleasdale.Most importantly, he dealt with all the many wayleaves. He was extremely good at that, with only one fail. Jeremy raised the finances, and put a lot of hard physical work in himself to the benefit of both the estate and the local community.

Back near Inglewhite, David remembers a particularly wet week working in the mud with Paul, with Paul's ancient digger, digging up a stony track to Latus Hall in heavy rain and driving sleet to serve just 6 houses. It was best described as a 'bonding experience' which took place on the way to Carron Lodge Cheese.

They got Carron Lodge on the new Gigabit fibre connection first, and then Paul and Edward managed to get the connection through Whitechapel to Loud Bridge and the Waddecar scout camp.



David (also soaked), took this photo of Paul on the Latus Hall stone dig.

David says that early on, he and Paul sometimes had a 'hell of a dig' to get around the stony areas and remembers one morning when he used half a box of shear bolts to get across just one field.

David moled much of the early part of the Bleasdale connection, and around the various locations, he achieved nearly 1500 metres on weekends when the weather was OK and he was allowed in fields. This was often restricted to tight "windows of time" due to silage or stock. Often, farmers gave him very little notice.

The best bit of moling David remembers was 3.5 kilometres in one morning over lovely fell ground, and he said when you looked backwards, 'You would hardly know we had been there'.

Roger Clark, helped by Gavin Henderson, who farms on the estate, also did much of the digging on the estate and was one of the several very hardy stalwarts who helped dig, mostly by hand, a long way up a very steep hill through thick woodland.



Tough steep dig through the woods.



Sub-ducting (water pipe) through the woods.



Digging up from the breakout point.



Roger Clark or Gavin Henderson moleing with a view.

Even though this was in summer, this was very wet ground, full of rocks and tree roots so it was really hard going. It was essential though to get to the Zayo connection point down by the road.

On 5 July 2016 the B4BIG website reported as follows:

'On Saturday up at Bleasdale the men of grit dug uphill through a wood, out through a wet peaty bog and then up onto the fell, where the mole plough took over, and laid the rest of the 800m of conduit... That was then ably assisted in a difficult cut under the stream through very rocky ground by another digger.

'Big, big thanks particularly to Brian Clark, Michael Carroll, the Faradays and also to Jeremy D for his unstinting support and the digging, but also to Lisa D for the bacon butties and the beer.. Thanks too are due to all the volunteers - who know who they are.

'Together we can get this done... 'Dig for a Gig...'

Bleasdale was particularly spectacular because of all the amazing views.

None of the homes or businesses in this area had vouchers (these were not available then), so all credit to Jeremy 'Jake' and the others for raising the shares and investment to pay for it all.

At the time, David commented to the local press that 'If you allow businesses to have this great connection, they can then expand and grow, and this helps the local community and local economy too, often creating local jobs and revenue, enabling rural businesses to thrive'.

These local businesses were all happy to invest rather than just pay a telco large amounts of money with no return on their investment, with many companies being very supportive of the project in other ways.



A tidy mole trench at Bleasdale by David and his little Massey Ferguson.



The drag mole on Paul's tractor, in action at Loud Bridge.



The A Team.



Tony and Stuart putting in a chamber near School House, Inglewhite Rd.

Edward Hibbert was one of the residents of Loud Bridge who had been asking David and Paul if they could join their Gigabit network, and by August 2017, this was being absorbed into B4RN.

Edward knew he desperately needed B4RN himself and knew others would soon too. He says if he had just left it to B4RN, it would have been 5 more years before it would happen.

He also says if it was not for the early determination of David and Paul, and their connection point near Inglewhite, they may still not have been connected today.

At this point David's own business now needed him, and so he had to limit his engagement with the projects. But he still continued to volunteer his help as and when he could.

Paul and David had in years previously held various meetings in village halls, but it had been difficult to convince B4RN that it was possible to join onto this project. After the Gigabit CIC was absorbed by B4RN, Edward negotiated further and eventually managed to get permission to dig. Edward held meetings at the Green Man pub in Inglewhite near where the cabinet was and managed to raise over £138k in investments.

They also now had the benefit of the early vouchers for businesses, and they got a few of those. It was hard to convince people that it would work, but he enjoyed it and met some amazing people who ended up as friends.

Because the rest of the B4RN network was quite a long way off the locals had not heard much about it and there was simply no B4RN infrastructure south of the fells.

Edward had to get all the wayleaves and help sort out the routes. He is a techie person and invented procedures to map the different landowners so that



Tony Swidenbank and Graham.



Tony's trench.



Belt and braces, duct run through spare copper pipe under the flags.



Paul Parsons blowing fibre into house fibre ducts.

he knew who to contact and who was willing to let the duct through.

Gill Hall at Butler's Cheese was extremely supportive at this point.

Mike Meredith came on board at just the right time to help Edward with the dig organisation; he had just retired from a civils type company and knew what needed to happen to get the duct from A to B. He was a 'godsend in the build phase and organising diggers'.

The house digs were done by the householders, and a pair of volunteers Stuart Kidson and Tony Lund. They had a great line in friendly bickering, Edward recalls.

They also fitted house kits, and David Ford then fused many of them.

This project had a few downsides: due to the rapid take up of B4RN in other areas they were often very short of resources, but they understood the issues and worked with them.

Edward says every community has the trauma of going from the JFDI get-it-done phase into the streamlining of a professional company, and there is no easy way to learn the tricks. If it was not for the JFDI then the project would never have happened, and he got great pleasure from being part of it and is very happy.

Tony Swidenbank, a very experienced contractor, was employed by B4RN using the money B4BIG had raised, and that made the operation much more efficient. It was a very wet year, but farmers were impressed by Tony's equipment and the skill with which he used it so as not to leave an impact on their fields. The first landowner to give permission was Colin Singleton, and it is thought that because of him the other farmers 'saw the light'.

Edward says the first is always the hardest.



Phil putting a chamber in.



The new cabinet arrives at Inglewhite.



Alistair Adams Huset and Joseph Brown splicing the core.



Bruce 'the blow' on one of the core routes.

With the time he spent on it, his worst moment was when they had dug a route and filled it in and had forgotten to lay a customer duct in the trench.

Once they had the ducting in they ordered the blowing and fusing teams to get the core live. This is a quote from their Facebook page:

"288 strand fibre costs about a fiver per metre. It is going in about 60 metres a minute, so that is three hundred quid per minute. That is why we need investors to build the network as well as sweat."

The B4RN civils then put a new cabinet in place to replace the cosy Gigabit hut at Inglewhite, to standardise the installation. The fusers finished the job and all was good.

Edward says he is very happy he spent the time on it all, but it is quite an anti-climax when you realise it is finished, and you end up looking for something else to get stuck into. He does not have to worry about internet access anymore, since it just works.

He wants to namecheck Phil Ackroyd RIP, who never lived to see the fruits of his spade, but his legacy lives on.

Eventually, Inglewhite village, with Ken Partington leading, decided to join on, and thanks to the duct David and Paul had previously laid running past them, this was accomplished and they came live in 2020.



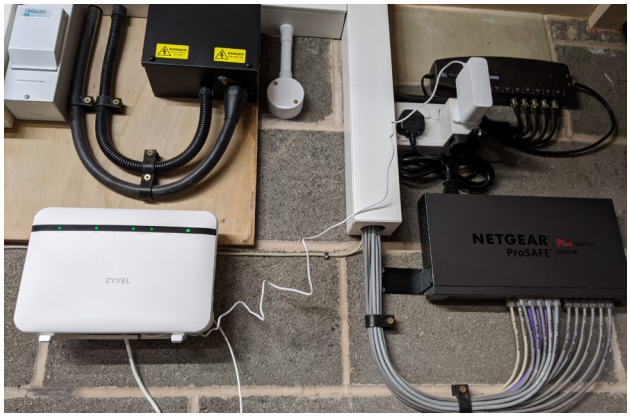
Bruce fusing fibre, working with his leg in a cast.



Ken Partington plus spade award.



Wayne Pye with his spade award.



A house install in Inglewhite.



The Bleasdale Lindsey spade on the signpost.



Jeremy Duckworth with his spade award.

By this time B4RN had changed to Zyxel routers as you can see from one of Ken's installs, all ready to feed the Netgear switch which takes ethernet through the property. Very posh!

Wayne Pye was also instrumental in digging to many properties in the Whitechapel area and getting them connected. He was also awarded the MBE spade.

Bleasdale

Jeremy Duckworth owned the Bleasdale estate, and was very keen to get decent internet access to it. He worked a lot with David in the early days to get it dug up to the estate, and arranged for a cabinet at the village hall.



Simon Dunn had now been taken on by B4RN as the electrician to commission the cabinets and he did Bleasdale.

The volunteers dug down to the breakout chamber leading up to Bleasdale estate. This chamber would eventually connect to the Inglewhite cabinet.

Some of the land was easy to mole, and great progress was made.



Ben and Peter with their MBE spade awards.

The blowers and fusers arrived and houses started to get connected–the views from this area are amazing, you can actually see Blackpool tower on a clear day.

Bleasdale dug in over 42 km of duct.



The fuser's view on a house install. Blackpool tower in the distance.



Cute sign in the woods.



Hugh Tamlin and Robert Staveley fusing a core bullet.



Simon arrives and installs the electrics in the cabinet.



Tom Rigg did the live link to the internet backbone at Bleasdale chamber.



The Bleasdale cabinet arrives.

Oakenclough

This is a really amazing story, and a bit different from any of the others.

Oakenclough is an area that is split between two parishes, Bleasdale and Calder Vale. Bleasdale had invited Shaun Lewis to a meeting to talk about getting the connection to them, including the side of the road that Shaun lived on, but they never got that far. A year after the meeting Shaun decided to take matters into his own hands. He had just sold his business so he had time to do it, so he thought 'If I want something to happen I had better make it happen'. And so begins the story. The spring of 2018.

This group had no vouchers, they did it all themselves.

It also took place when a lot of other groups were 'in build' and demanding most of the B4RN resources, and B4RN itself was gearing up for the voucher scheme (which was another year away) and Shaun remembers dealing with B4RN was very difficult. He compares it to 'a scoutmaster being promoted to general', which, to be fair, is just what it seemed to be. The procedures were being tightened up, health and safety was a major consideration, new staff had to be trained, and everyone was doing their best. He appreciated all that but it was still very difficult he says. Shaun's approach is that of a bulldozer, not a kitten, and he desperately wanted to Get Going. He spoke to the Bleasdale champion who reckoned that about £17k would get the duct to them, but the quote from B4RN came through at £38k. He talked to all the residents and got many to invest, but was still £9k short. He had contractors ready to dig, and summer was passing. 'If we do not do it soon it will be winter, and the farmers will not let us on the land' he says.

He bypassed the normal routes of communication and spoke to the finance manager at B4RN, gave him a cheque from his own funds for the missing £9k and they agreed that if no further investment was raised that he could cash the cheque. That meant he could start.

Oakenclough did not have a tribe, they just had three like-minded souls with amazing skills. The three worked together and just co-opted in the extra talents and volunteers they needed without involving them in endless meetings as Shaun could not cope with that. Each project seems to have its own way of working, but this one is pretty unique. Between them the three members had the time and the skills to do most of the project.

Shaun often said, 'The IQ of a meeting is inversely proportional to the number of people attending'. Controversial indeed, but a committee of 3 worked for them. Elaine Johnstone was a civil engineer and she knew what she was doing. She did all the tube maps so that everyone else knew what went where. She took her turn following the digging contractor and making sure it was all done right when Shaun could not be there. Graham Hulme (pictured with Richard Hopkinson below) was a geography teacher, and he did all the maps and routes. He also helped with the build. Shaun insisted the contractors had somebody local with them, to make sure wayleaves were followed, to sort out any problems, and to keep them supplied with tea. He said they worked even better if you took them cake as well as tea.

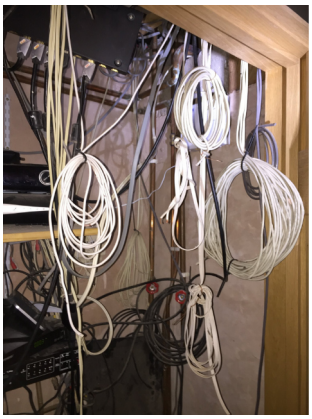
Shaun sorted the wayleaves and planned detours with his team where there were problems. He had a few landowners at the start who wanted paying, and that is not possible with the B4RN approach. The way he got round them was to talk to their wives, and all the problems went away. The womenfolk knew it was their best



Graham Hulme with Richard Hopkinson get MBE awards.



Tidy mole plough.



Ready for the future, ethernet to every room.



Superb house installation.

shot at getting broadband for their farms, businesses, children and grandchildren. The men got bulldozed too. In actual fact Shaun says a lot of 'tact and diplomacy' made it happen.

A local farmer, Roger Clarke. who had done a lot of digging work in Bleasdale, gave confidence to landowners, and was chosen to be their main contractor. Lots of local farmers had diggers and some of them dug their own bits for free, which kept costs down. Their small team pulled people in when there was a job to do, and they all did it willingly to get B4RN into their community. He simply asked them and they did it and he avoided meetings.

One great volunteer was Richard Hopkinson who drilled all the houses and installed the boxes on the walls. One of the houses Stuart took the fusers to was certainly going to make the most of their connection, they were in the process of building a comms room and had run ethernet to every room.

When the fusers came Stuart took them round to pre-booked appointments, and kept the install day running efficiently.

Stuart is also pictured next to the blue Oakenclough Lindsey spade on the school fence. The bag on his back contained his lunch, but the volunteer doing the fusing reports that he took it home with him in the evening, having not had time all day to eat any of it.

They got the connection to their school via a long detour around Longhouse farm and a road crossing because of another landowner's reluctance to issue a wayleave. But eventually they got it all done in a record time of 10 weeks from start to finish, laying 17 kilometres of duct. The houses and school came live in November 2018.

The fusers were also impressed by the quality of the house installations done by Richard. Duct was encased in a stronger sub-duct and some very thick



Stuart (pictured outside the church they had just connected).



Stuart pictured at the school.



The Oakenclough spade.



An open day with Jorj from B4RN for the Calder Vale visitors.

walls drilled through neatly. Will Dehany said all their ducts blew very well, which is praise indeed, and the installs were of a high standard.

Shaun liaised with Tom Walmsley at Calder Vale, and they held an information day at the school in December 2019. Jorj helped organise the event, and he told them he had already arranged for a chamber to be dug to a handover point at Marsdens Farm ready for Calder Vale to dig to meet them.

He got told off by B4RN as they had stipulated a small chamber, but he knew it would need a large one so he did it anyway and says he is 'not sorry'. (He did the same at the end of another long route ready for the Scorton link to come in for resilience). He is not sorry about that either.

At the time all the B4RN staff were busy and mostly unavailable to give advice, so they did what they thought was appropriate and sensible.

Shaun says when Covid came the phone went mad with other areas asking for connections, but they were all different parishes and had to go through the B4RN process.

The Calder Vale team came to try out the service at the school and ask questions, and then pushed harder to make a start on their own project, also asking Roger to dig for them too.

By that time B4RN was employing more staff and information and training became more available.

Shaun says the connection is brilliant, and if he ever moved out of the B4RN area he would start another project to get it.

B4RN did not need to cash his cheque.



Goosnargh Village

The Dig for a Gig project in Goosnargh had originally started in 2013/2014 as an independent self-build project, and became Gigabit CIC. This project has since enabled a lot of subsequent connectivity for parishes to connect to B4RN.

Unfortunately, as the largest parish by area in the country, and with limited funding available the team could only cover part of the parish. In contrast to this early "JFDI" and piecemeal approach adopted by Gigabit CIC, the B4RN projects cover the whole parish.

The majority of the population of Goosnargh parish live in Whittingham & Goosnargh, which is the largest village and at the extreme south of the parish, and oddly with a parish boundary with Whittingham running through the middle of it. With hindsight, if there was ever a parish land area that was not designed to work like the rest of B4RN's projects, Goosnargh is it!

Just north of Goosnargh and on the way up to Bleasdale, it is a very rural area indeed. Unlike Goosnargh village, many houses and businesses were very badly served by phone lines and the lack of normal internet from BT. These more remote businesses and properties had as a result become reliant on Paul Vinson's wi-fi network.

Four years after it was formed in 2013, in 2017 the original CIC then officially became part of B4RN. With this new support, and renamed B4BIG, the volunteers continued to make really good progress in the north of the parish, extending the B4RN network out towards Bleasdale and Chipping etc. Because the Zayo backhaul connection was already in place at the Inglewhite cabinet, the various digs also helped provide the connections and backhaul for these new main B4RN trunk routes.

In 2018, the volunteers had initiated a B4RN project to try finish off the whole parish, but unfortunately it did not succeed as a result of some challenges over vouchers, funding and BT's 'land grab' tactics. Because the more recent Goosnargh activists were also persistent and dedicated, they eventually managed to find a compromise. There was insufficient demand in the main village for B4RN, since the majority of villagers appeared reasonably happy with what they had, so two new routes were planned and then built to just serve the outlier houses and businesses that really needed it. Unfortunately, because one landowner refused a wayleave, a third, much-needed route could not be built.

Jeff Jefferson was a key member of the Goosnargh Village B4RN team. He says: 'My involvement with B4RN started a few years before the Goosnargh project as I was a customer of Paul Vinson's private wi-fi network. Paul was able to tell me of the trials and tribulations that he and David Ford had with B4RN over the years, trying to get them to extend the network down to the rest of Goosnargh. After much badgering over nearly eighteen months by David and Paul, B4RN finally agreed to hold a meeting for interested parties in Goosnargh village hall in February 2022. B4RN was represented by CEO Mike Lee, COO Tom Rigg and Nick Hall (Civils). There was quite a good attendance and lots of interest. Several further meetings took place

and a feasibility study was conducted. When this was later presented to the meeting of potential volunteers by our B4RN liaison person, it was ridiculed because of a projected cost of £200,000 was mooted. More meetings were arranged with B4RN at Melling, and a new figure of £80,000 for a reduced scope of work was produced.

Work by the volunteers, which was by now a small select group comprising Paul Vinson, Grant Rhodes and Jeff Jefferson then started in earnest. Paul had been heavily involved along with David and landowners in the area so he took on the responsibility of getting the many wayleaves required, along with distributing B4RN publications. Grant provided valuable technical know-how and took on the Goosnargh Lane area to try and obtain wayleaves and distribute publications whilst Jeff concentrated on the Mill Lane area. To keep everyone updated the team posted on the Your Goosnargh website and the B4BIG Facebook group with regular updates on WhatsApp threads.

By the middle of 2023, the three key requirements of B4RN were met, namely interest, funding and wayleaves, although due to one blocker, routes had to be revised and updated. Unfortunately, Paul left the project, but digging started in August 2023, which lasted for 3 weeks and was blessed with fine weather. The first of approximately 30 properties went live in October 2023.

Grant says, 'When we got involved there was a very high build cost being thrown around. We attended multiple meetings at B4RN, discussed the costs, had direct discussions with Tom at B4RN, and tried to get a direct connection to the village hall. The village was showing vouchers available and we had signed a few up, but we were still short so needed investment from the local council or parish. So, we ran it past them, looking for a small investment from them and also asked if we could put the cabinet at the village hall. They agreed to a meet for the business case etc, and then frustratingly, they abruptly cancelled on us on the day of the meeting - stating it 'wasn't in the parishe's best interest at the time. Unfortunately, this scuppered the plan to reach the village hall.



'Undeterred, we regrouped, re-routed and got B4RN to re-cost (and to include the vouchers, which Grant had access to). Jeff did a huge amount of work making sure he had everyone signed up to bring the costs down. Once Jeff got more signed up, I checked the register to make sure the vouchers were being included in our build costs etc. Once we got to the final agreed build and included all funds from vouchers etc, we were still short. We then went hunting for local investors on the route and luckily, we found one kind person, and their investment completed the funds package required so we could get on with the build.

'So, as you may be able to see from the maps, the outlying houses got connected to the main cabinet up at Inglewhite, but the village at the bottom still sadly awaits B4RN enlightenment'.



This photo has not been photoshopped! It is the mole used for most of the Chipping dig.



A big group dig brought out lots of people to help.

Chipping

Because Bleasdale had got online Chipping decided to join on to the branch. Paul Hunt, who was the local postmaster, had heard about it all on a bus with the Goosnargh group to the test match at Old Trafford, and thought it sounded great. This was about 2016.

In September he arranged a meeting at the village hall in Chipping, and Edward and David, who had been the mentors did a presentation with Barry for them all. 50 people came, and Barry told them what was needed and if they were up for it then B4RN would add them to the network. They were up for it and Barry produced the maps in January 2017.

Chipping raised £200k to start the project. Paul and his community formed the Chipping Chain Gang. They got a Facebook group to keep people in the loop, and they had a route champ for each leg, and some helped on all the routes. They got the wayleaves sorted and started digging in August 2017 and the cabinet came that autumn.

They had a core of 6, with numerous little groups doing their own patches. They organised group digs and big working parties where needed. Farmers did some of the digging, and John Stott (also a farmer and contractor) did the majority of it.

The main difficulty was the window of opportunity for digging; often there were crops in the field or too much livestock, but John knew the score and could work round it, getting a few hundred metres at a time dug when conditions allowed. John was a member of the team, and volunteered for lots of jobs, as well as being the main contractor.

In those early days a lot of people did their own house digs and the volunteers would help too, or they worked in a group to do patches of houses.



Using subduct where it could not be buried deep.



Tea break and team meeting.



Hilary and Paul house install.



Paul helping to go under a wall..



Yes it is through.

The volunteers laid the duct and dug in the chambers on the housing estates.

They used subduct for extra protection where they could not dig too deep. John Stott was busy getting the core routes dug, Steve Foster did the road moles and Tony Swidenbank did drills under rivers for them.

They dug under walls, and did the house installs, the photo shows Stan doing one with Hilary. Stan moved to Cumbria shortly afterwards and was instrumental in getting B4RN in his new area, and now works for B4RN.

After big work days they joined up for a brew and chin wag.

They got all the duct round the houses near the cabinet first, and the first customers started to come live.

Martin Butters installed most of the house kits in the early days, but when Paul retired from the PO (and Covid hit) he then took on the house kit job.

This is the view from one of the first houses connected to Chipping; you can actually see Ingleborough in the distance, which was the current northern end of the network, which shows how it is spread out and how remote the area actually is.



The view of Ingleborough from the first live house in Chipping.

Ducting the estate at Chipping



Measuring out the ducts.



Digging another trench.





400 flags lifted and duct trenched under them.



Trenching alongside the cobbled paths.



Digging where possible.



More flags.



Cleaning up and re-laying cobbles.



Tidy job.



Trenching in a lawn.



Digging in a round chamber.



Digging in a big chamber.



Barbara and Hilary learning to fuse at Melling..

Half way through the project in 2019 the government voucher scheme came in, and that meant that householders could get dig grants from B4RN to pay someone to do the house installs for them.

This caused the project a few headaches, because areas they had already been through with the core duct were not eligible for a voucher, and it upset the villagers. Their meetings were held in the pub, and Paul noted that the gossip around the vouchers was becoming divisive and causing difficulties.

Also some people had got vouchers on routes they had not got to, and use-by deadlines were running out on valid vouchers, and that caused stress too. They had to re-apply for a few of them. The voucher scheme did take the pressure off raising money though, and meant they could pay people to do some of the work. Some communities at this point paid people out of the grant to dig their gardens, and some had a community charity set up and put the money in that. Chipping did neither, Paul carried on fitting kits for free and the volunteers kept helping out.

Once the initial installs were done, areas came on in dribs and drabs as they got to them, so several volunteers went to Melling to get trained to blow their own house fibres and to fuse them. John blew the house fibres and Hilary learned to fuse. She and Barbara had arranged all the house installs in their area and then continued to help others. Barbara was also the chief bookkeeper. They also learned to patch their customers in to the cabinet. This cut down on the time waiting for B4RN fusers to come, and they got their own equipment to do the work.

Hilary was fed up with her internet. She lives on one of the many small estates in Chipping, small blocks of houses in a group. She asked Paul every time she saw him in the pub when would B4RN get up her estate. Paul said a champion was needed in that area to gauge interest and get the ball rolling. Although



Barbara doing the paperwork.



Hilary fusing the customer.



The Chipping tree, by Paul Hunt. Its branches reaching out…



Barbara and Hilary patching customers in the cabinet.

desperate for better internet Hilary kept saying she was too busy as she worked full time. But one night after one too many lagers she caved in and said she would be a champion.

Barbara and Hilary made a great team. They went to meetings to find out what to do and set about it. Hilary roped her husband and son into the team and they blitzed their estate. Hilary, Andy and Tom set to with gusto and lifted and relaid over 400 flags round the houses to lay duct. In different bits they had volunteers helping too. There was a mixture of take up, a lot of people were quite content with the internet they had already, and 'a few were scared of losing BT Sport'. There were quite a lot of Apathetic people, and the Adopters could not awaken them at this point, but they got duct to all the houses they could and left it as close as they could to those they could not reach. Steve Seed helped Andy with the digging.

Paul and Martin Butters did most of the house kit installations for them.

Hilary has carried on helping new customers and also helps with any repairs in the area. She has also helped nearby projects to get going and by doing some fusing for them. She also shared her fusing machine with the Calder Vale group until they got their own.

Paul reckons that 423 or 50% of the area took the service initially, but more than 90% have the duct to their houses/boundary. They have spent 6 years on the project. They have also given nearby projects assistance and encouragement.

The following volunteers have significantly helped the Chipping Chain gang B4RN project over an extended period:

Hilary Dickinson, John Stott, Andrew Hutcheson, Steve Seed, David Hall, Peter Chambers, Ray Metcalf, Carol Griffin, Martin Hawkins, Robin



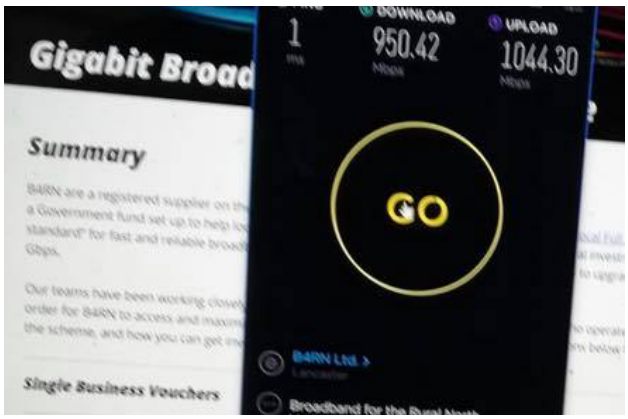
Tea breaks essential.



The Chipping team on an awards tour.



The Chipping Show ground now has a connection.



The speed test at the village hall.

Underwood, Graham Crichton, Martin Bleasdale, Stan Jenkins, Martin Butters, Barbara Hoyle, Graham Frost.

Paul says they have met people from all walks of life, people they would never have met despite living in the same area. They met them in wellies and mud.

He says they are seriously impressed with the response times if there is a problem with the network, because from when they first started reliance on broadband as a utility has increased tremendously, and Covid proved how vital a service it is.

They held an event in their village hall to show the service off, and had a big map on the wall where people could put pins where they lived. They put a speed test on the Chipping Chain Gang facebook page along with all the news as it happened.

Chipping had joined the Goosnargh network, and this opened up the route to the Hodder Valley.

They dug in over 100 kms of duct.



Digging the duct into Chipping.

Chipping Village hall event



Villagers gather at the BYOD day event to try out the connection.



Planning ways to build out the network.



From A to B. How far? How do we do it? What if we did this bit first?

The Hodder Valley

Whitewell / Dunsop Bridge / Newton / Slaidburn

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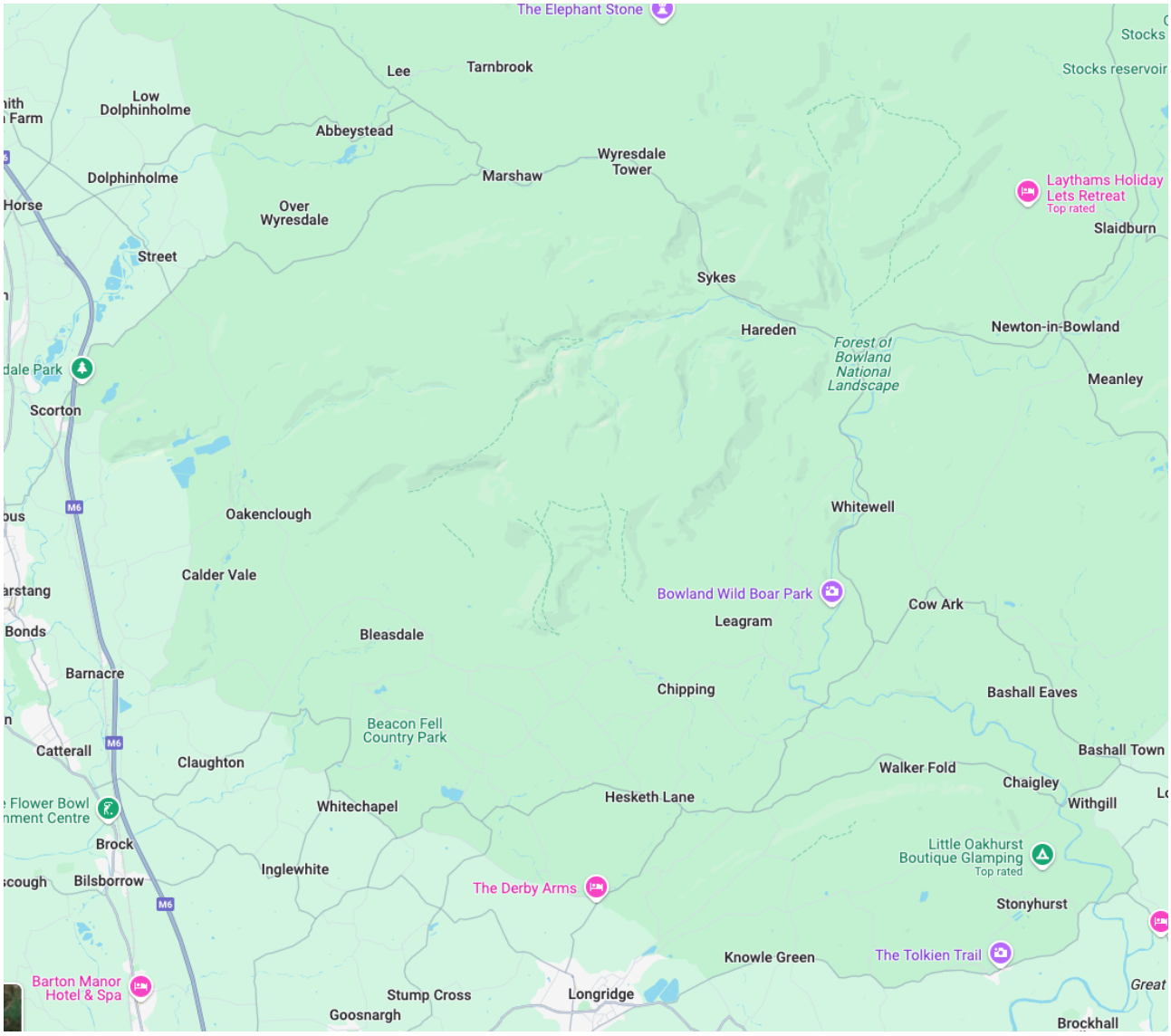
The route went on from Chipping down the Hodder Valley, all the way to Slaidburn, a project which started in 2018. There were no vouchers at this time, though they did appear later.

Cath Halstead, B4RN community engagement and development officer said 'It's brilliant how the local community has come together to help plan, design, fund and build this network. The Dunsop Bridge community have become a great volunteer team and the landowners in the area, including United Utilities and the Duchy of Lancaster, have been incredibly supportive in allowing the B4RN Network across their land. Everyone's commitment to this community project has enabled B4RN to plan and build across miles of land to bring the B4RN network to Dunsop Bridge and beyond.

'The Plan, developed by Edward Wilman, our B4RN Network mapper and planner for the project, covered some difficult ground and some interesting challenges and working with the local knowledge of the group, landowners, farmers and the contractor and digging teams these have been overcome. A great team effort'.



Photos by Peter Costello.



As you can see from this map, this project covered a very large area, with very sparse populations. There were live B4RN networks in Over Wyresdale but no open route to join them yet.With the Inglewhite cabinet going live, Chipping saw a chance to join there. In turn, this opened up the route for the Hodder Valley. There was no funding to help them, and no EIS support for taxpayers if they bought shares. It is a testament to their determination that it ever worked, but it did. If you look at the map, from Chipping it first went to Whitewell, and then to Dunsop Bridge which is half way between Whitewell and Newton. When business vouchers started in 2019 the project took on a new impetus, as the businesses were desperate and each business voucher helped 10 residential customers.

Whitewell

Charlie Bowman owned the Inn at Whitewell. He championed the route that went all the way to the cabinet at Dunsop Bridge, from Chipping.

Over 63 kilometres were dug for Whitewell to the Dunsop Bridge cabinet. Charlie worked tirelessly, and even learned to fuse the customers.



The famous Inn at Whitewell.



The rainbow at Chipping reaches Dunsop Bridge village hall.



The Valley road.



Charlie Bowman fusing connections at Whitewell.

Dunsop Bridge

Richard Astle was the main Activist for the area, and he says this is how it all started:

'The catalyst for the whole project was a public meeting held in Newton on 18 February 2018, organised by Newton Parish Council, with Dave Ryall from B4RN. It was particularly well-attended and it quickly became apparent the project was going to be much bigger than a small network centred on Newton, as there was interest in all five of the local parishes along the Hodder valley.

'This was favoured by B4RN because, apart from incorporating a far larger population, it would extend the existing network from Chipping almost to Tosside, leaving only a short section to connect to the existing network in Rathmell and thus providing vital network resilience, a key objective for B4RN'.

Richard got involved because he was retired and had time and was interested.

There were a lot of people on the parish council who wanted to get it going but they all had jobs and had not the time to devote to it.

People then seemed to lose interest, so it all needed gearing up a bit. Richard went round all the houses, encouraging people to sign up and invest if they could.



Barry arrives to blow the fibre.



John gets his MBE spade award.



John fusing.



Barry from B4RN blowing fibre.

They managed to get a coordinator in each village. The project encompassed Whitewell with Charlie Bowman, Dunsop Bridge with Stephen Bennet, Newton with Richard, Slaidburn with Edward Ireland, and Julian Valentine as volunteer for Easington, which is east of Slaidburn and finishes a mile or so short of Tosside.

Richard liaised with B4RN. They all got the wayleaves for their own parishes and raised as much investment as they could.

A lot of the project was done during Covid, and David Spencer recalls, 'It was a good time, April 2021 in Newton, when digging trenches was a welcome outdoor activity amidst the restrictions of the Covid pandemic which was still forcing many of us to work from home'.

Stephen Bennet became the coordinator for the Dunsop Bridge area. He had been to the original parish meeting at Newton village hall and was excited and wanted to get involved. He recalls there was a year's delay from that meeting before anything really got started. A lot of this was down to the B4RN organisational issues as the prospect of voucher funding was being absorbed into the planning and costing of projects. Nevertheless he went round all the village (about 50 houses) and the outlying farms to check wayleaves and gather interest.

Two major landowners were prepared to invest heavily, but ordinary householders did not have as much interest. They had an adequate service from BT as they lived so close to the exchange in the village. Stephen says he was regarded as a salesman and treated with scepticism. The outlying properties 'were on the equivalent of dial-up'. However Geoff Walker on an outlying farm was desperate and they made sure they got to him, and left duct ready at the boundary of all the farms and houses. Most of the houses had Sky satellite dishes and so were served for television too. He says take-up was around the 50% mark, but some people were tech savvy and saw



Stephen practicing his fusing in a tea break



The centre of our world.



Dunsop Bridge cabinet.

the potential of a true fibre service, both on their usage and property value. The local estate paid for all the estate houses to get a connection and invested heavily.

The team had not been told at the start that they would have to raise money to pay for the project, but luckily vouchers came in for businesses in 2019 and that eased the burden somewhat and made it possible.

Steve and John Whitney volunteered to dig to the village houses who could not do their own, and Tom Wells who worked for the Duchy did all their houses. They installed all the house kits too. Jorj and Barry came to blow the fibres. When the house fusers came they had a go at fusing too and did their own connections.

Steve Foster did the mole ploughing and was really great to work with.

The hardy volunteers of Dunsop Bridge have helped B4RN reach the centre of Great Britain! National Grid reference SD 63770 56550 is famed for being the exact centre of GB and its 401 associated isles.

The B4RN planners decided on two cabinets for the Valley, Whitewell would be on the Dunsop Bridge cabinet, and Newton on the Slaidburn one. Charlie had started getting it to Whitewell, so the core was on its way and the cabinets were installed ready for the core.



Slaidburn cabinet.



Stephen installs his own router.



Volunteer fusing a house connection.



David fusing in Newton.



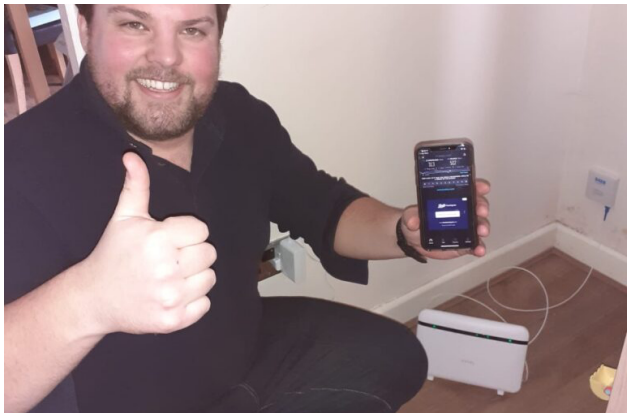
Lawn protected with sheeting.



A tidy dig.



Tea time in the sun.



A happy customer goes live in Dunsop Bridge.



Stephen installs his new router.



Newton village green.



Martin gets his MBE spade.



Richard and David get their spade awards.



David fusing with an audience.

They had never known how much money they would need to raise, and they found that because contractors would be doing the digging they would have to raise far more money. Some areas raised more than they needed and together they managed to finance it all. There were some business vouchers which helped as well.

Newton

Newton had a long wait for moleplough contractors, it was in 2021 that B4RN finally let the major cores start through to Slaidburn. Richard says Steve Foster and he walked the routes and Richard introduced him to all the farmers who told him where problems to avoid were. By November 2021 he could report, 'All core routes finally complete. Well done all'.

They had problems with routes losing vouchers and it left a bad taste. Some people were very confused and irritated and Richard got involved to help them resolve the issues. They had vouchers lapsing, and had to be re-applied for. He found it very frustrating dealing with B4RN at this time, but he really enjoyed working with Steve and carried on, though he says it 'was not an easy path'. They had problems with some of the land agents on some big estates, which caused 3 months of delays, but most landowners and the farmers were brilliant.

Then they had delays because of Covid. Everything seemed to be against this project, but they persevered and got there in the end.

They had house kit volunteers, who worked in pairs, trained by B4RN. On fusing days David helped out. They had about 20 diggers on Saturdays helping with the core and the garden digs, and lots of fun with garden barbecues and bacon butties. These Saturdays made more community events happen, all continuing to this day. The project builds a lot of cohesion in a scattered community. Richard fitted the first router and then went to the cabinet to patch in the customers, with training from Flick.



David sitting down on the job.



Flick and Sarah from B4RN.



Richard (right) and the first happy customer.



Richard patching the first customer with Flick.

Richard says connecting all the houses who wanted the service became easier as they learned what was needed, and he became very confident with tube maps of the ducting routes.

Once they started installing more people signed up, with 98 out of 130 properties taking service initially. All the others had duct left at their boundaries. He communicated with everyone via email. They did not do social media.

Richard says infill is a lot harder, as B4RN contractors have to do it all from scratch. He can supply them with details of where the duct was left, and as houses change hands everyone wants it.

Flick and Sarah from B4RN helped them on many occasions. The overall timescale from start to finish was Feb 2018 to December 2023

The only unplanned outage they had was on a bank holiday Sunday, when a farmer cut through a big 192 fibre core duct. It was replaced and spliced both ends within 24 hours, which amazed everyone who was used to phone lines being down for weeks. They are all very proud of the network they built.

They got duct into the forest in Tosside, and hopefully this will one day join up with Rathmel.

Slaidburn

Edward Ireland and Rob Glendinning had attended the meeting at Newton in early 2018. Edward agreed to be the champion for Slaidburn. Andrew Cowkin joined them once he got the cast off his leg. A long period of meetings with Dave Ryall from B4RN ensued, and they had many problems to overcome. The delays meant vouchers expired and then came Covid and lockdowns, making getting the internet even more important. They recall that nobody was keeping them informed and giving them the information they needed. The project to reach



The rig.



Starting the digs to the houses.



Bony dig.



Round Chamber install.



Many dig days.

Dunsop Bridge was difficult, Charlie from Whitewell had a very long dig to do to reach his patch to hand over to Dunsop, and then the long route through Newton had to get to Slaidburn. It all took longer than they thought it would. Edward set to and did flyers, he went to every property to explain what B4RN was all about to try to raise interest and also investment.

The middle of the village was very Apathetic, most of them had FTTC and they thought it was sufficient for their needs.

A lot of the houses were estate houses, and unlike the Duchy and other estates. The Slaidburn estate did not see the point of anything better than what was available. Eventually many of their tenants must have persuaded them that something better was needed, and only B4RN was prepared to deliver it. It took until 2021 to get the core dig started and they started installing house kits and doing garden digs in 2022.

They left duct at the boundary of every house, whether the residents wanted it or not, as they did not want to have to go back to do any of the digs again. They helped the older people with their installs. They had been to a volunteer day at B4RN and learned how to do the installs properly. At this point Rob was indispensable because he had a long drill. Edward and Rob worked Saturdays and Sundays and Rob bought a mini digger for some of the bigger gardens or places where the contractors would struggle. Andrew proved to be an awesome digger man. People kept their dig grants and they did the work for free, or helped householders to do their own.

Halfway through, with no warning at all, B4RN put the price of the service up from £30 to £33. This was a big shock, and caused a lot of bad feeling, as B4RN had never put the price up before. In actual fact it was only a 1% per year increase over the past 10 years, when other ISPs were raising prices every year, but



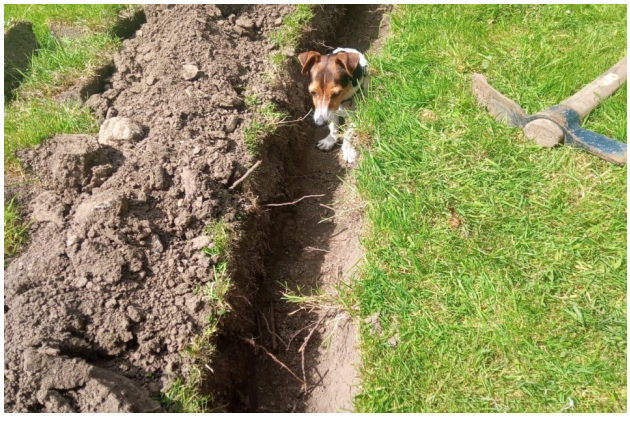
Very long digs by Steve Foster. At last he is back.



Very tidy work in a garden.



Digging to the chamber.



The measuring Jack Russell.

they had sold the project to the people on the understanding that B4RN had never raised prices so this was a big shock to them all. They spent a lot of time calming the troubled waters and everyone got over it in the end thanks to Edward and Rob.

Another disaster was looming, and it hit them in the summer. The project had run out of money. Projects in those days could start to build when they had reached a certain percentage of the total needed to complete, as it was always found that more investment always came once people could see it was underway.This did not work in the case of Slaidburn, where there were not enough people who could see the benefits of having such a good service, when the one they had seemed sufficient for their needs.

The double whammy was that Steve Foster, who was the contractor putting the core into Slaidburn, was sent off to another project in Cumbria that was time-specific and had a lot of vouchers, and Cumbria topped up the vouchers so all the contractors were moved up there. The Hodder project without any money did not stand a chance, so Edward set out to get more investment and get Steve back. It took six months, but there are some very community-minded people in Slaidburn, and although they had already invested, they put in even more.

What really upset everyone was the fact that nobody from B4RN had told them that the project was underfunded, and they had no warning. They actually met with senior managers who apologised and lessons were learnt. There were many mitigating circumstances and unfortunate coincidences that contributed to this infernal situation, but, as with the price rise, they took it on the chin, and working with B4RN they all got things back on track.

They carried on digging round the village and Reuben Parsons invented the measuring gauge for house digs. A Jack Russell is now the standard depth needed in a lawn.



Garden digging.



Careful digging for customers.





Digging and more digging.



Tea time.

6 months later Steve Foster came back to them. This time he stayed, and from February to October 2023 he completed the join and dug the other routes.

One of them went right to Tosside, ready for them to start their project when they are ready, and join up to Rathmell.

They fitted the house kits and dug the gardens on all the routes. On 25th July 2023 they had their directional drill under the River Hodder, and they fitted their last house kit in December 2023. They remember doing an install at a farmhouse and they had to pull a couch out of the way to drill through. Andrew picked up a toy rat and cried, 'It's a rat, it's a rat' and the farmer's wife freaked. They were also accused of 'sexual harassment' when they told another farmer's wife they had 'come to fix her up'. They admit to having a lot of fun amongst all the headaches. At the Hodder Valley show they set up an outdoor wifi unit, so all the stalls could use their card machines as there is no mobile signal there. They really enjoyed showing off their network.

They had lots of volunteers helping to install the cabinet at Slaidburn, this would feed back to Newton and join the Dunsop Bridge route back to Chipping.

They connected their church, and went round the village digging to all the houses and installing them.

Pickaxes, mattocks, spades and trowels were needed. B4RN contractors did the field digs and the road crossings for them. They used their own mini digger within the village and hand-dug a lot of properties to the house wall, and fitted the boxes.

Many days were spent getting all the houses connected. Very thick walls, cobbles and flags had to be dug through or under, and massive drill bits were needed.

They also did their own version of FTTC. Fibre To The Caravan.





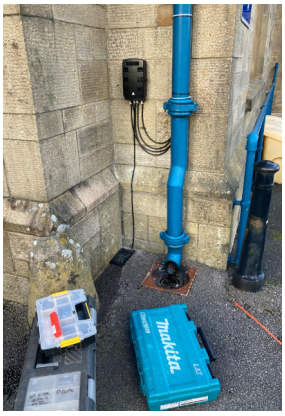
The dig down to the Slaidburn cabinet, before and after.



Almost there.



Pickaxes needed.



Duct in and box on wall of church.





Fran Brown blowing the core duct.



The road crossing..

Frank came to blow the fibre when they had got all their ducts in. Because the cabinet at Slaidburn was already live the customers came on as soon as the fusers had visited.

The Newton and Slaidburn groups dug over 76 kilometres of duct. The total dig for the Hodder project was over 140 kilometres of trenching, which is a fantastic achievement. Well done to all.





Crossing done and chamber installed.



Steve Foster's rig at close of day.



FTTC. Fibre To The Church.



Under the wall.



FTTC. Fibre To The Caravan.



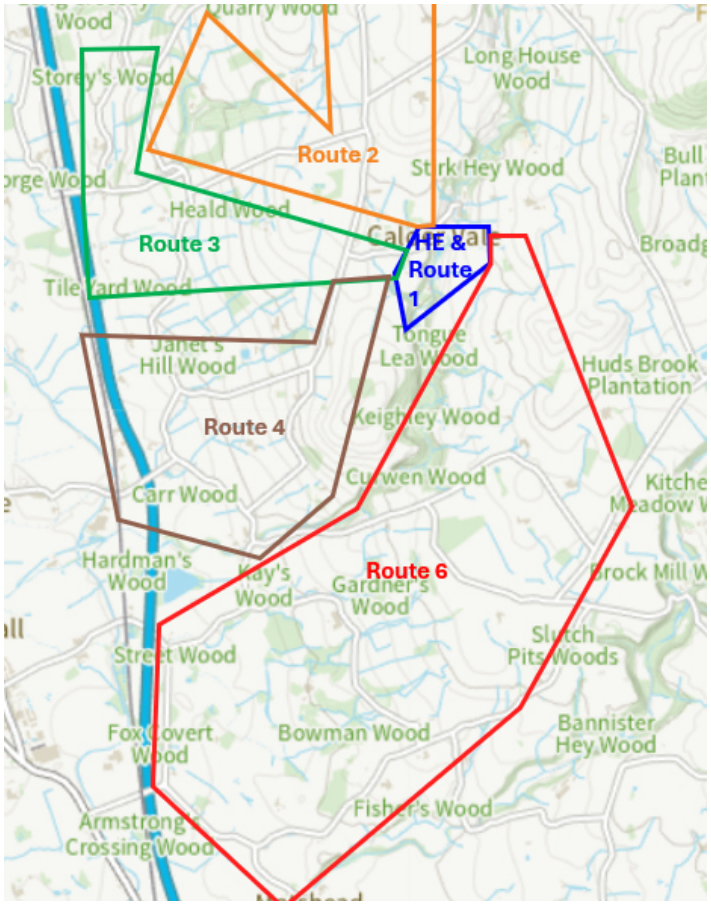
Discussion on walls.



The long drill. Plus audience.



A house install. Big drill needed.



The plan.

Calder Vale

Local councillor John Ibison, who was very concerned about the villages in his ward which had very poor broadband service and mobile coverage, began making enquiries which led him to Broadband For the Rural North - B4RN.

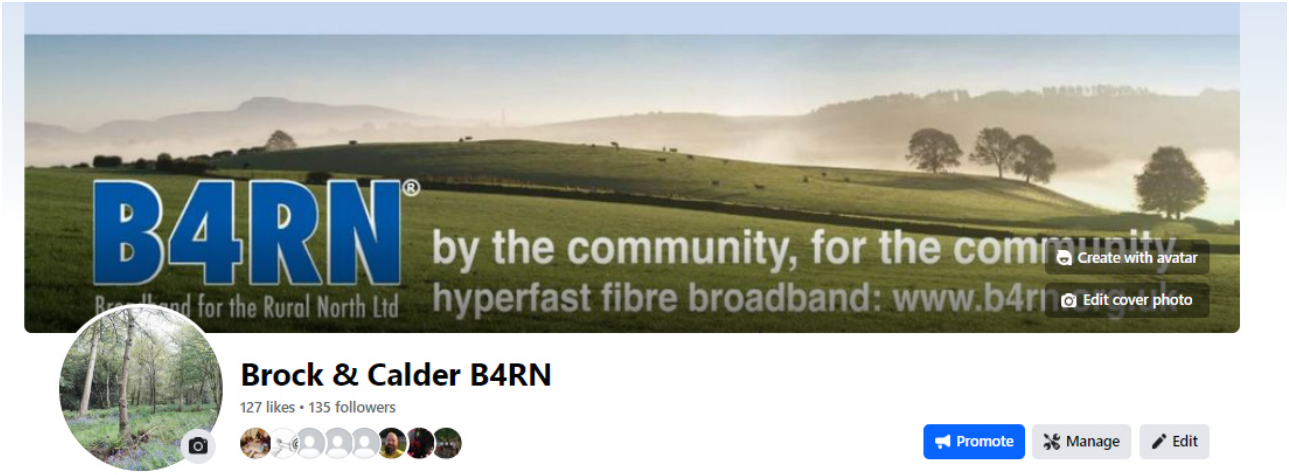
John's ward consisted of two parishes, Calder Vale and Barnacre. Originally, John's vision was to improve services in Calder Vale, but it grew to include almost the whole ward. John Hallas, the parish clerk from Claughton-on-Brock which adjoins the Calder ward, was also keen to improve services in his village, so joined forces with John. This provided an opportunity to increase the number of potential customers, including many farm businesses, and thereby helped to make the financial case for B4RN service.

John Ibison gathered together interested people for meetings at the local school, whereupon the level of interest became apparent, which led to the calling of a public meeting at which Dave Ryall from B4RN delivered a very informative presentation. This led to the formation of a working group headed by local resident Tom Walmsley, which began work on a proposal to provide B4RN service for the wards.

The proposed project entailed digging in over 36 km of ducts passing 376 potential properties. The plan comprised 6 Routes: The Head End (HE) Route and Route 1 (Calder Vale Central); Route 2 (Barnacre North); Route 3 (Barnacre South); Route 4 (Calder Vale East to the Creameries) and Route 6 (Claughton-on-Brock). Individual champions were appointed for each route.

The first major step was to establish a register of interest to check that 50% of the community was interested and thereby enable detailed planning to commence. Volunteers went house-to-house with specially designed questionnaires to gauge and record the level of interest, which proved to be over the 50% threshold.

Having secured the interest, the next task was to encourage local residents and investors to invest in B4RN to fund the project. A big boost was the announcement of the first voucher scheme, which provided government support for installation of broadband infrastructure, but there was a problem–some properties within the project area were eligible for vouchers, and some were not, which caused major headaches. However, there were a large number of high value small and medium enterprise (SME) businesses on Route 4 and Route 6, which qualified for business vouchers, the value of which compensated for the lack of complete voucher eligibility, and helped meet the voucher scheme minimum requirement of 1 business for every 10 residential properties.



During the period of the project there were three major changes in the B4RN method of delivery. All were the result of differing government approaches to delivering broadband to rural areas, and this caused a few problems, delays and misunderstandings. Apart from some areas not getting a voucher when their neighbours could, the B4RN dig grants also created their own problems. These grants were intended to recompense home owners who could not undertake the final dig from their boundary to their properties, or install the house kits, and had to employ contractors to do it. The dig grants were paid once the customer's service went live and B4RN had claimed the government grant.

In Calder Vale, a team of trained volunteers, directed by the working group, undertook most of the final dig and installation work, on the understanding that the property owners would donate at least some of their grant to the working group to fund the consumables such as drill bits, fixings, tools etc. This worked well in some instances, but backfired in other ways, as some of the householders did not make a donation and just kept the money to offset the connection charge.

It was early days of learning to utilise the vouchers to get the best result. Because of all the problems this caused, B4RN changed this method, another good learning curve and a better way was found.



Brock & Calder B4RN Newsletter

December 2019

Welcome to Issue 7 of the Brock and Calder B4RN newsletter, which aims to keep residents and businesses abreast of progress towards providing 1000 Mbit/s fibre-based Hyperfast Broadband to your area.

This month, we continue with our Frequently Asked Questions (FAQs) section to address the questions being asked by residents and businesses. See page 2.

Progress update

Around 30 people attended B4RN's Home Installation training course on November 13th. This covered a range of installation aspects including laying the 7mm ducts to the customer's property, affixing the house entry box (also known as the CLiP) and locating / affixing the router backplate (FTU). Attendees included volunteers who will be able to offer home installation services for a voluntary donation to Brock and Calder B4RN, and local contractors who plan to offer installation services to residents and businesses.

On the 16th November, a team of local volunteers cleared a path for the Route 1 cable duct through the dense vegetation behind Mount Pleasant. It's now possible to dig the duct trench with a mini digger.

The node cabinet was installed by B4RN engineers, assisted by local volunteers, on 19th November. Local volunteers will now build the concrete base for the electricity meter enclosure in the coming days.

Following a survey by B4RN's Streetworks Officer, work will start this month to install the road crossings in Calder Vale.

A steady flow of residents attended the Information/Registration Evening on 10th December, at Calder Vale Primary School, despite the weather. Experts and volunteers answered questions about the service and £150 government grant, and helped residents to register. A big 'thank you' to Helen Hesketh, Headteacher, for allowing us to host the event in her wonderful school and for making us so welcome. Another event will be held soon. Meanwhile, residents can register on B4RN's website https://b4rn.org.uk/. Click on 'Get B4RN' at the top of the page and follow the on-screen instructions. A guide on how to register can also be found on our website https://sites.google.com/view/brockcalderb4rn/useful-info

Issue 7, December 2019 Edition 2 for publication Page 1 of 2

The HE and Route 1 were first off the mark to create the cabinet and interconnection with the live Bleasdale area at Oakenclough. This provided the core capability for the rest of the project. The rest of the routes then followed on as soon as they were planned and funding confirmed.

During the project the whole community was kept informed of progress through several channels. These included banners to remind residents that work had commenced, a website and a Facebook page, as well as a monthly newsletter produced by one of the volunteers.

A Bring Your Own Device (BYOD) and information day was organised by the working group, in conjunction with Jorj Haston from B4RN, at St John's Primary School in Oakenclough, close to Calder Vale.



Bring Your Own Device (BYOD).



The rainbow starts the project work.



Hard core delivery.



Chamber delivery and base mould for the plinth.

The school already had B4RN service, so residents could try out the service for themselves, obtain further information, and register their interest if they wished.

The event was quite successful and, along with the questionnaire activity, helped the working group to generate sufficient expressions of interest to enable the project to proceed. There were, however, some problems obtaining wayleaves (not everyone in the village was a supporter) which in some cases delayed the project. However, where there is a will there is a way, and a workaround was always found through the goodwill of other land and property owners. When delays caused vouchers to expire, Amy Lis of the B4RN voucher team worked wonders in obtaining replacements.

Head End & Route 1 - Calder Vale Central - Route Champions Tom Walmsley / Tim Forshaw / John Ibison

Tom Walmsley was the lead for Calder Vale; he remembers them all working together with Tim Forshaw doing a huge amount of work mainly in the Calder Vale area and the terraces. Tim had 30 years experience in the telecommunications industry, going from apprentice technician to installation and maintenance engineer to development engineer at BT's Research Laboratories at Martlesham Heath, where he was developing, by coincidence, broadband technologies. Tim got involved with the project early on because, as he himself said, it would have been rude not to! The team nicknamed Tim Engineer in Chief. As well as helping with the practical, backbreaking work, Tim assisted with tube maps, posters, banners, ran the Facebook page set up by Christina Campion and produced the monthly newsletter.

Half a ton of rainbow hard core was delivered for the Head End (HE) cabinet plinth. The site chosen for the HE cabinet was next to Calder Vale Club, the proprietors of which were very supportive of the



Delivery of supplies.



Site foreman.



Starting the Head End dig.



Clearing the site and digging out the chambers.

project and accommodated meetings of the working group.

Parishioners who had trailers collected supplies for the project.

The working party, which comprised quite a number of local, strong volunteers, had their own site supervisor for the building of the cabinet plinth.

Jorj Haston from B4RN delivered several training sessions to augment their skills with the knowledge and information to install the cabinet plinth correctly. Jorj remained on hand for advice and help.

The site was cleared and the pits dug for the HE chambers.

Andy Mortimer was an experienced digger driver which proved invaluable for digging the pits and associated trenches.

John was already au fait with the plinth and chamber construction methods from his previous career planning networks, so he had a good idea of how it should all fit together. After the plinth was completed, B4RN staff delivered the cabinet and installed it on the plinth.

Refreshments were always on hand to keep the volunteers going.



Tom Walmsley, Alan Wrathall, Joe Gornal and Alan Wrathall Jr.

Building the plinth for the cabinet



Getting the base ready for concrete.



Concrete going in.



Chambers dug in next to the plinth.



Caroline Mortimer is handing out our delicious home-made biscuits.



And the farmers helped too.



Cabinet delivered.



Finished plinth and chambers.



Roger Clarke.



Subducting the core duct.



Roger's dig.



B4RN civils getting over the river.



One of the volunteer dig teams at Victoria Terrace.



A volunteer dig team installing a chamber in Victoria Terrace.

Roger Clarke was contracted to undertake the core digs as he already had B4RN experience in Bleasdale.

John Ibison had a mini digger and worked with John Procter to do the messy bits–they also dug an awful lot by hand where a digger could not go, with Tom and the gang helping.

The B4RN civils team installed the road crossings, and also fed the core ducts under Calder Vale's main river bridge.

Once the core ducting was installed, the volunteer dig team dug in the branch ducts to all the houses, most of which were terraces.

Tim worked with the B4RN planners, civils team and landowners to tailor the Route 1 network design to the challenges presented by long terraces, one of



Tim Forshaw helping to install 16mm duct feeding Victoria Terrace.





Volunteer dig teams working on Mount Pleasant.



James and Alan helping to install 55mm duct on Mount Pleasant.

which comprised 19 dwellings. Commonality of duct routes was key so as to make the most of each duct trench, so Tim produced A3-size, laminated tube maps and detailed plans, as well as chamber schedules, to assist the contractors and dig team. He also helped to supervise road crossings, in liaison with Nick Hall, head of B4RN's civils team, and assisted the contractors in laying the 7mm ducts, ensuring all were accurately labelled, which was most important, especially as one route comprised twenty two 7mm ducts, each destined for a different property.

From this point, Tim, ably assisted by James Butler, installed ducts to each property, as well as house kits in those properties that wanted B4RN service, including the Methodist Church, Village Hall and Mission Room. The task involved a great deal of ladder work, so Tim's training and experience came in very handy. Tim and James worked tirelessly throughout the long, hot summer of 2020, for which they were rewarded with the treasured spade!

This part of the project coincided with the pandemic lockdowns which called for adherence to Covid-19 restrictions, including wearing face masks and social distancing, all of which were an added complication for the project. However, forward planning, attention to detail and plenty of stamina ensured the work progressed .

A 7mm duct was provisioned to each house, whether or not service was required, so as to 'future proof' the infrastructure and make it easy to provide services to other houses in the future. This has proved invaluable for B4RN's infill team because many properties are tenanted and often change hands, so providing service for a new tenant is straightforward as there is no need to run a new duct from the chamber. Tim kept records of everything he did and gladly supplies engineers with all the details.

B4RN broadband made a huge difference in Calder



Kurt, one of Roger Clark's team, installing multiple ducts from Head End.



A dig team clearing the way through brush prior to a core duct install.



Tim having been presented with his spade award.



James helping Frank with the blow.

Vale. Prior to B4RN, the village was a broadband backwater. Most residents could only obtain less than 1 Mbps, which was very frustrating, especially for households with multiple users. Frustrations became even more acute during Covid lockdown, with the need for simultaneous homeschooling and home working.

When the B4RN service went live in June 2020, the difference was phenomenal and immediate, with families astounded at what they could all do simultaneously with a 1000 Mbps symmetric connection. This included a couple, both of whom were college tutors, and had to upload their lesson resources to the college server. This used to take all night, but suddenly took a fraction of a second. Families and home workers expressed their gratitude to the volunteers for making a huge difference to their lives. Calder Vale now has world-class broadband, a factor which makes the village a far more attractive place to live and work, as estate agents point out that broadband speed is a very important factor for potential purchasers and tenants.. Tim says, 'B4RN completely took over my life for a while' as he and others helped Roger Clark get the main core in, then ducted up all the terraces, about 60 houses in all.

The B4RN blowing team arrived to blow fibre into the houses. Frank and Will sorted out any snags and got the job done, and the fusers brought all the houses live. James, who had fitted the house kits with



Frank Brown arrives to blow the house fibres from the chamber.



Will Dehany waiting to catch the fibre, watched by James.



And the fibre arrives.



Guy Campion fusing the outdoor connection.

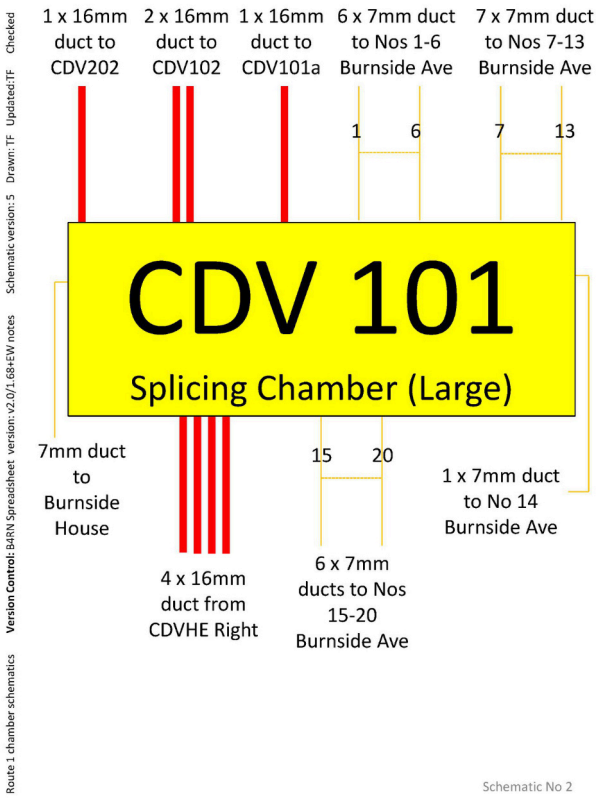


Jorj Haston fusing the customer connection in the house.

Tim, helped them all out. Jorj Haston from B4RN fused in customer's houses, and Guy Campion fused the outdoor connections.

When the project was finished, Tom Walmsley was amazed that the team, as he said, 'could just walk away and it all just worked'. He says B4RN is a brilliant network and looks after them all very well. A new customer moved in this month and wanted the service and the B4RN VoIP phone too, and it was all done there and then in a few hours over the phone; he was very impressed.

They have had outages where farmers or contractors have cut their line, but repairs have been very quick and dealt with efficiently, with customers kept updated. It is all very reassuring and a source of pride that they built their own network, and that it is so good and being run so well.



An example of a chamber schedule, designed to assist ducting teams during duct installation. The chamber schedules align with the tube maps.

Job done.



James and Tim doing house installations.



Jorj waiting for air to identify house ducts as Will blows them through.



Will fitted the external house box and threaded the fibre through.



Will fitted the internal box to the village hall.



Will and Jorj at the finished cabinet install.



The router put on the wall covering the internal entry point.



Will patching the customers.



Tea break on fusing day.

Route 6 - Claughton-on-Brock -

By Christina Campion

Christina and Guy Campion were the route champions for the Claughton-on-Brock parish.

Route 6 was the most extensive route but was also predominantly rural so not hampered by urban infrastructure in the way that the HE and Route 1 were.

Early on, the decision was taken to ring-fence all the activity on Route 6 so it could be planned and delivered independently of the other routes. This allowed the other volunteers to concentrate on solving the core Calder Vale challenges. This increased the workload on us, but simplified the decision making and control of the planning and delivery.

Getting the sign-up of the minimum 50% of the properties in the Route 6 area was the first step, and working with John Hallas we delivered flyers to the entire catchment area, then held a sign-up session at Claughton Memorial Village Hall to help people through the process. John and the parish council continued to help with the communications throughout the deployment and funded the B4RN banners to publicise the project.

A large proportion of the parish, and all the farms, are part of the Claughton Estate. Francis Fitzherbert-Brockholes, the major landowner, was very supportive of the project.This meant that route planning and wayleave agreement was really well-integrated between the various farms.



Each property had a laminated sign indicating duct installation.

A small number of property owners did their own house dig / kit fit, and one resident, Bill Dennison, created a mild steel drilling template for the house kit fit, and came up with the idea of a bright yellow sign at the point of entry to the property to help the main duct dig team to spot the drop off point. The template was handed round the parish and laminated signs issued out to everyone to mark their curtilage entry point.

The estate team, Chris Gornall and John Cowell, were given the thankless task of digging the ducts in, and fitting the house kits, to all the estate properties which were the vast majority of the route. They were helped in the task by the hire of a duct digging mole. They also did some of the remaining properties, funded by their owners from the dig grants. As well as making sure all the house kits were in place early, it also meant that

they were all of a consistent high standard, which made blowing and fusing much easier.

The network engineering planning changed several times with the maturing B4RN strategy for route resilience, and a physical constraint at the start of Route 6 linked to the infamous Calder Vale bridge crossing, which was our route back to the cabinet. Edward Willman in the B4RN network engineering team with his encyclopaedic knowledge was a constant help in redesigning and replanning the route, and the associated planning spreadsheet.

The net result of all that was that even before the HE / Route 1 work was complete, all the Route 6 network planning, tube maps, area maps, duct labelling and drop off points were in place, gas main crossings approved and the civils work identified for scheduling. This also allowed Roger Clark's core duct dig team to walk the entire route prior to start and modify it for ease of build.

Cath Halstead at B4RN was a big help in navigating the approval process in B4RN to agree the Route 6 start, even though the voucher process was in a state of flux.



A bright sunny start to Route 6 near Cobble Hey.

Simon Brockholes acted as quartermaster for the ordering, collection and distribution of materials for Route 6, and continued to help on other routes when they started.

Work finally started on the core duct dig itself in June 2020, in the middle of the pandemic.

By October, fibre blowing to houses started with us working with Frank Brown in some terrible weather, and often into the pitch dark. Because of the extent of Route 6 and distance between properties we often needed to draft in help in the form of Simon Brockholes and make use of walky-talky radios to avoid too much stop/start as we moved between properties.



Frank Brown blowing core fibre.



Frank blowing house fibre.

We learned the hard way the effect that water ingress into the ducts has on the ability to blow fibre, and the arcane art of determining blockages in extended 7mm ducts with Frank's divining skills. Some of the following photos from Christina show:

Chopping out a blocked duct on the core 288 fibre–a tight squeeze at the best of times– Christina & the B4RN team with Frank out of sight trying to blow the fibre.

Photos show Christina agreeing a new route with the landowner so Roger Clark could dig the new trench to the chamber after the core had to be re-routed from a damaged road crossing. Frank & Christina trying to locate the re-routed core to reconnect the 16mm duct to the next chamber. Good job we had head torches and Roger had floodlights on the digger, it was a late night!



Chopping out a blocked duct on the core 288 fibre.



Radios were essential when blowing house fibre.



Christina agreeing a new route with the landowner.



Frank & Christina trying to locate the re-routed core with head-torches.



No time to stop for a brew! Guy multi-tasking.



The fusing kit with Christina in the loft.



The fusing kit with Christina in the garden.

In early November, we were ready for house splicing so Will Dehany and Chris gave us the in-depth fusing and router deployment training: 'watch one, do one, and off you go!'

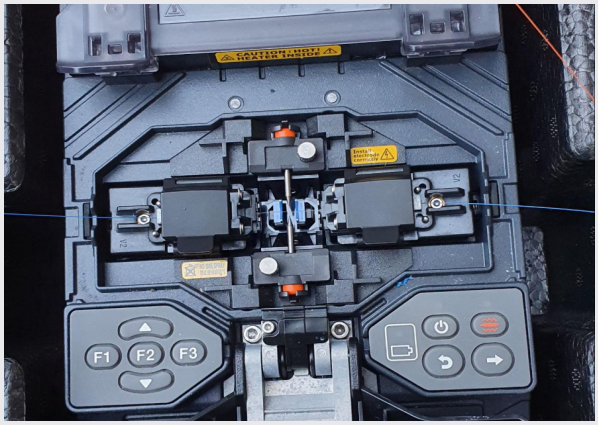
We did all the installs on Route 6 over the next few weeks, and after the patching training, put everyone on service by the end of November, in perfect time for Christmas.

Some locations were more unusual than others! It required a ladder to get up to the loft.

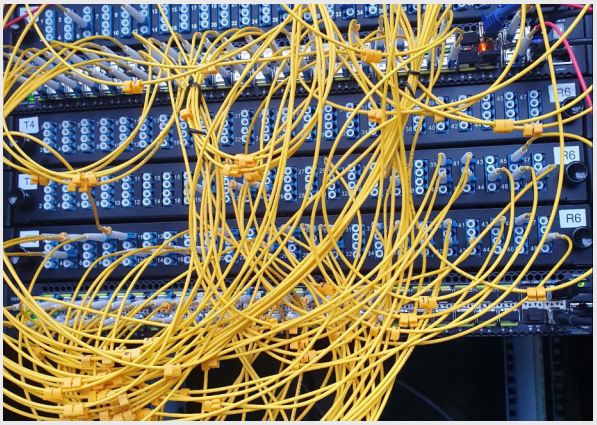
With all the skills under our belts, and Route 6 finished, we rolled onto all the other routes and did the blowing, splicing, router deployment and patching for the majority of properties as well as additions on Route 1 and other local areas when the B4RN team were struggling for resources. With Frank Brown temporarily out of action we worked with Barry Cheeseman for some of the routes, but sadly he did not bring any improvement in the weather.

One of the biggest issues we faced was the availability of the fusing kit - at first we had to drive a return trip of over an hour to Chipping to collect and return the kit. After a minor sense of humour failure on our part we managed to acquire a set for a short period to help get people on service, but it remained a problem throughout and definitely provided an avoidable irritation factor! Cath and Ashley were always on hand to help overcome some of the process issues.

In the first year following getting everyone on service we had a few glitches, mostly due to farm activity where the duct was accidentally damaged, but B4RN are always straight onto the problem with field service engineers, and over time have really improved the comms to users when there is an issue that affects everyone.



The fusing kit where the magic happens.



Seeing the light.

Where does it go??? Getting people patched into the cabinet and watching the service light up was the most rewarding part–and a relief that all the hard work was worth it.

The B4RN team had to repair and reroute a severed duct after the first ploughing post install. Service was restored in just a few hours after B4RN spotted the outage remotely and sent the team out.

Feedback has been overwhelmingly positive, from the improvement in basic service to the responsiveness when things go wrong, and how helpful B4RN has been helping people to switch to the new voice service.

From a personal perspective it was a great opportunity to meet everyone in the neighbourhood, which is often difficult in a rural area, and also to learn a few skills and make the most of some old ones.



The B4RN team repairing and rerouting a severed duct.



The original dig.

Route 2 - Barnacre North - Route Champions Liz & Archie Russell

Archie Russell was involved from the start. He did a lot of canvassing in April 2019, and went round chatting to everyone, and with Liz attended the meetings in Calder Vale. The main task of the volunteers initially was to raise the funding needed for the project. As the cabinet was to be sited at Calder Vale village hall it was sensible to start there, and Barnacre and Claughton volunteers helped out to get everything started. Liz's brother John Procter actually wore out a spade digging down the steep hillsides into the valley, digging under tree roots and removing rocks to lay ducting where it was impossible to get diggers in.

Covid started and Liz was really desperate to get a decent connection. She runs a business, and the farms and properties in the area also needed a good connection. Once they had reached the target £50,000, Liz and John went to Melling and picked up some ducting. They had started the dig from Strickens Lane to the four properties at Birks Farm. during the summer of 2019, but there was no sign yet of any duct from Calder Vale coming to join up to it.



The early work.



Steve Foster's rig.

There was no support from B4RN at this time and it seemed like nobody in the village was interested in the other routes. The majority of the funding for the combined project had come from the routes extending out of the village, and it did not seem logical to Liz, but she was very busy up to lockdown and did not have the time to be a champion for everyone.

Basically her area, part of which was done a year before by her family, was rudderless. With lockdown and working from home, Liz found she had more time, but she also found out that she was actually a

social person, and really missed other people.

She started to try to find out what to do to get her connection.

Enter stage right, Wonder Woman. Christina Campion had got her route done by sheer determination, and one of Liz's businesses was on a farm on that route. Liz needed an internet connection for the biomass boiler and industrial dryer on the farm on Route 6 (Claughton Estate) and the quality of the B4RN connection and the speed of installation, helped by Chris Campion and Claughton Estate, hardened her resolve.

Christina taught her the tricks and inspired her. Liz discovered Cath Halstead at B4RN, and together they walked the proposed route 2 on a lovely summer's day. It started as simply to find a route from Calder to her farm, but Cath persuaded her to become the route champion and JFDI all.

Christina helped her with tube maps and spreadsheets, and Liz got going. B4RN provided other data and she visited all the farmers again and finalised routes and organised the digging. She freely admits that being allowed to go out with a mask on as telecoms is classed as a vital industry helped her cope with lockdown.

Because of some reports of bad digging in Bleasdale the farmers were often reluctant to let anyone dig on their land, but Liz persuaded them to do it themselves, like she and her brother had done.

Wes Cornall did all the digging on his own land and neighbouring farms on the eastern length of Route 2 to reach most of the properties. He did a great job, and that inspired and gave more confidence to others with the digging.

Eric Leach, owner of Barnacre Lodge and surrounding properties and land on the western end of Route 2, set to and installed ducting to all his properties. He put two lads on the job for three months, and they dug a lot of the route in. Eric was pleased with their work as they cleared a lot of land at the back of Terry Sharples, and he said it looked a lot better when it was finished. Terry Sharples joined on from there with his own residence, his daughter's, and several holiday cottages. Several other residences were also connected. At this western end, Route 2 joined up with Nether Wyresdale.

Meanwhile, back on the eastern leg of Route 2 we were still struggling with wayleaves/permission from United Utilities, to allow us to duct under the road to reach the Board House and Sconce Cottage.

We only had one absentee landowner who refused wayleaves, so they went round his land. It cost them more time and money, but working with the farmers they found shorter and better routes which made up the difference. Basically Route 2 joined Route 1 as it came into Calder, so it was very close to them, and then it split in two different directions. At one side it would join to Nether Wyresdale, and at the other it would join to Route 3.

Liz recalls in the new year of 2022, a certain parcel of land could only be done if the ground was frozen, otherwise it would have to wait until spring when the land dried up. It was important to get this done, because it joined the central piece of Route 2 with the extreme west end which had already been dug. The farmer whose land it was was most particular. Cath told Liz about a fantastic mole plough man who never left a mess. It was vital that no mess was made. Liz was texting him all over Christmas to make sure when the temperature



Guy connecting ducts in the small chamber.



Frosty fleet.



Liz in a very muddy site sorting ducts in a large chamber.

was right that he would come. Steve Foster came when they had a three day window of frost and got the job done. The farmer watched every stage, and was absolutely delighted. The photo is of Guy connecting ducts in the small chamber adjacent to Burns Farm.

Liz says, 'Mole ploughing continued, with Steve laying duct across Birks Farm. The hill in the background with the wood on the horizon is where we took duct across to Burns Farm. The picture of me in the large chamber shows how muddy it was prior to Christmas and the varied house and core ducts that went into this chamber (CDV204), adjacent to Long Lane on Birks Farm.

John Procter allowed ducting to be dug the full length of his farm which showed great generosity considering the difficulties we had with some land-owners. As well as wearing out his spade digging by hand in the difficult areas in Calder Vale, he is proud



Steve heading up the hill.



Fence reached, time to dig.



Tea break for the work party.



Christina fusing.



Christina fusing by torchlight.

that the work has transformed lives by giving hyper-fast internet to this rural community.

Word spread and the other farmers wanted Steve too, and he did more work for them and joined up their duct to the Nether Wyresdale project, giving resilience to both networks.

Route 2 also continued, to join to Route 3, where Joyce took over, and Christina and Liz helped her too.

Liz and Archie helped all the homeowners to dig their gardens and fix the house kits. B4RN also had Will Dehany, he came and did quite a few too. Christina and Guy helped Frank Brown blow the fibre, with some challenging runs to deal with and plenty of head scratching and cold hands. The record length of 2f house fibre was just over a kilometre, which resulted in a nervous wait at the house end with time for a brew, but was testament to the quality of the 7mm duct install, and there were cheers over the radio when it appeared. Christina and Guy then fused all the house connections for them and did the service patching in the cabinet, whilst the B4RN core team did the main bullet splices.

Guy produced some router deployment training notes, and did a training session at Liz's farm. After that Liz went round installing routers for many of the residents on Route 2, and properties started to come live. She says she had formed relationships with all the people and wanted to be there at the finish line, and share the joy when the lights come on and all their hard work is rewarded. They are all totally delighted with the connection, which went from a nominal 2 mbps to 1000 mbps, and are thrilled to be part of the B4RN network of people.



The Creamery Industrial Estate & Kenlis Road.

Route 4 - Calder Vale East to The Creameries

- by Route Champion Tim Hotchkiss

I sold and retired from my Creamery Industrial Estate-based air brake remanufacturing business in 2005 but retained the property interest and was still managing the estate when I was a B4RN volunteer.

The Openreach broadband connection was woefully slow, and repeated requests to improve this service had fallen on deaf ears–it will happen when it happens, I was told! A couple of businesses bit the bullet and bought leased lines, paying tens of thousands of pounds for them.

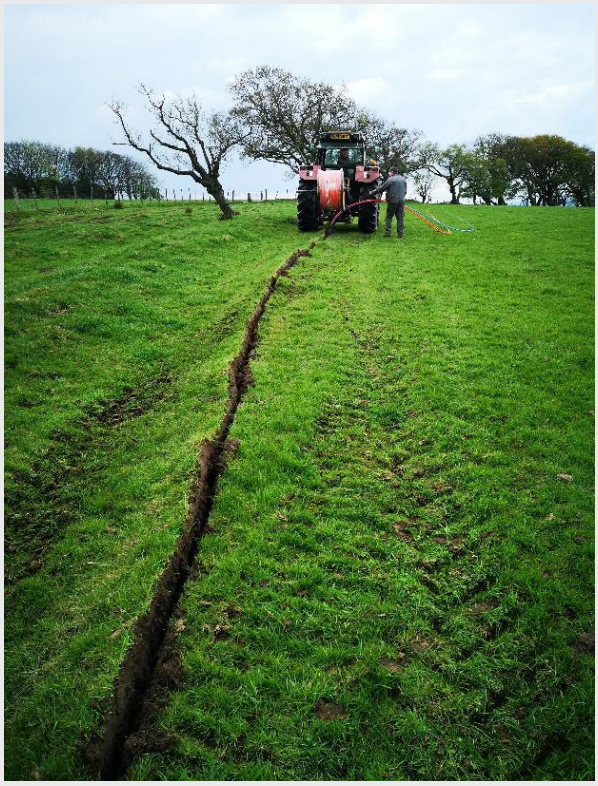
The Calder Vale project was underway by this time. We had assurances from Cllr John Ibison that B4RN fibre supplying properties to the west of the M6 motorway on Route 4, including our industrial estate could be available within 6 months. Unfortunately, as time passed this became a rolling 6-month period with connection not getting any sooner; nor was anything happening with Openreach either!

To try and speed up matters, I was already acting in minor volunteer support roles. Not fully knowing what was involved, but on the assurances that work on Route 4 was already well advanced and help would always be available, I agreed to take over as route champion. I, rather naively, thinking that all the clever

stuff would be done by B4RN and I would just have to keep doing the legwork.

How wrong I was. I had no idea then of just how demanding and frustrating it would become, how hands-on it would be, or the multitude of problems that would arise. To me Route 4 became 'TPC' - The Poisoned Chalice.

I certainly never expected being a route champion would require so much self-learning of background knowledge. With few exceptions, the answers expected to the many questions I had to ask of different people at all levels within B4RN either never came, were non-committal or contradictory and misleading or just wrong. Fortunately, Chris and Guy Campion and Tim Forshaw were usually on hand to help me.



Mole plough run above Sullom Side.



Open trench at Eccles farm.

I soon discovered that Route 4 being 'well advanced' was also perhaps being a little economical with the truth. To start with there were still over twenty wayleaves outstanding, some harder to obtain than others. Difficulties encountered involved landowners living overseas or away from the local area, husbands and wives disagreeing over whether a wayleave should be granted, landowners who had had previous bad experiences with utility companies on their property, house owners who did not want B4RN and were making sure their neighbours could not have it either, a demand for money and not to mention becoming unwittingly involved in a rather acrimonious landlord/tenant dispute and a boundary disagreement! Early on we also had a case of attempted sabotage to handle where someone had intentionally diverted a surface water sewer so that it would flood the main CDV400 chamber.

These teething problems were followed by difficulties establishing the actual route on the ground, sourcing a contractor (eventually Roger Clark) to undertake the work, finding a way across the M6 motorway, getting road crossings done and whether or not we could use BT ducts etc.etc. etc.

Then we had the need to first understand and then suggest changes to the route spreadsheet, prepare tube maps (initially under the watchful eye of Tim Forshaw) and persuade daughter Catherine to prepare and print them out.

Working out the ducting, chamber and fittings hardware requirements and collecting all from Melling, with the help of Andrew Atkinson's truck and trailer, via Katie Johnson in B4RN stores. Storing securely at the Creamery Industrial Estate and arranging to get all this equipment on site ready for Roger Clark's men.

Getting Frank Brown to blow the fibre, contractors/volunteers/homeowners to fit the new house kits and Chris Campion and Guy to splice at the properties and then connect (patch) in the main head cabinet.



Creamery Estate chamber.



Creamery Estate MDU.

I am not known for my manual dexterity but I assisted Tom Walmsley fitting wall ducting in Calder Vale and Tim Forshaw with house kits throughout the route then fitted the majority of routers myself (just as the design was changing and there were quality issues with the replacements!)

Because things were taking longer than expected and I was continually being chased about when B4RN would be available, I decided to keep all prospective users on the route up to date by sending out a monthly progress map to them all.

There were times throughout this process when I considered resigning, but that smooth-talking



Christina fusing the customer end of the connection.



Tim and Frank blowing core fibre.

Christina Campion (secretly known to me as Wonder Woman) kept persuading me to continue, always after she had managed to resolve what had appeared to me to be some insurmountable problem I had with B4RN. I did eventually resign before Route 4 was completed because all progress had ground to a halt and a farmer had cancelled his wayleave, demanding a payoff and leaving us with no apparent way to easily get fibre the rest of the way down to the industrial estate. This issue too was eventually resolved following a visit from Michael Lee & Cath Halstead but clinched, I later discovered, by the farmer's formidable close neighbour who explained rather forcefully that the lack of a B4RN connection to her home would have a detrimental effect on her children's education!

Following this, and without further input from me, the connection through to the Creamery Industrial Estate was miraculously completed within two weeks!

I perhaps should have resigned sooner! Particularly impressive here was that the last main fibre was blown all the way from Calder Vale in one go without splicing. Photo shows Frank and me blowing the fibre on a particularly wet day.

Ultimately my primary aim was achieved, though looking back I still do not know how we managed to overcome all the troubles along the way.

Take a bow Wonder Woman and also Alan Wrathall Snr, a retired farmer whose local knowledge and contacts and ever willingness to assist proved invaluable.

Route 4 had provided over 50% of the initial investment capital B4RN required for construction of the whole CDV project to begin. It comprised over sixty live connections, with at least as many again ducts at the boundary of every property passed en route, and spares left mainly on the Creamery Estate. It is

just a pity that we were telling some businesses that they could have the Static IP Address they needed when at the time it was never a possibility. This cost both the project and me personally much needed credibility when up against Openreach, who by this time had started installing overhead fibre in the area.

The fact that Route 4 reached completion is nothing short of a miracle, and all businesses on the Creamery Industrial Estate who are connected are pleased with the improvement in internet speeds so, despite the challenges, the project was worthwhile. However, as you will have read from my experiences working on TPC, there were repeated communication issues with all levels of B4RN, which I am hoping, for the sake of both B4RN volunteers and service users, have now been addressed.

Route 3 - Barnacre South

By Christina Campion

By the time Route 3 was ready for work, the processes were fairly well-understood and this was the final section of the overall project. Route 3 was the smallest route in terms of properties but very rural so still required over 3km of digging.

The route also included Barnacre Church and village hall so it was an important boost for the community. Route champions Joyce Cotton and John Ibison got the wayleaves agreed and the sign-ups in place.

Barry Cheeseman was fibre-blower in chief with Frank out of action, so Christina & Guy pitched in in support, with John Ibison's teenage son getting some interesting work experience.

Chris and Guy did the fusing, dodging the usual badly-timed torrential rain, and resorting to fusing under golf umbrellas at times.

We also got some excellent brews on this route, with proper tea pots, milk jugs and biscuits; people have no idea how welcome that is, especially on a cold, wet day.

Joyce and John did the router deployment and so brought live the final group of houses in our area to enjoy the hyperfast connection to the rest of the world.

So from two determined individuals, David and Paul in Goosnargh, this chapter's branch reached right over to Slaidburn, and Oakenclough, and covered all of Bleasdale. Thanks to Shaun at Oakenclough, the Calder Vale project happened. The challenge now was to connect it to Abbeystead and Quernmore, making everything in the area more resilient.

The last story in this chapter is where Flick (Felicity Greenwood) was bullied into joining the B4RNstormers. She first appeared as a volunteer, and helped Nether Wyresdale get connected. B4RN then saw her potential, and employed her as one of the first co-ordinators, to help communities get through the pain barrier of building their networks. The Nether Wyresdale project became the key link in the circle round the fells you can see in the picture below. Very shortly a figure of eight will complete the network plan when the Slaidburn link connects to Rathmell, which in turn is fed from the northern end of B4RN.



The map of the area covered by the Hodder valley and Chipping projects.

Nether Wyresdale

Another project slightly different from the normal...



A community dig day in Nether Wyresdale.

Jorj Haston kept saying to her sister Felicity Greenwood, 'your internet is rubbish'.

Flick (Felicity) had lived at Street, a hamlet between Dolphinholme and Scorton for a few years, and had seen leaflets pushed through her door about B4RN but did not know what it was all about.

She worked in school catering in Lancashire and the rural schools had really good internet from B4RN but she had not connected the two. In February 21019 she changed jobs to be a school photographer, and discovered what Jorj was saying was true, her internet was rubbish.

She would sit in her car, outside the local pub, connect to the B4RN Wifi and upload huge files of school photos in seconds, rather than wait 8 hours at home for a 'Upload Failed' message.

She was also paying for a phone line that nobody used.

The internet came down that old copper line, and that was her total understanding of how things worked. She set about to learn.

Jorj had been one of the volunteers in Brookhouse, and then took a job at B4RN. She explained to her sister how B4RN worked, so Flick made her mind up to get a connection. Flick wanted to join her house on the existing Dolphinholme route, but B4RN wanted the whole area doing, as with other projects, the rule was Everybody or Nobody.

Apparently when they looked into it all there was an area in between Calder Vale, Bleasdale and Dolphinholme that had never got off the ground, despite some of the community trying to get it started, but to no avail.

That became the Nether Wyresdale project. In August 2019 they held a community meeting at Wyresdale Park in Scorton. The turn out was good and interest was high. Jorj said to Flick why not take it on? She offered to help and mentor her sister, and so Flick decided to give it a go.

They had several meetings at the Fleece. At one of them, when she was trying to organise things and explain what was needed, one of the men said, 'This is all well and good, but where is the man to lead it, to drive this



Steve moleploughing.


Steve Foster.


Flick.

forward?' This made her all the more determined to make sure it succeeded.

Initially she was told she would have to raise £50k from the local community, which with about 75 properties seemed doable, and she went round them all, held local meetings at the Fleece, and they raised the money. But in the meantime the planners at B4RN realised they now had the perfect opportunity to provide not only Nether Wyresdale with a seriously resilient link, they could also improve the resilience of Calder Vale, Bleasdale, and Dolphinholme, so the project costs went up.

Flick still did not have much idea about how the project would be built, she just knew it could not start without money.

By this time Covid had hit, and she was furloughed, so she had more time to learn and to work towards the project's success. Raising another £50k from a community who had been told they only had to raise £50k in the first place was going to be difficult. For the next 10 days she visited all the people who had signed up and she actually raised another £80k in investments.

They started building in June 2020, and it was a really hot summer.

Lucky for Flick her assigned contractor was Steve Foster, who was very experienced and very patient with new champions. They walked the routes and he explained how stuff was done.

Jorj showed her how to do duct maps so she could be sure the right ducts were in the trenches, and chambers put in the right places. She marked routes out with bits of scrap duct. She literally learned on the job. She took duct to every single property, 85% of which took the service immediately, with some coming on later once they saw how good it was.

By then dig grants were being issued, and this



Flick and Cath Halstead tidying up a mole trench.



The cabinet install.



Frank and Flick blowing house fibre.



The core fusers Ronan and Rob arrive to fuse the core fibres.

project actually used them well. There were not a lot of volunteers prepared to dig everyone's gardens or fit house kits, so the people used the grants to pay others to do it for them.

Jorj brought Barry from Heversham and David from Levens to fit house kits and the householders paid them directly out of their grants.

A lot of people dug their own gardens, and there were a few community digs or gardeners doing them for the householders. Flick coordinated all this and made sure the contractors turned up when the householders expected them, which was quite an exercise in logistics.

The cabinet was originally planned to go at the other side of the motorway where their local school was, but the BT duct (via PIA) would mean the fibre in and out would be in the same duct, and not as resilient, nor was the PIA duct large enough to carry all the fibre. They found another place next to an electric substation, so the B4RN civils built the plinth there, and a smaller fibre went over the M6 Swan bridge to give Scorton school a free connection.

At this point Flick still did not know what fibre actually was, but Frank soon put her straight. She helped him on the blows, and then came the fusing.

She learnt quickly how to fuse the fibre, so from a complete novice with no real interest she was fast becoming an expert, having seen a project through from start to finish.



Alex and Matt fusing the core into the cabinet.



Flick got her spade MBE.

The first customers came live at Christmas, 6 months after the dig started.

Where is the man indeed!

Flick is very grateful to everyone who helped make this project happen, especially her sister Jorj who helped her at every stage of the process.

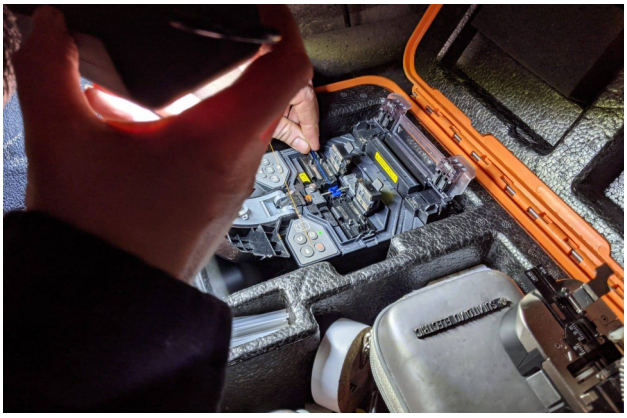
In February 2021 when her project was complete, Flick applied for the role of Project Build Coordinator with B4RN and has been building new projects ever since.

Flick got her spade MBE and stood on the Swan bridge where her fibres had gone to the village school.

She continued the digs to join on to the three parishes, and in total they dug 23 kms of trenches.



Flick fusing house connections.



Flick putting customer fibre in the splicing machine by torchlight.



Jorj, Steve, Flick and the farmer. 'you can't tell where it is!'



Chapter 14

Caton and Brookhouse

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The Wray and Lowgill towel volunteers blowing the fibre over Littledale.



Tea break at the top of Littledale.



Chris Hall and Bruce assisting and Alistair running the blower.



Brookhouse towel helpers.

Brookhouse and Caton

This is a project in two halves. The first part came to pass when the main core was going through Littledale from Quernmore to Wray in 2013. A new branch grew down through part of Littledale to reach the Brookhouse side of Caton village. Bob Hutchinson and local farmers dug a lot of it, and the fibre blew well. None of this land was moled, it was all dug. There were no vouchers for this first route, it was all self-funded by Wray residents and Littledale farmers and businesses (see Chapter 1).

From the main core route, spurs were dug down to the different farms, and one of them came as far as Brookhouse.

The Brookhouse volunteers turned out to help Bruce Alexander with the blows. Bruce fitted up house kits and blew the house fibres on the route. Rob Staveley was volunteering with Bruce at this time, and learned how to blow the 2f into the houses. Rob ended up becoming one of the key members of the fusing team by the end of this story.

A cabinet was installed at Artle Beck so the people on that line were fed from it right away, and others could join on if they wished to.

Then fusing began. It was a mammoth job at the time of the core dig, as there were no staff employed yet.

There were lots of joins to do, and so some volunteers including Bruce, Alistair and Iain agreed to work for shares. At this stage the focus was on getting to Wray, to build up our customer base.

All the farms and properties between Quernmore and Caton joined on to this route, including the Forge Mill complex, who were very grateful to get a good connection at last.

Blowing and fusing the fibre



Alistair from Abbeystead and Iain from Thrushgill, volunteer fusers.



Spectators.



Iain Robertson fusing a bullet join.



Fiona getting in the groove laying conduit.



Iain prepping a bullet with core fibre.



Alistair fusing the house connection.



Bruce shows Rob, a new volunteer from Wray, how to blow house fibre.



Paul Parsons, a new volunteer, helping to blow the fibre to the cabinet.



The final blow down into the cabinet, through the garlic wood.



The Caton Green spade.



The Brookhouse fibre arrives, with Paul Parsons on the reeler.



The Brookhouse cabinet fibre blow with Bruce, and Sandra helping..

BT Openreach had just put FTTC cabinets in Brookhouse, and Caton had its own telephone exchange.

A lot of people were satisfied with the connection they had at the time. Most of them had been told it was 'fibre broadband' and the signs on the roadside cabinets proclaimed it was, but the service came through their phone lines and so it was not all fibre. Try telling them that when they are told constantly by BT marketing that it is. Anyway, quite a few were savvy enough to know the difference, and in Brookhouse a group got together and started laying the duct through fields and gardens to reach the houses they could get to.

The branch from Caton Green was supposed to carry on down into Brookhouse, but because of landowner issues it did not. Therefore the best chance they had was from the Artle Beck cabinet at the bottom end of the village off the Littledale branch route. Quite a few houses that were relatively easy to reach got on to that straight away, with help from Bruce.

Caton at this point did not get a group going, but Brookhouse had a church and a school they wanted connecting, and they decided to make it happen.

Then they came up against the problem of roads and pavements and great expenses, and the second half of this project finally woke up about the same time that Caton did which was quite a few years later.



The Brookhouse spade.



The Brookhouse meeting, with John Hamlett, Martyn Dews and Barry Forde from the B4RN management team.

Brookhouse

By Steve Smithson

Looking at my diary, it looks like I got involved with B4RN 4 Brookhouse before I'd even moved there! I was aware of the B4RN project from the get-go and didn't hesitate to offer a wayleave through our land and to help in our local area as and when the time came. At that time, we were living at Caton Green.

On Monday 18th May 2015 there was a public meeting at St Paul's Church Hall in Brookhouse. The hall was beyond full with people standing at the back and even out into the foyer. Barry Forde, Martyn Dews and John Hamlett from Gressingham presented the B4RN project with the aim of generating interest in Caton & Brookhouse. A cabinet had already been sited near Artle Beck bridge.

Over the next few months, under the guidance of Peter Hearne, residents at Caton Green dug in their ducts. We were living in a converted farm complex, and those residents that could, did the digging to get the ducts to every resident in the complex. I recall spending about three evenings getting passage under a drystone wall for the ducts to enter the complex. Turns out a one metre drill bit comes in very useful in this situation!

We'd been looking to move down the hill and eventually settled on a house near St Paul's church in Brookhouse with a completion date of 30th October 2015. Needless to say, B4RN went live at our old house after we'd moved!

However, prior to moving there hadn't been much movement since that public meeting back in May. Towards the end of September 2015 I struck up an email dialogue with my future next door neighbour and by the 8th October we had a team prepared to get B4RN into the north side of Brookhouse.

Selfishly, we were just focusing on the area around us and started by seeing if we could get fibre from Caton Green . This would be far easier than coming from the cabinet at Artle Beck. In fairness, Barry had drawn up a network plan but it involved a lot of wayleave negotiations and plenty of ifs and buts. Hence the selfishness. If our little group could get fed from Caton Green, we'd be alright, Jack!

That wasn't to be. There wasn't enough fibre and that plan also involved wayleave negotiations. We therefore went with Barry's plan to come from the cabinet at Artle Beck. We were still being selfish though, and were concentrating on Brookhouse North.

We'd moved house and by April 2016 a team had formed to move things along in Brookhouse South. In many ways they had a head start on us as B4RN had already laid an interconnect to the east and even laid 7mm ducts to the back of every property backing on to the fields.

We then worked together, working on wayleaves, communicating with the community and generating interest. In December 2016, Barry Forde gave us the go ahead to start work in Brookhouse North and South.

On 27th January 2017 a public launch meeting took place for all Brookhouse residents. We were off!

In 2016 Jorj Haston, myself and others had set up and manned a B4RN promotion stand at Caton Gala. In 2017 we decided to do it again. I believe it was there that we persuaded, cajoled and possibly strong-armed Phil Hughes to get something going in Caton. It's possible Phil saw it as gentle persuasion but I'm not sure. Anyway, my diary notes that a public meeting was held in Caton on the 6th July but that will be Phil's story to tell.

Our Brookhouse projects were difficult. Many of the B4RN projects were generally run and manned by retirees with a fondness for tea and cake. Virtually all of us running this project were in full time jobs. I was renovating our new house as well. A most memorable dig weekend was held on 13/14 January 2018 and concluded with the diggers standing around our shovels on a cold dark evening celebrating our achievements by sipping Hugh Stewart's whisky!

Getting B4RN to everyone in Brookhouse was always going to be a tall order using the traditional 'fields and gardens' method. In May 2018 the government voucher scheme ultimately opened up the 'hard dig' method. This enabled B4RN to employ contractors to trench the pavements, leaving a Toby Box in the pavement outside every property that wasn't covered by the soft dig. The annoying point for us in Brookhouse is that Caton got a head start by being fully completed via the hard dig process before us. Hey, we started first!

After Caton was completed, Brookhouse became a hybrid project completed using a mix of hard and soft dig.

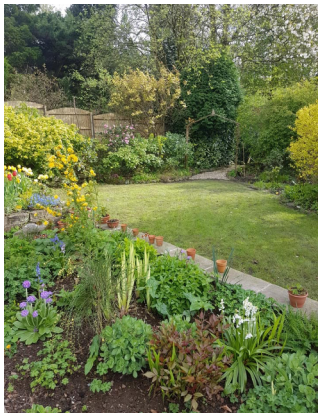
Good things come to he who waits. I went live during the third week of June 2021. It only took 5½ years! I now have a rock solid connection that has only suffered 20 minutes of unplanned downtime since then. Was it worth it? Yes, I've met people I might not have otherwise met, we've future-proofed our village as far as internet connectivity goes, and our community has benefitted from free service in our schools, churches and village halls.

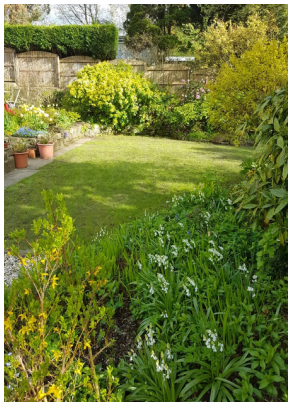
If we can do it, so can you.

Soft dig in Brookhouse.



Chris, Paul, Phil, Ralph and Mel aka the Local Heroes.





Homeowners were really pleased with the re-instatement after trenching.



After the dig, grass healed well.



The team in action.

The core to Brookhouse had been planned originally to come in from Claughton, but landowner issues stopped that route at Caton Green. So we brought a core down to the other end of Brookhouse at Artle Beck from the long dig between Quernmore and Wray. Once the cabinet was put there, some of the villagers decided to get their houses connected, and take the core up to the Church at the top of the village.

Fantastic volunteers have driven this project for everyone in Caton and Brookhouse. They also wanted to connect their school. Miles Rutledge at Old Hall was a massive supporter and encouraged them. Richard Mews, Steve Smithson, Jorj Haston and Geoff Metcalfe were brilliant at getting things moving. Most of their meetings were in the pub, and more people started to take notice.

Steve and Jorj prepared a wonderful Powerpoint presentation for a village meeting at the Methodist Hall, but when they started it they found it would not run on the old PC, so they did it on the fly. They explained how the village could be separated into zones, with each one having a block champion. They set the hall tables out into zones and got all the people there to sit in the right zone. People who had lived there for years finally met neighbours and it started the community build.

They put information in newsletters, both digital and printed, and started their own Facebook page where they kept everyone updated.

They met up with Barry, made a plan, and got digging. By this time B4RN had new premises at Melling and staff, but most of the work was still done in the communities by the volunteers.

A lot of people commented that their gardens and



Old Hall Farm dig.

patios were much better after the dig had been done than they were before, and that encouraged others to join in.

Jorj remembers going to B4RN in her car, only to realise the reel of 7mm multicore was bigger than the car itself. Frank Brown was there at the time, and he jumped in to help her with his pickup and the reeler trailer. She says without Frank's help they could never have done what they did. They dug every house connection in from the field behind the houses, but then trouble set in when they had not enough money for the pavement and road crossings needed to connect the rest of the houses.

There were no vouchers in those early days.

They were out every weekend digging, and the best bits were when a lovely elderly lady who could not dig turned up every day with tea, and a lady brought them biscuits every day. She says that working like that was a great leveller, and it was amazing getting to know everyone and what their jobs had been. A lot were retired and she witnessed many getting a new lease of life.

It was also great when youngsters came, and the older guys taught them how to flip a boulder out with a crowbar. There was also a person who took on the job of cleaning all the tools until next weekend so they did not rust. They put big signs outside Jorj's house which was close to the Methodist chapel so all would see them, and it was updated regularly with the number of houses connected.

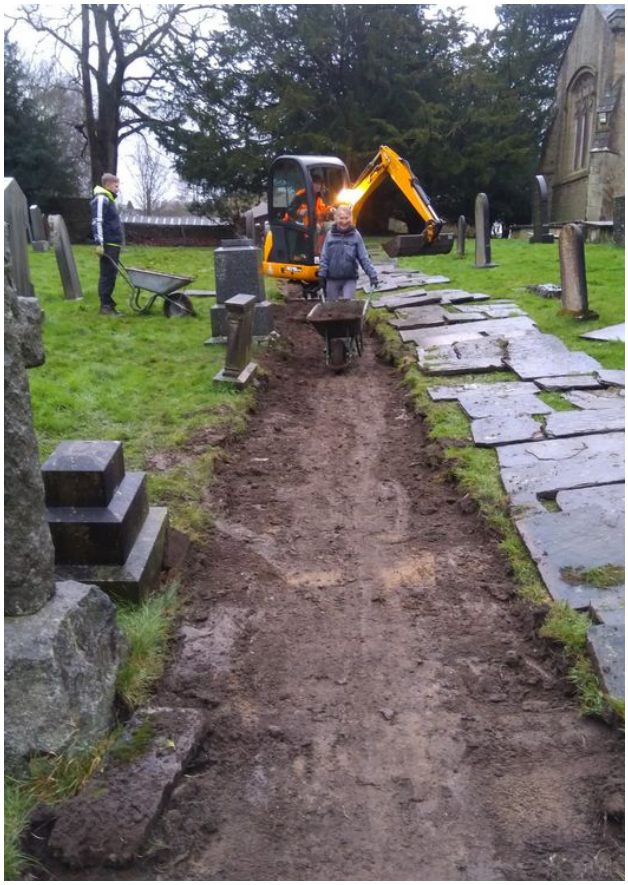
For 5 years running they had a stand at the Caton Gala, where people could come and ask questions. They also had a booth outside the local Coop and Londis stores to raise awareness and shares.

They organised work parties to stone pick on the core digs in the fields once the ground had settled as well.



The village school.

FTTC B4RNland style, Fibre To The Church



Flags lifted.



Church work party.



Many hands make it work.



Subduct being used under the flagstones.



Steve fixing up the church router.



Putting it out of harm's way.

Get me to the church on time…

The church notice at the time stated 'St Paul's Caton with Littledale–B4RN is coming through to Caton Green Road–working together with the path being upgraded. The work is being carried out sensitively due to the location and the grass will recover. Many thanks to the volunteers'.



Steve from the Cycle Mechanic.



Richard at Plan and Design.

'9 December 2020 'ST PAUL'S CHURCH - Our work here is done! 2 x 16mm ducts for our core route are now through the churchyard and across Caton Green Road awaiting the sinking of a ground chamber.

'This milestone achievement opens up the north east side of Brookhouse to the B4RN service - from Sycamore right up Caton Green Road.

'Thanks to all the volunteers that helped and to the church contractors who were a dream to work with. The contractors still have about 10 days work ahead of them in relaying the paving'.

The volunteers fitted the router in the church, and it enables the church to go digital and use card machines for donations.

Steve from the Cycle Mechanic in the photo on the left splicing his own connection and getting ready to connect up to his home network. 'When I redesigned the house I put ethernet to every room. I've put additional external and internal wifi points so I can access the internet on my devices.'

Richard at Plan and Design has been involved from the start of bring B4RN to Brookhouse. Finally he is now connected on a true Fibre To The Property FTTP connection. With his own WiFi mesh attached he has extended the wifi around his home. 'It's just brilliant! Thanks to everyone who has helped'.



Phil joining up a Toby Box.



Phil fusing a house connection.



The Caton Sp(l)ice Boys!



Paul remembers his splice protector.



Chris waiting for his turn with the fuser.

The Caton hard dig

There had been a lot of interest in Caton since the cabinet for Brookhouse had arrived from Littledale. However, it was on the wrong side of Artle Beck to serve the Caton end of the parish, and the early volunteers got disillusioned when it seemed impossible to make a plan to connect the village.

They walked routes and came across many obstacles, including wayleave blockers, so they knew it was not going to be possible to do the dig through gardens without radically changing the early plan. This very nearly spelled the end of the project.

The first voucher scheme came in, but unlike the rural areas–where one business voucher could support 10 residential properties–there were not enough businesses in the village at the time.

There was nobody to lead the project, but a core of people did not give up. They had meetings at the Victoria Institute, which were very well attended, and carried on raising awareness of B4RN being a possibility for the village.

Eventually Phil Hughes stepped up to take the lead; this was the start of a journey for Phil, and the village B4RN team are very appreciative of his tenacity as village champion to see the project through to completion.

The team had been trying for a long time to get Lancashire County Council permission for a cabinet on the school playing field, and after about 14 months this was finally agreed. A duct came in from the Quernmore end, after a wayleave was agreed with a local farmer, and Caton Primary School and one property were connected and went live–the first in Caton.

However, the soft dig method was still proving difficult for Caton and so the cabinet plan for the school field was put on hold. There was considerable



Paul fusing a property.



Chris gets his turn fusing a property.



A Toby Box.



The Victoria cabinet.

frustration, and at one point Phil Hughes had the email ready to send to B4RN to resign as champion for Caton, when B4RN got in touch to say there was some good news.

It was summer, 2020, and the country was in the grip of the Covid pandemic, so an inside meeting was not possible. Elaine Elrick from B4RN organised a socially distanced meeting with the remaining volunteers on the football field. Elaine explained about B4RN's new method of urban dig, which was being successfully tried out in Halton. She explained about the new gigabit vouchers that were available for their postcode. This was a turning point in the project, and the volunteer group immediately knew this was be the answer to their problem. They just needed to get the required level of interest and vouchers with the support of their community.

A core team of about 8 people was formed and they set forth to develop the plans. There was a lot of street walking, door knocking, and discussions with residents to explain how the voucher system worked, and to get enough people to sign up. This was supplemented with encouraging people to invest.

Eventually, sufficient numbers had registered for vouchers, and combined with the allocation from investments, the money was there, and the project started.

B4RN by this time had a dedicated civils team and code powers, and qualified people to work on roads and pavements, which meant the volunteers were free to concentrate on connecting the houses from Toby Boxes outside their boundary. Every single property was provided with one of these boxes ready to connect to the house duct. The method had proved to be successful in Halton, and Caton had enough interest at last to raise the finance to top up the vouchers.

This means effectively that government money goes twice as far and connects more people.



Phil, Sandra, Mel and Julian.



Multiple ducts in the chambers.



Oops.





Digging to meet the Toby Box.

The route into the village was changed to come from Quernmore, which gave additional added resilience, and because it was now an urban dig, the cabinet could go in the centre of the village. The Victoria Institute was an obvious choice of location and agreed to host the cabinet. This was already a focus for the community, with a computing room for villagers, so a really good internet connection was an added incentive. The Victoria Institute belongs to the village so it was fitting to have the cabinet here.

The team was formed, trained and roles were quickly assigned. The volunteers discussed best routes from Toby Boxes to properties with residents and got on with the digging and installing. The volunteers learned how to lay duct, blow fibre, and then to fuse fibre. Phil was a star turn.

There are more ducts going into an urban chamber than a more rural one, and all must be labelled and end-capped like these, or this happens - see photo!

The straightforward turf lawns were the easy bits but the team came up with challenges such as paved drives, slabs to be lifted etc. They always came up with a solution, making good after the trenches were completed and cable laid. Paul Austin was their manic digger, and often put in long days to complete garden connections; he was extremely fast with each house so the rest of the team had to work hard to keep up with installing house kits. Mel Wilkinson managed all the supplies of equipment and ducting, which soon took over his garage and garden; Sandra, his wife, did lots of digging and was skilled at keeping things moving and encouraging the rest of the team to complete tasks on time.

An unincorporated association was set up with Miles Rucklidge as chair, Steve Smithson as treasurer, Kath Fanning as secretary, and members Phil Hughes, Maria Coward, Jorj Haston and Chris Benson, giving Caton and Brookhouse a forum to manage the money and monitor progress of the project. When Miles turned 90 and retired as chair,



The Pizza Spade.



The urban dig to the school.



B4RN's new civils team in action.



Brew time.

Julian South was elected as Chair to continue to distribute funds to good causes within the village.

As the project got going, Julian set up multiple WhatsApp groups to run the project without bombarding people with calls and emails. The team got accustomed to their phones pinging when there was a call for action. Maria completed CRM training at B4RN, along with Kath, so they could maintain the central database of every property updated with the progress they made. They also kept a spreadsheet for the workers for reference, so they knew what needed doing and where, Maria being the main contributor to keeping this all bang up-to-date. Chris Benson did masses of work of all types, and Ralph Thackray who had said, 'It'll never bloody happen,' dived in labouring and became the House Kit King.

The team did most of the house kit fitting and garden digs, with the dig grants going into their community pot for their tools and equipment.

The Halton project also donated their tools to the Caton group when they finished their digs. Of special note should be the Pizza Spade, which was invaluable when installing ducting in manicured lawns. The team did most of the house kit fitting and garden digs, with the dig grants going into their community pot for their tools and equipment.

Each evening Julian walked the streets and inspected the progress, uploading photos to the village Facebook group. Occasional complaints from residents were dealt with via Facebook discussions. An example was the chalking of pavements which was described as 'urban graffiti' for which B4RN should be held responsible and wash away promptly. Once explained that this was specialist chalk that quickly disappeared the complaints went away. The Facebook group was a great way to keep the community updated and also helped explain the benefits of B4RN and gain extra sign-ups.

Residents near to where the civils team was working

The Caton urban dig



Pavement trench.



Pavement digs.



A road crossing.



Traffic controls in action.

on any given day would bring out mugs of tea and biscuits, as they worked hard through many exceptionally hot days. The dig on the road to the school was planned for the school holidays, as it is quite narrow and around one hundred cars go up it twice a day in term time with parents taking children to school.

During the project, each property had a Toby Box from the main core through the pavements. This allowed easy connection for those who did not want B4RN at this time but might choose to do so in the future. Indeed, there have been sign-ups since the project finished and as people come out of existing contracts, move into the village, or just realise what a great internet provider B4RN is, they want to switch. The team says that once the hard dig got underway it all went pretty fast.

The civils team was very popular in the village as they all worked very cleanly and efficiently and the roads were closed for very short periods. They said it was



Pavement ducts.



A chamber with ducts and fibre.

real teamwork, with all the guys working in unison to keep it running smoothly.

Once all the ducting was into the Toby Boxes and the volunteers had fitted the house boxes, it was time for the blowers. Frank blew the fibre through these ducts to the house entry point ready for fusing. The white duct inside the box goes directly to a pre-terminated box in the house that the router is clipped to with a patch lead.



Frank Brown, Will Dehany and Barry Cheeseman–the blowers.



Opening the Toby Box.



Fitting an internal house kit.



Fitting an external house kit.



Frank blowing house fibre.

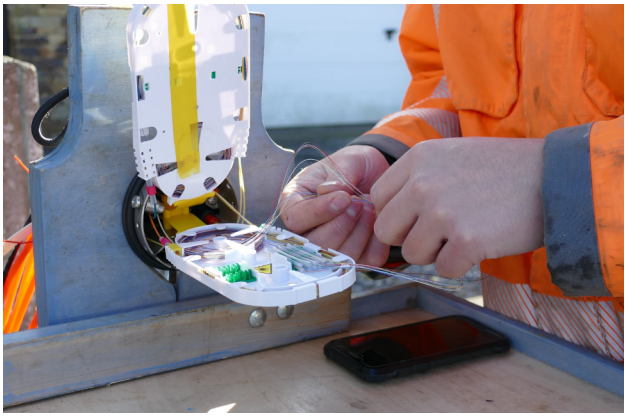


House fibre blown into the outside box ready to fuse.

Photos taken from the community Facebook page



Ronan Halstead and Bruce fusing.



Wrapping the fused fibres into the bullet enclosure.



Kit Mackereth and Bruce.



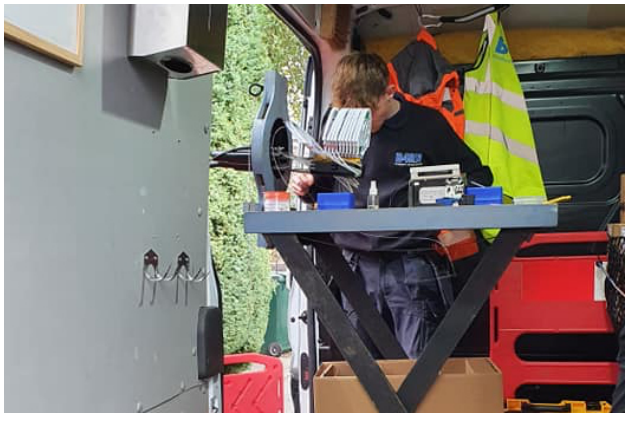
Bruce wrapping the fibres into a large bullet.



Alex Colton and Bradley Jackson.



Joe working on a large bullet.



Fusing in the van.



Rob Staveley and Lucy Hawkins working on a large bullet on Caton Road.



Tom Rigg the CEO of B4RN, shows the local MP the cabinet.



Patching in the customers to bring them live.



The volunteers and the B4RN team on connection day.



The Caton Tea Party where volunteers paused for a well-earned break.

Once the blowing was done, the fusers moved in. By now B4RN had a core team of fusers, led by Alistair Adams-Huset. They had lots of bullets to do but the weather was grand and they got on with it.

Volunteers and staff had already fitted the house kits, and as the volunteer team were already trained up to fuse the house connections, the customers came live very quickly.

The volunteers and staff from the connections team at B4RN connected 40 customers to start off the exodus to the hyperfast fibre network as it neared completion. The local newspaper carried this report.

The benefits of the community project were, and continue to be, immeasurable. New friendships were forged, new skills were learned, and the village has benefited from the accessibility of the best broadband technology available. It now has the ability to move away from corporate contracts to excellent value, and the assurance of locally-based technical support.

They had a community pot for the dig grants, and they used it for all their tools, with over £12,000 being donated to worthy causes when the project was finished. They installed a really good mesh wifi system in St Paul's church hall and the Victoria Institute, and continue to support many other village activities.

In the meantime the funds raised by the volunteers have enabled the benefits to spill over into other projects of benefit to the community, including amongst others, essential training for scout leaders, new kit for the local junior football team, contributions to Grow Caton for the planting of food-bearing trees in the community – the list goes on.

The team had a celebratory evening in the Victoria Institute at which B4RN Spades were awarded .

The MBE spade awards



Ralph and Chris Benson.

Volunteers were awarded spades by Jorj for their sterling work bringing the future to Caton. At the end of the project the Facebook page offered this comment;

'We all continue to benefit from our superfast fibre to the property broadband, thanks to the tenacity and hard work of the village residents who kept the project alive, especially lead Caton volunteer Phil Hughes'.



Jorj and Phil.



Jorj and Julian South.



Steve Smithson and Joyce Prichard, block champion and leaflet deliverer.



Mel and Julian.



Julian South, Maria Coward, Phil Bargh.,



Chris Benson and Phil.



Phil and the router fitting team.



The special JFDI beer and spade.



Not the normal brew…

After people went live, the main issue faced was educating users to the dark art of wifi. They have lent out kit and advised on running ethernet into offices and TVs, and shown people how to use meshes.

They still assist the B4RN connections team when properties need a connection, and they still run the B4RN for Caton facebook page and advise people when they have issues.

To celebrate the end of the project, Julian, a keen home brewer, made a special beer.

Later, a further celebration was held and a beer was commissioned from Kirkby Lonsdale Brewery and labelled with labels depicting the project team in action.

22 kilometres was dug in the Brookhouse project with the core feed coming from Quernmore via Littledale and Artle Beck.

13 kilometres of trench was dug in the Caton Village project, with the core feed coming from Quernmore via Escowbeck.



Bay Health & Care Partners delivering | bettercare together

ldcvs volunteer awards

LANCASTER CITY COUNCIL
Promoting City, Coast & Countryside

Volunteer Achievement Awards 2021

Certificate of Recognition Awarded to

Caton and Brookhouse B4RN Volunteers

For your contribution and commitment as volunteers with Broadband for the Rural North

presented by the Mayor of Lancaster

on Thursday 3rd June 2021



Chapter 15

Norfolk

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The Don Swanton community award.



Map of the area. Scole was the breakout point and the Thelveton Estate.

The Norfolk stories.

Burston and Shimpling

by Jane Fishwick.

The project first started in 2017 by canvassing villagers and encouraging people to buy shares. Fortunately, the government launched the Gigabit Voucher Scheme in 2019 which enabled us to physically start the project.

There were quite a few frustrations, such as obtaining permission from BT to use their ducting across a major road bridge and the railway line in the village. These held up the project for months. Once they were resolved we had confidence that the project was viable.

We formed a small core group of 6 people with various skills, Alison Wakeham is an IT expert, Jim and Lynn Howard, Brian and Jane Fishwick and Chris Humphrys on infrastructure.

Video by The Creative Grid (www.creativegrid.com)
Music by Premium Beat

Beyond the book:

The B4SN video



Reeling out the duct.



The infinity fleet.



Waiting for the fibre.



Here's the fibre.



Checking the depth of the trench.

None of us had any experience in this field but we learnt quickly. We had many other villagers volunteering to dig trenches, pull out and lay fibre in all weathers. We worked closely with B4RN engineers and planning departments to move the project along efficiently.

We were fortunate to have a major landowner who was totally on board with the project, which made obtaining wayleaves much easier.

Virtually the whole project was achieved during lockdown and gave us plenty to do, but did add an extra level of complexity.

We laid 37.5km of 16mm core fibre and 91km of 7mm fibre. We met a lot of new people and made some new friends in Burston and Shimpling. We got to know their gardens and houses quite well when we advised on the route to their houses and fitted the house kits and routers.

The core group are all retirees and probably never thought that they would be involved in such a huge project, both technical and physical. We had to contend with flooding, drought, freezing cold and temperatures of 40°C. We also encountered buried buildings and tarmac roads, along with huge flint stones which we find in East Anglia.

There is also an extensive ditch network between fields. It required a substantial amount of galvanised pipes to carry the fibre and to be able to withstand flailing machines when the hedges were cut. Fibre had to be buried 600-800mm in the fields due to the use of deep ploughing. Even so we had a number of instances of fibre being dug up, needing re-splicing or new fibre.

One surprise that we did have was how many businesses were run from homes. This helped enormously with vouchers, contributing about 20% of all connections. The village pub was the first site to be connected in the region, and we also connected



Don Swanton award.



High Sheriff- Michael Gurney & Councillor Florence Ellis formally open the B4RN connection in Gissing..



The team photoshoot.



Ashley and Jorj from B4RN turning a fleet.

the school, church and the famous Strike School Museum which doubles as a community hub. We also helped surrounding villages with advice and volunteering.

The group received the Don Swanton award in 2021 for outstanding service to the village.

Some of the volunteers' dig grant subsidised the Jubilee celebrations in 2022, and this year also partly funded a new petanque court in the playing fields, which has been a great success.

Connections are still being made as new people move into the village, and we will be working on the next phase of promoting B4RN Voice.



Tidy Clive trench.



Another infinity fleet.

Photo Gallery



Clive and Graham trenching.



Starting a sub-route to a customer.



Soft backfill.



Newly ploughed.



Laying the duct behind the trencher



Backfilling.



The blue purchase.



Mike Harrowven going through proposed routes in the workshop with Andrew and James Pitcher.



The splice boys, Graham and Rob.



Paul and Peter at a volunteer training session for handling fibre.

Gissing

Clive A J Blakesley's story:

Well, today we got to the last chamber in The Heywood. It's been an adventure. B4RN are down this weekend to blow the core fibre to the last chamber. That's where your fibre starts ! So, basically we are at the edge of your village. It's taken four years to go from Billingford through Scole, Thelveton, Tivetshall. Shimpling, Burston and The Heywood. Also, Gissing was completed this year!

I've been a contractor from the start and never did it before. Previously, I couldn't tell one end of a mini digger from the other, but there we were, all signed off ready to go, and no one to put it in. So I bit the bullet, borrowed some money to buy some equipment and started to build.

With the help of the villages we did it!

By Halloween, Burston was LIVE. Well done everyone, champions, contractors and B4RN staff. You did it.

Following an October 2020 visit, the Burston and Shimpling champions got into fusing mode after their summer digs. Lynn became splice girl as well as tea girl, evidence that teamwork makes the dreamwork.

As this project was eligible for vouchers, B4RN made dig grants available, and several households contributed to a community pot for tools and equipment for the volunteers. This went into their bank account and they used it as they needed it, and the surplus was returned to the community. They used it to improve local amenities, like the French Boules court and other things.

Beyond the book:

The B4SN case studies

Bringing Burston live photos



Turning the fleet. Norfolk Infinity.



Another Infinity loop.



Laying the duct in the trench.



Alison Wakeman, the label queen.



Alison installing routers in Covid.



Ashley and James blowing core fibre.



The B4RN civils team, before and after. Sunny days and rainy days.



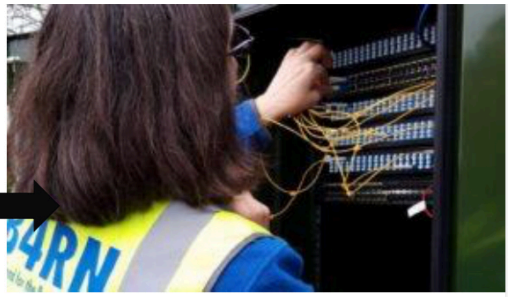
This was a rainy day.

Some photos sent in by volunteers



Some volunteers hanging around on a street corner!

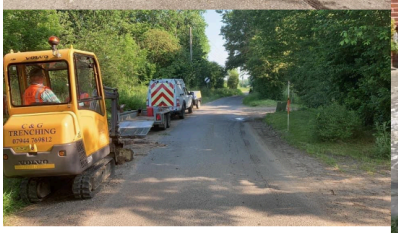
B4RN volunteer, Alison, patching in the first few customers.





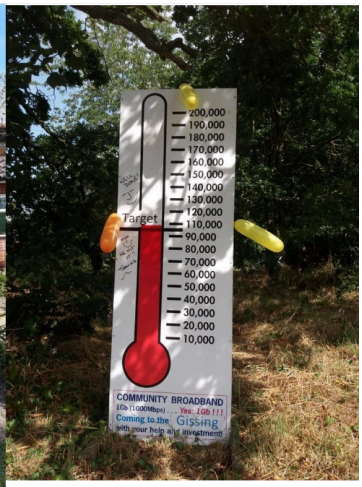
Burston Cabinet has landed







The first Gissing House kit was fitted.
Will Santa deliver an Ipad to Miss Colchester?







We still await a clearer understanding as to the ritual



In spite of often inclement weather a neat job is done - Moling

B4RN

In spite of the ever changing weather and soil conditions a neat job is done - Trenching



Lynn becomes splice girl as well as tea girl.



Alison gets her MBE spade award.



Tea break on a digging day.



Laying the duct in the trench.



The gas man checking for the line.

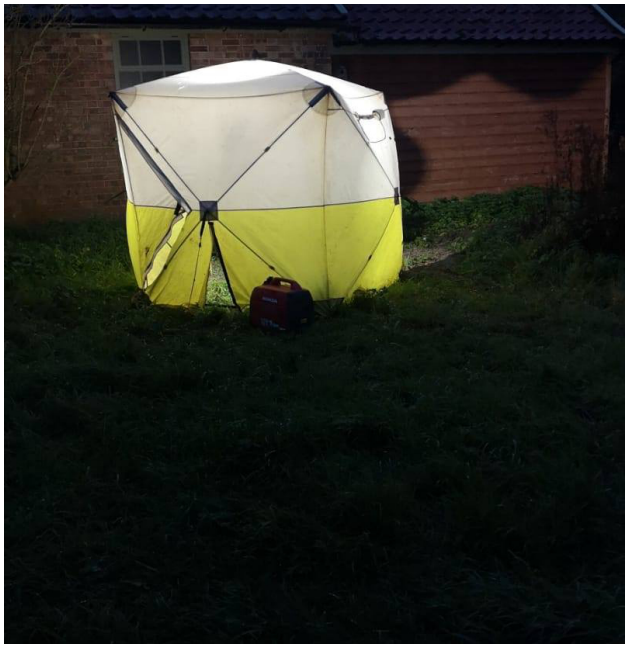


The gas man watching the trenching.



James blowing core fibre.

The B4RN team fusing the core fibre



Robert Staveley and Kit Mackareth fusing in the tent.



Night shift.



Chris, showing a new volunteer (David Evans from Norfolk) how to fuse fibre-optic cable in a field in Dent, in 2019. Photo by *Kira Allmann*.



Matt Mercer fusing the fibre at the cabinet.

David Evans continues to connect new customers and is now employed by B4RN to look after the Norfolk end of the network.

Chapter 16

The Allen Valley

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Allen Valleys

By Mike Robinson

It all started in 2015 when I moved up the valley to a rural farmhouse. Because I had more room, I decided to move my video production business from Gateshead to home. Most video delivery had moved to online, so a local TV commercial I had made would be sent via WeTransfer to Yorkshire Television. I realised my BT ADSL line would be slower than the T3 line I had normally used in Gateshead, so I started it at 6 pm so it could run all evening. At the crack of dawn it still was going at 80%. This was fine, as the item was not due to air until that evening. Then after a leisurely breakfast I checked–and it had crashed and timed out at 89%. So after an 80-mile round trip and a 15-minute upload via the T3 line, I was determined to improve my internet. I never realised it would take 7 years of organising, and hard work for me and a group of local volunteers.

My first reaction was to contact my supplier OpenReach / BT. After being passed around I spoke to Developments and explained my need for something better. They eventually offered me a T3 line (effectively 28 lines combined) which would give me 48Mbps. The only downside, it would cost £150k. After my sharp intake of breath, they suggested contacting their community projects department. I did and I spoke to a nice man who suggested I get anyone else interested in a better broadband together.

After leafleting the area, we attracted a hall-full of people, and probably more than 100 folk listened to all the wonders that BT offered. The only problems were, BT couldn't tell us was what they could provide, the cost, and when. After 6 months of pestering they gave us a ballpark estimate–each property would need to pay £1500 to £2000 and some would get FTTP and others FTTC. Needless to say, that went down badly as the neighbouring town had just got FTTC for no upfront cost. Next, I spent a year hiking the hills trying to find locations for wifi transmitters before realising the valleys were not suited to a wifi network.

Then everything changed. From a chance find on the internet, I visited a B4RN Show and Tell day. I was buzzing when I got back home after experiencing the B4RN magic and I told the four others I had been working with.



Volunteer group ready to start the first dig at the school.

So a visit by two car loads of locals to Melling was organised. From a meeting with Barry Forde the CEO, and other B4RN staff, we committed to setting up a community interest company and then, with B4RN support we would start to prepare to build fibre in the Allen Valleys. This was no small task but people soon started volunteering to be community champions, dig coordinators, web designers, route walkers and the all-important admin.



Full meeting in the Allen Valleys



Allen Valleys exhibition tent at the village show.

A few weeks later, a phone call from Barry Forde changed things again. After an internal discussion around B4RN's long-term strategic plan to expand north through the rural areas to the Scottish Borders, Barry made us an offer to join B4RN completely, provided we could raise £150,000 in investment. (This was before the introduction of the government voucher scheme). A fortnight later the investments had exceeded the target. This speeded things up with planning, and we moved up a gear to walk routes and gain wayleaves.

Originally the backhaul, the live connection that would join our network to the World Wide Web, was to be brought from Newcastle. This would use an old disused Newcastle University trunk route along the A69 and we would, in the short term to get us live, lease a connection from Openreach. Meetings were held to explain how the duct is laid once routes were agreed.



Volunteer group planning routes.



Packed meeting in the Allen Valleys.



Laurie, Joshua and Alan are discussing the best way to negotiate disused mine workings in the West Allen.



Allendale primary school.



Volunteers laying duct at Allendale fire station.

The build started in Allendale Town at the primary school 9 months later, which was near the BT exchange. This was attended by nearly 50 people, which proved a challenge finding them all jobs to do. This was jumping in the deep end with 12x 15mm and 10x 7mm ducts to install around a pristine school playing field.



Crossing the East Allen river.



Volunteers laying duct at Allendale primary school..



Installing a large chamber.



Farmer installing duct across his land in Acton.

The build continued at a pace at weekends and during the week, aided by a small Ditch Witch mole plough bought by a volunteer. Build moved up a gear after a chat with a local contractor who gained such sufficient faith in the project that he imported a large mole plough from the USA. The number of contractors soon increased to 3, with one building a mole plough from scratch.



The mini mole plough in action.



Digging the duct in.



Work continued throughout the winter.


Terrain couldn't beat them.



The first duct delivery.

Work continued in all seasons and different weathers on all terrains, using mole ploughs, diggers and hand digging.

On training days the volunteers were trained by Frank and Will to blow and fuse fibre and install the routers.

Then after a day of training from B4RN, house kits were installed, fibre blown and spliced. Frank let one of our blind volunteers work the fibre blower...

Training day



The volunteers.



Frank and Will demonstrate core fibre blow from the chamber.



Filling out the contracts.



Frank showing volunteers how to close the gas blocks.



Frank Brown letting the blind volunteer feel the fibre.



Frank showing the volunteers how the nano flow blower works.



Will Dehany and Frank Brown blowing house fibres.



On the radio to say, 'We have air'.



A cold dig.



Volunteer splicing after training day.



Watching Bruce blow fibre at the showtell day.





Team at work laying multiple ducts.



Volunteer wrapping a bullet.



View from the Sparty Lea cabinet.



Explaining how to pull duct.



Families digging trenches and backfilling them at Catton village green.



The weather did not stop them.



Mike mole-ploughing.



Digging the trench to the house.

But before we could get the first properties live, we learnt that our backhaul was to change. After talking to B4RN, Zayo was willing to re-route the fibre data link from Southern Ireland to Scandinavia past our door, instead of taking it via Glasgow.

This was good news, as it meant we would get a full-blown fibre connection direct to B4RN immediately. The downside was the connection point was now no longer Allendale, but 15 miles away at Whitfield, across some of the wildest country. So with the help of 2 contractors ploughing the open farmland and teams of volunteers doing the gnarly bits, another cabinet was installed in Whitfield and this saw our first connections go live in June 2020.

Things on the funding front became easier with the introduction of Gigabit vouchers.



Tape put under the sod, the new youngest project manager in control.



Laying duct in the trench at Catton village green.



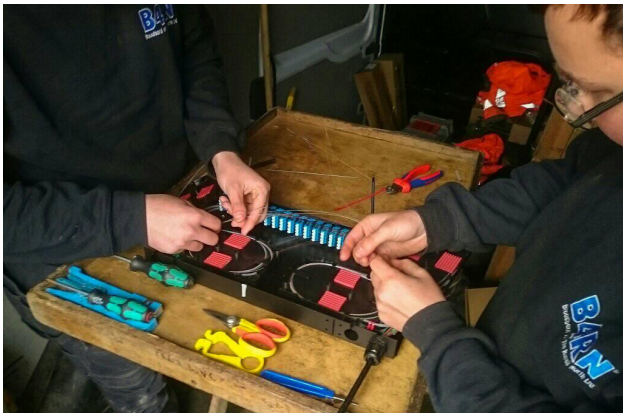
Jamie Driscoll.



Metro Mayor Jamie Driscoll getting stuck in laying duct.



Jon Randal-Paley doing a bullet.



James Clapham doing a cabinet tray.



The B4RN fusers doing a bullet in the field.



The fourth B4RN cabinet at Sparty Lea going in on a wet windy day.

The North Tyne Metro Mayor, Jamie Driscoll, spent a day working with us; this was a novelty as most politicians spend just enough time to have a quick chat and a photograph. But the following day the Borderlands funding was introduced, which doubled the voucher money.

Once the core fibre was blown through the ducts the B4RN core fibre team came and fused the lines through to the cabinets, and fused the cabinet trays for the customers.

It took another 2 years of digging and planning before the fourth cabinet, which served my property, went live. But it was worth every spade of earth dug, all the soakings and muddy and frozen hands.



Youngest volunteer at the bridge crossing at Sudden.



Contractor laying duct with his self-built mole plough.



Triple reel mole plough.



Volunteers digging around the caravan site.

We now have the best internet, as evidenced by many comments from those in technology-based businesses like broadcasting, computer games and IT, on how good it is and wish that they could connect. Other benefits away from the internet have been social, with people making friends and connections via volunteering digs.

Work continues; we now have over 500 live properties including 2 schools, 4 village halls, 3 churches and a monastery (some of the monks turned up to most digs) benefiting from free service. Others connections are being added all the time. The network now has the security of a ring main in the shape of a figure eight loop linked into the B4RN backhaul in two locations. Other communities north and south of us have visited us and are now embarking on their own B4RN projects.

Some of our users

Gareth Forbes, a GP in the village, says, 'The connection couldn't have come soon enough. Covid lockdown measures meant working from home with online interactions, critical to maintaining health care services. Much of primary care has moved online, with video, telephone and e-consultations now making up the bulk of our work. However, the area's unreliable internet was making this challenging, My home had a very poor connection. At peak times, this can mean direct clinical work was not practical for me or my wife, who is also a doctor.'

Kate Jackson, 61, took a wooden wool-spinning wheel into her garden, propped her iPad against a brick, pressed record, and started talking as she spun–about crafts, the countryside, her menagerie of animals (cats, chickens, bees and Eileen the goose). Kate enjoyed watching videos about gardening and quilting on YouTube, so



Pulling duct into a chamber, 'One heck of a tight fit'.



Pneumatic mole plough in action.



Tyne Tees and the BBC covering the first dig.

one day she thought: how hard can it be? With the help of her B4RN broadband, she resolved to upload once a week.

She calls her channel The Last Homely House, 'which is a place to feel comfortable, secure and welcomed. That's what I wanted my channel to be.' It now has 123,000 subscribers. Last May, Jackson, who lives in the Langley area, set up a sister channel, called The Last Homely Garden. She has an online shop, nearly 40,000 Instagram followers, and even a fan-run Facebook group. She has become the linchpin of a thriving online community.

Susie White, Guardian writer, lecturer and photographer, says 'I went with my husband to the first public meetings and we took part in some of the volunteer digs. That was great, that feeling that the community were getting together to help each other, and we met neighbours that we hadn't met before. I began to see posts on the local Facebook pages - dramatic before and after pictures showing the speeds that people were getting as their B4RN service went live.

'Living quite a long way from the main road I somehow rather doubted how successful it would be for us. In the end, it all happened very fast. The cable-laying machine took less than an hour to make it a mile across fields and down a steep slope



A nice moled trench.



Volunteer team laying duct in Catton.



The tea break at the end of a rainbow.

to arrive at our gate. The installation was done by volunteers. The thin fibre cable shot out of the box, having been blown down the hill from a mile away. Amazing! With a couple of neat, inconspicuous boxes, one in the kitchen, one outside and the cable sunk across a flowerbed and a path.

'Before the changeover, the radio would keep cutting out every time somebody was using the computer, which was very frustrating when you're trying to listen to something. Being able to give a talk via Zoom without worrying about loss of service was great.

'Since I write for a number of magazines, I regularly have to send in photographs via Dropbox. I was used to this taking over a quarter of an hour, during which time I would have to do something else. So I was astonished the first time I dragged 20 photographs into Dropbox and they went instantly. When you're working this saves so much time, and my family in Hexham are really envious of the broadband speeds that we get out here in the middle of the countryside!'

You can find out more about Susie on her website (see below).

The Allen Valley project has dug over 174km of trenches.



Beyond the book

The last homely house

The last homely garden

Susie's website

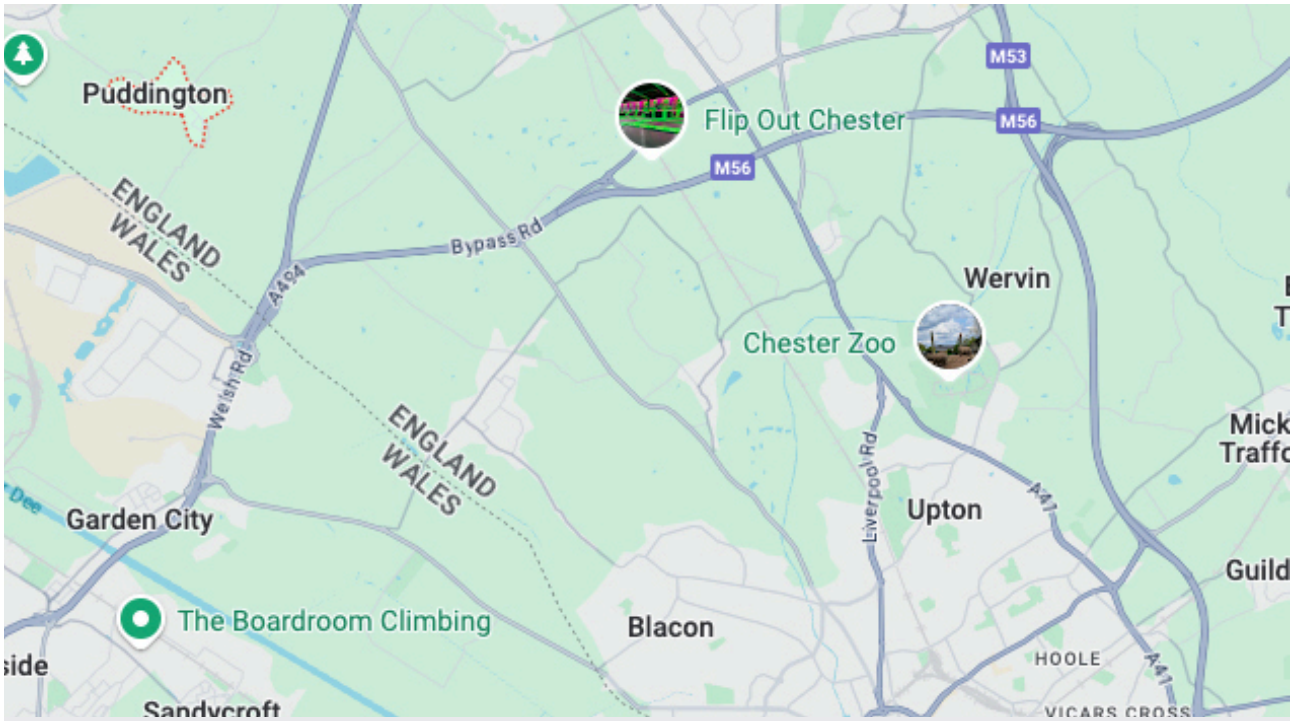
Chapter 17

Cheshire

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Cheshire

Puddington and the Politics

By Pete Delaney

Puddington inadvertently found itself stuck in the middle of a fight not of its own choosing, as BT and B4RN struggled with the government over who should pay to bring fibre to the village homes.

The situation attracted media attention in the form of an article in the ISPReview (read it here). It provides details of the somewhat Kafkaesque situation the village found itself in at the hands of BT Openreach and BDUK, the government's broadband funding authority.

The B4RN project in Cheshire had its genesis some time ago, back in 2013 in fact. At the time, the villages of Puddington, Burton and Shotwick, all tucked up together in the northwest corner of Cheshire, were on ADSL.

Puddington, where I live, had 1 or 2 Mbps (or even nothing at all) as it was at pretty much the maximum reach from the nearest BT exchange in Neston. Nearby Burton, the largest village, was slightly closer to Neston but service was still firmly in single digit Mbps. The tiny village of Shotwick, being the furthest from the exchange, was more or less devoid of any broadband services.

My own service was 1Mbps and almost useless. When searching for a solution to this, I came across the B4RN website. Dot (my wife) and I booked into one of the early Show and Tell days at the Lancaster House Hotel.

To say it was a revelation was an understatement.



We attended the showtell day and climbed aboard the gigabus.



We see live demonstrations and Barry tells us how it all works.

People investing their own money in a network they build themselves was such a simple, comprehensible and attractive proposition that was already delivering gigabit broadband into the most remote (and beautiful) areas of Lancashire. The energy of Chris and Barry and the JFDI philosophy was so addictive (and still is, I might add).

I was convinced we could do something similar in rather less rugged Cheshire. Sadly, before that really got underway, Openreach started deploying FTTC in the area in 2014 and so we waited until we found out what that delivered.

In the end, it amounted to the installation of a single FTTC cabinet in the centre of Burton.

An uneven mesh of speeds across the three villages was the result, which is fairly typical of FTTC deployment in rural areas. The centre of Burton, nearest the new cabinet, could get close to 80Mbps but speeds fell away rapidly, leaving some with disappointing improvements in speed or none at all. Mine went to 10Mbps (and still is) but others remained on ADSL due to the shorter range of FTTC. Shotwick was too far away from the cabinet to show any improvement.

After a while, it became clear there was still a lot of dissatisfaction with broadband speeds and little prospect of them improving anytime soon. This was despite us lobbying BT Openreach, which showed no interest at all in bringing FTTP to the area.

Cheshire hyperfast and B4RN Cheshire

As Barry Forde had made clear, backhaul (the internet feed) was key to B4RN projects. In B4RN's Lancashire heartland, this requirement was usually satisfied with organic expansion; new projects growing outwards from the periphery of existing projects.

I had been thinking about a B4RN-like project again but it would be difficult to realise. B4RN had made the original concept big enough to support the building of their own core network. It seemed unlikely we would have a big enough footprint to make this economically viable or to build it in a reasonable timescale.

However, I discovered that Zayo (Geo networks at the time), whose dark fibre network connected B4RN projects to B4RN core router(s) in the internet exchanges, ran fibre right through our area.

A bit more research located an access point to the Zayo network.

Now we had the prospect of being able to connect to the B4RN core network and thus be a regular B4RN project.

The idea of a B4RN project was enthusiastically received by local landowners and the parish council.

If we could persuade B4RN to support us, we had a project.

After much discussion, B4RN agreed we could start our own B4RN project and by early 2017, we were underway as Cheshire Hyperfast.

At this time another group, based in the nearby village of Capenhurst, expressed a wish to be included. We really needed to expand our footprint anyway to support the cost of the backhaul. Our project group grew to include Capenhurst and the nearby hamlets of Two Mills and Woodbank. A little later Ness, on the outskirts of Neston, also joined the group.

So now we had a contiguous footprint (moving north to south) including some 1100 properties: Ness, Burton, Puddington, Shotwick, Woodbank, Two Mills and Capenhurst.

From this point, for a while anyway, it was a normal B4RN project; packed public meetings, network planning, costing, encouraging investment, recruiting volunteers, bickering.....

We also changed our name to B4RN Cheshire at the end of 2017.

In February 2018, I found a guy in a high-vis jacket with a tablet computer rummaging in the undergrowth near my house in Puddington. He was an Openreach contractor surveying assets for an FTTP build 'because of B4RN'. He offered this information without prompting and without knowing who I was.

The first Gigabit Voucher Scheme (GBVS) launched in March 2018. This didn't have much of an impact on us as the eligibility rules were geared more towards business connections.

Completely out of the blue in late 2018, Openreach started an FTTP build in Ness and Burton. This proceeded steadily through 2019 and fibre was also extended to the centre of Puddington. This did cause delays to our build while the footprint was redesigned to take account of the Openreach build.

The reduced footprint that included Puddington and part of Burton was finalised and in early 2021, B4RN commenced building after we had a rapid voucher signup campaign that resulted in 80 applications.



Preparing for the cabinet.



Will meets the team.



Will Dehany comes to blow house fibre.



The B4RN team arrives for house and core blows.

By early 2019 we had raised around £70,000 and building started. The location of the Zayo access point for the backhaul was nearest to Capenhurst, so the network build started there.

A team of volunteers installed the cabinet at the village hall with the help of B4RN staff, and Will Dehany came to blow the fibre. Tea and sausage or bacon buns kept the volunteers going.

Crucially, in March 2019, the new Rural Gigabit Connectivity Scheme (RGC) was launched. The implications of this on our project, ultimately, would be profound. The eligibility rules were



The bacon butty queen.



Blowing the core fibre and they bring us tea.

much simpler than the GBVS making applying and using them much more straightforward.

The original £70,000 went on funding the backhaul and the first part of the build. The remaining connections were voucher-funded and work continued in Capenhurst through Woodbank, Two Mills and Shotwick until the end of 2019.

B4RN staff came and blew the core fibre and fused the enclosures. They brought the first customers live on 17th December 2019. They worked late that day so nobody was missed out. Bruce and John fused the bullet, Will finished all the house blows. Neil patched in the first customer.



Working a bit late.



Jon Randal-Paley and Bruce Alexander doing the bullet.



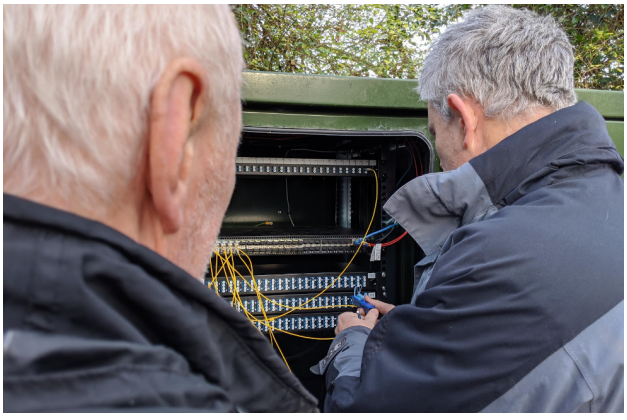
Neil in a rush to check something.



Yes, it's live.



Neil and Bruce patching customers.



Neil patching customers..



Elizabethan farmhouse.

An Elizabethan farmhouse with state of the art milking parlour was one of the business voucher connections.

The famous Pete Delaney spade was manufactured and used on lawn trenches.

The first customers installed were very happy with their new connections, and the plusnet routers were soon turned off.



The photo does not do it justice. Amazing property.



Happy kids can now do what their school friends can do.



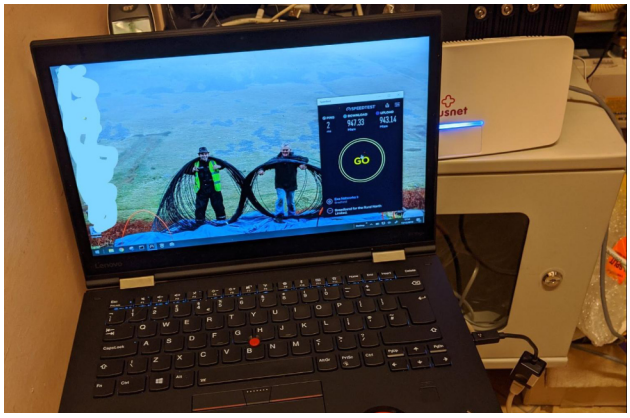
The famous Pete Delaney spade. Patent pending.



Easy to trench house duct through a lawn with the PD spade.



The house fusers were well impressed by this house's network.



The first speed test on a laptop, Over 900 Mbps symmetrical.



Fleeting the core fibre.



Barry presenting at the public meeting.



A village meeting.



James Clapham fusing one of the bullets.



B4RN splicers fusing the house connections.



Volunteers reeling out the multiple ducts.



Volunteers reeling off the ducts.



Pop-up cafe.



The first B4RN cabinet for Capenhurst.



A chamber ready to blow.



The Puddington cabinet.



Pop-up cafe. Tea break.

So the first stage of the Cheshire Hub was done.

2019 was not so good for the remaining footprint covering Puddington, Burton and Ness, however.

B4RN installed a street cabinet in Puddington, arranged power to it, installed 3 road crossings and commissioned a contractor to start installing duct (all at B4RN's expense because of the delays) in anticipation of receiving funds from the voucher requests once connections started to be made.

Disaster strikes

At exactly the same time, the eligibility rules changed on the latest iteration of the gigabit voucher scheme. The commercial Openreach build meant Burton and Puddington were no longer eligible for voucher funding and Ness had been reclassified as urban.

This stopped the build in its tracks. Without the voucher funding we would have to raise a substantial sum of non-refundable money to replace it. This was a consequence of B4RN changing their funding model to rely largely on voucher income that doesn't need to be paid back compared to investment funding that does, eventually.

Over the next few months we tried to get something built. but in July 2022 we finally gave up as it became apparent that we stood little chance of raising the tens of thousands in additional funding required if Openreach were going to build anyway. This was despite B4RN kindly offering to allow investment funding instead of having to donate the money.

Sadly, we didn't get gigabit broadband and B4RN were out of pocket by tens of thousands for the work already done.



The team of volunteers at the Capenhurst cabinet.



The unused BT Openreach fibre.



Still on the pole unused since 2018.

Still, Openreach promised to be here soon enough. Or rather they wouldn't, except for 23 properties in the centre of the village.

The remaining 116 properties in Puddington wouldn't be built to by Openreach and B4RN couldn't build to them either because there were no vouchers.

Why has this absurd situation arisen? Openreach has denied they were ever going to build to them. This is despite putting fibre infrastructure on the poles right opposite my house, which remain there unused to this day.

There are two other poles with CBTs and fibre on them that remain unconnected within 50m of this pole.

Openreach has also installed a pole on private land 75m away and this remains unused with nothing installed on it.

Installation was all done in the same frenzy of van activity in December 2018 and January 2019.

I think the BT Openreach explanation (stated in the ISPReview article) that they never intended to build here is rather lame. If they didn't, then perhaps it was simply a mistake or, perhaps, a 'towels on deckchairs' exercise to make sure the vouchers went away at the cost of throwing up a few bits of infrastructure and a pole....

As a consequence, all 116 remaining properties went into the Project Gigabit regional procurement for Cheshire (Lot 17) making them ineligible for vouchers.

Freedom Fibre won the Lot 17 contract on 23rd May 2024 and spent the next few months in the planning stage. In February 2025, there seemed to be indications from Freedom Fibre that service

would be arriving a lot sooner than we expected, sometime in mid-2025 perhaps.

Then on 7th March 2025, Freedom Fibre dropped out of the Lot 17 contract entirely 'by mutual consent' leaving us, and the many thousands of others that would have benefitted across Cheshire, in limbo. No properties were connected under the contract.

The reason given was 'by mutual consent' (with BDUK) so exactly why this happened is conjecture. Here in Puddington, Openreach announced a commercial build on 22nd January 2025. There is a strong likelihood that this may have affected the public funding Freedom Fibre could have claimed to build here anyway; a point that is moot now that the whole contract has gone.

Whatever the reason(s), the reality is that we are now left waiting for Openreach to complete our build over 6 years after they started. As it stands, the Openreach website indicates this will be sometime between now and the end of 2026.

There is reason for optimism though.

We have decided to JFDI and build our own full fibre network. Materials and equipment have already been acquired and the 1.7km of backhaul we need is being constructed. This is happening regardless if Openreach turns up or not. We hope to have our first connections in the summer of 2025.

The B4RN spirit lives !

Conclusion

Yes, we had a lot of arguments with B4RN, tempers were lost, and delays did happen, but this sort of thing occurs on projects. However, progress was being made and both B4RN and ourselves had every reason to expect the Puddington build would happen.

Unfortunately, either Openreach or BDUK or both, whether accidentally or not, put paid to that. I should point out there was a separate B4RN project, the FiveVillages project, based in nearby Mollington. This started not long after us using the same backhaul. Sadly this closed in January 2022 without anything being built. I don't know the full reasons for this but across our project and theirs there were around 2000 properties.

In the end, fewer than 100 properties were actually connected. The limited success, in my opinion, was largely due to the change in funding model.

Fully investment funded was simple to understand - raise enough money and you can build. We were happy with that, and personally, I wished it had stayed that way. Government funding, in the form of vouchers, helped B4RN expand, but like all government money, comes with strings, bureaucracy and rules that constantly change. The control this took away from our project ultimately proved fatal.

Even B4RN faced a crisis in 2021 when BDUK announced that the Lancashire regional procurement

meant all vouchers were frozen. It took a lot of effort to resolve this with what became Voucher Priority Areas (VPA).

B4RN has been hugely successful in delivering truly 'outside in' broadband to rural areas and continues to be so. It is a truly fantastic achievement and an ongoing success story.

It's just a pity something as capricious as voucher availability now drives expansion.

Capenhurst laid over 12 kilometres of trench with 30k left unfinished for the rest of the project.

We started this chapter with ISPReview, so in 2025 we will end with it.

The digitalbritain superfarce rocks on.

https://www.ispreview.co.uk/index.php/2025/03/freedom-fibre-drops-out-of-project-gigabit-broadband-contract-for-cheshire-uk.html

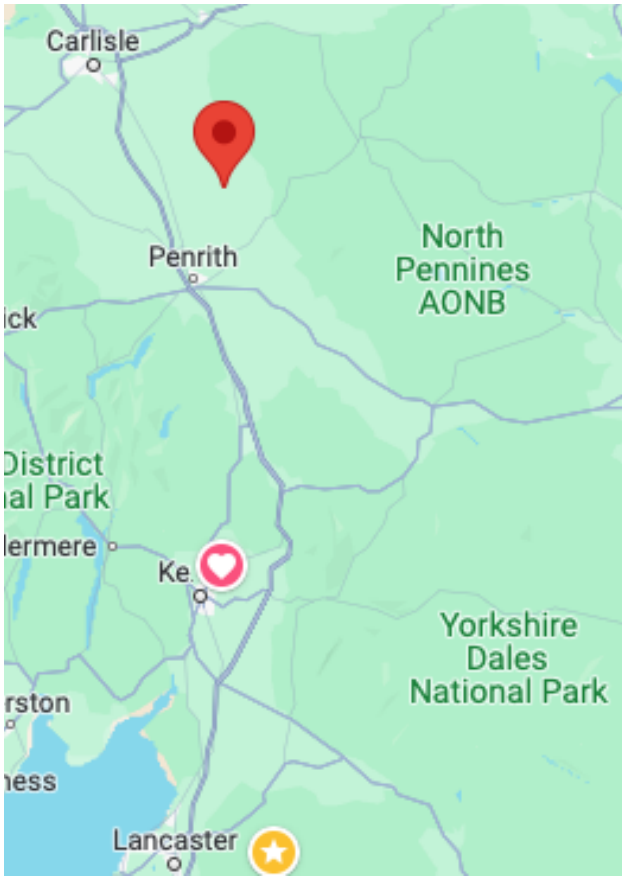
Chapter 18

Melmerby / Gamblesby / Kirkoswald
Great Salkeld and Mungrisdale

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This group was a B4RN baby. This means it did not join on from another village in the way that the early projects had.

Similar to Mint and Sprint and the Allen Valley projects, it had its own breakout point on the Zayo fibre. Therefore, because it was so remote from the other projects, the community did not have the same peer support. Instead they had the newly-formed help squads from B4RN, which had taken on Staff to cope with the demands of the voucher funding, civils work and training.

This was all quite new and everyone had a lot to learn. It was all part of the process of making B4RN into a professional telecoms company.



Alison and Bill.



Sam, Nick and Stan with Andrew planning routes.

Melmerby

By Allison Smith

B4RN in Melmerby had a rather bumpy ride. Poor Stan Jenkins had to kick-start the campaign by addressing the Melmerby parish council on Zoom during Covid on 23rd March 2021–not an auspicious beginning.

Fortunately, local major property owners, the Rowley family, were quick to see the opportunities and advantages of superfast broadband in the area. This made the installation of the connection from Melmerby to Kirkoswald via Gamblesby reasonably straightforward.

Some properties in Melmerby were connected along the route. The Melmerby cabinet was installed in May 2022 with connections along Route 1 which was part of phase 1, beginning in June 2022.

Several operators already supplied variations of broadband in Melmerby village itself (B4RN Phase 2). While the service some people received was dire, others including me, were quite satisfied, thinking, 'If it ain't broke, don't fix it.'

I thought that if somebody else pursued the B4RN project then I would probably join in. But eventually it dawned on me that I was going to be the 'somebody else'.

A public meeting was held on 16th March 2022, which led me to ask a few more questions, and another public meeting on 29th November 2022. It's fair to say that the project had not built up much steam.

I think for me it was the ethos of the way B4RN operated that flicked the switch from vague supporter to B4RN Activist. I was impressed by their basic fairness–to deliver to the 'hard to reach areas' the same service that people in city centres assume as a right. I loved that the village hall and church had a free service and so would the village school if we still had one. I wanted a service that had an active and available real person help desk. As a Community Benefit Society, B4RN weren't interested in big profits.

We had been with BT for years and they had basically exploited the fact that we aren't people who choose to spend our time shopping around; B4RN was going to be a much faster service at a much lower price. They even had a lower rate for people who were eligible for a reduction in council tax.The only issue, then, was to explain all this to other people.

I joined Bill Burford, Andrew Woodhead, David Bardsley and Nicky Burrow in forming a small working party and we met regularly to monitor our progress. There was suspicion about this new broadband provider; at least one person assumed that I was being paid to advocate on B4RN's behalf. The low point for me was when I met with hostility from a local farmer whose land would usefully have been an integral part of the 'soft dig'. The high point was a Friday evening with the farmers in the pub. They applied their local knowledge, generosity and grasp of the potential for the new broadband to benefit future generations to enable the project to proceed.

House by house, wayleave by wayleave, and pledge by pledge we slowly built our way to the tipping point and B4RN were eventually able to deliver to the village with the first connection being made on May Day 2024.



Joe Brown and James Clapham bring the Melmerby cabinet live.

Now, 40% of the properties have a B4RN service, with a trickle of new customers coming all the time.

Melmerby dug 8 kilometres of trench in preparation for their own project (which is still underway), the first cabinet for this area was sited there to feed Kirkoswald etc.

Kirkoswald

By Brian Smythe and Sue Quinn

Kirkoswald is a rural parish in the Eden Valley. It consists of two main villages, Renwick and Kirkoswald, and several hamlets, Parkhead, Highbank Hill, Staffield, Scales, Scalehouses, Busk, Scarrowmannick, Blunderfield and Outhwaite .

The parish ranges from the River Eden up the Pennines to Hartside. The Raven Beck and Croglin Beck mark the boundaries in the opposite direction. The parish contains many rural and remote farms in hidden valleys or up rough tracks, which poses a challenge to any but the best provider of high speed broadband. The need for better connectivity was identified in May of 2012 as part of the Kirkoswald Parish Council Community Plan.

History of the beginnings of the project

Brian Smythe bought his current home in Parkhead in Kirkoswald Parish in June 2007 and he tracked opportunities to acquire faster broadband (more than 2Mbps). He followed the government procurement that resulted in fibre to the cabinet contract for every region in the UK being awarded to BT Openreach in approximately 2012 . Brian briefed both Kirkoswald and Lazonby parish councils on progress at PC meetings. He also became part of the Connecting Cumbria group and reported back about this group to the parish councils.

The FTTC technology inevitably meant that this solution would do virtually nothing for properties more than one mile from the cabinet. Anyone outside Kirkoswald village would see no benefit, but those within the village could expect a minimum of 50Mbps.

LonsdaleNet was established in 2012. It offered a wireless broadband service that provided approximately 20 Mbps for all properties with a line of sight to their aerials. The LonsdaleNet service reached about 70% of rural properties in Kirkoswald parish, but still left a significant number of properties with less than 2 Mbps and some with no practical connection.

The BT Openreach FTTC service went live in 2014/15, but in addition to distance limitations, the technology could become overloaded resulting in slow performance.

Until 2020, none of the government voucher support schemes for delivering full fibre solutions provided sufficient funds to create a viable project for Kirkoswald parish. The Rural Gigabit Voucher Scheme (RGVS) announced by Building Digital UK (BDUK) in June 2020 was the first scheme that appeared to create the opportunity to completely fund a full fibre project for Kirkoswald parish.

A group of parish councillors began work with Brian to establish who in the area would wish to donate their voucher to the scheme. To do this we enlisted the help of many volunteers throughout all the different areas of the parish. More than 98% of the residents outside Kirkoswald village pledged their vouchers.

BDUK defined three organisations that would be eligible to benefit from this RGVS, namely BT Openreach, B4RN and LonsdaleNet/Voneus. We approached all three organisations and asked them to provide a preliminary budget for a network that would enable us to connect every property with full fibre.

BT Openreach stated that they would have to invest £0.5m in infrastructure before they could provide an estimate. LonsdaleNet stated that they could do the project within the likely voucher budget but would not commit to connecting every property.

Tom Hurst from B4RN visited and explained the B4RN approach that included a commitment to connect every property in the parish. He also stated that, with a 50% take-up on the vouchers, we would have a funded project.

The Kirkoswald B4RN Project

With the support of the parish council and the volunteer coordinators who had leafleted all the homes in the parish, Brian Smythe and Sue Quinn (then chair of Kirkoswald Parish Council) agreed to go ahead with B4RN in October 2020.

Recruitment of further volunteers commenced immediately with the support of Kirkoswald Parish Council.

The first two key tasks were the negotiating of wayleaves with all landowners over whose property the fibre ducting would be installed, and secondly, the commitment by as many of the property owners in the parish of their RGVS vouchers in order to create the funding for the project.

Brian Smythe negotiated the wayleaves with the landowners with the help of information packs, as we were under Covid lockdown conditions that made public meetings impossible.

Sue Quinn alongside two other parish councillors, Jane Tea and Wendy Smith, recruited and coordinated a team of volunteers to visit every property and gain their commitment to pledging their RGVS vouchers. The wayleaves and sufficient RGVS vouchers (60% of properties) were in place by March 2021. This enabled B4RN to submit their application to BDUK for project approval. There was then a six-month delay before the formal project approval was granted by BDUK.

B4RN's contractors, Robson Plant, were able to start work with their mole-ploughs in October 2021. By this stage we had assembled a large team of volunteers who, following training by B4RN staff, assisted with many of the tasks in support of the installation of the ducting and other infrastructure, and coordination between residents and the contractors.

We were extremely grateful to both the volunteers and the landowners in supporting B4RN and their contractors and facilitating the rapid progress of the project. This also included the provision of temporary storage sites for supplies and equipment.

Gamblesby and Unthank

By Dave Henderson

To start the project a breakout point had to be established to bring in the B4RN feed. Melmerby was decided upon, and the route to Kirkoswald would be dug from there. In between the two villages was Gamblesby, with 87 properties, and the satellite hamlet of Unthank, with 13 properties.

Gamblesby was primarily served by FTTP from Voneus (formerly LonsdaleNet). This was a service that had originally been a pilot, installed by LonsdaleNet in 2016-18, replacing an unreliable (20-30Mbps) radio signal WAN (wide area network). The newer system was a sub-75Mbps FTTP service, backhauled using a village-based dish and a microwave feed from a transmitter on Fiends Fell above the village. Users were generally unhappy with the whole installation process, as well as the integrity and speed of the subsequent service. Other households were still on landline copper from a variety of suppliers, and were getting 15-25Mbps and were also, in the main, dissatisfied with their service. Unthank's broadband was also provided by a Voneus (formerly LonsdaleNet) WAN using house-based wireless antennas, with broadband speeds ranging from 0.5 to 15Mbps, depending on the season and the weather! Residents here were also very unhappy, especially as they had been promised an extension of Gamblesby's FTTP service in 2018, which never materialised.

Brian Smythe from Kirkoswald, on B4RN's behalf, had contacted someone in Gamblesby who had helped with the original LonsdaleNet project, but he was unwilling to get involved after the problems previously encountered. Dave Henderson had been indirectly involved previously and, as he had some IT technical business background, he was approached to see if he would assist.

Dave got in touch with Stan Jenkins and in late April 2021, and standing at a safe distance in the farm yard (Covid restrictions were in place) Stan explained how the B4RN scheme would all work. Dave was impressed by the offering, but in light of his previous experiences, he checked out everything that he had been told, and quickly realised that B4RN was able to offer a service which his fellow villagers truly deserved.

Dave got straight into the detail, got Stan in front of the parish council to get their backing, started putting flyers out, posters up and going door to door to gauge interest and sell the service. Dave fielded all villagers' questions, and a well-attended village meeting was held in late August 2021 when Stan informed the audience of what was likely to happen over the coming months.

Following that, a B4RN update email was created and sent regularly to all the interested households. This was continued during the design and build phase utill the project was fully completed, to keep everyone informed as to the progress and issues encountered. Having two villages to cover proved a problem, but Hugh Stewart, who lived in Unthank, took the Unthank support role on and Dave looked after Gamblesby, working together to keep every household fully informed and supported during the project.

On the 6th December 2021, a further public meeting was held for anyone in the catchment area who was willing to become a B4RN Volunteer. Again, a well-attended meeting was held with Dave and Stan leading and explaining in more detail what would be required. 16 people signed up, and ultimately 13 became the volunteer group, the self-named B4RNacles.



Trenching as an art form

After a number of informal chats and email exchanges and the creation of a WhatsApp Group, the inaugural meeting took place on 24th February. Among the many things discussed were the creation of a constitution, finances, election of officers and a huge amount of detail. The positions created were:-

Chairman - Hugh Stewart, Secretary - Dori Henderson

Treasurer - Stores and Consumables - Tom Sawyer

Operations (including wayleaves) - Dave Henderson

House Plan Coordinator - Mike Korner

House Plan Pro Forma Design - Chris Gibson

VoIP Decision Tree Document - Sean Moon and Arnold Fairless.



Mike searches for underground services with the aid of his feet



First dig of the day and I am moving like a zombie



That mole was proving very hard to catch



Lawn dancing – eat your heart out Strictly

The rest of the Group were Greg Everatt, Dave Trickett, Chris Mulholland, Matt Malcomson and Paul Logan.

One huge benefit was that most of the group had project management experience. This proved invaluable, as over the next two months, weekly meetings and various onsite installation training from B4RN's team, cemented what was required and how it was going to be done.

The group agreed that households would claim their dig grants direct and would ask home owners for £50 to cover the group's installation work, leaving the remainder of the dig grant of £100 to cover the B4RN installation fee. However, it became clear this would be too large a pot of money to hold, as getting a bank account would take up to six months to obtain and this was not practical. The group's charge was then cut back to a £15 donation per household and, instead, a £200 loan was obtained from the Glassonby Parish Council. This, along with the group's individual £15 donations, constituted a pot of operating capital to purchase all the consumables.

In the following weeks, members visited all the properties that had signed up for B4RN and created a detailed plan for each. This included location of the router, locations of services, Toby Box and house kit locations, walls, garden layout and the number of P-clips, rawl plugs and screws required, as well as the agreed ducting route and any wayleave issues. These proved invaluable when the ducts and equipment were actually installed, and B4RN subsequently adopted these pro forma plans for other project groups to use.

The group had enough tools and equipment to cover all their needs, and only consumables like drill bits, cement, screws, P-clips and small items needed to be purchased. Dave Henderson offered a secure storage for all the equipment, and the first house duct was installed in early April 2022. Dig days were agreed to be Tuesdays and Saturdays every week to allow everyone to get involved, including those who were in full-time employment.



Dave preparing for holey orders in the Chapel



Team work in action – 2 hours to dig a 8” x 2” trench



Mike selecting a suitable blue tag to fix to Dave



Dave kneels to the supreme deity of all trench diggers – the wheelbarrow



Dave quality controls all the biscuits



The devil is in the detail of the P clip fixing



The external B4RN box hides away in a tidy workshop.....



A watched box never installs



The home owner watches the first install with some concern



Dave winding Arnold up about the 150 yards three duct pull



It might have been easier to fix it to the wall....

Over the next three months the group installed all the ducts and house kits, often working in small teams and with most of the group working together on bigger jobs.

Some installs were short, where the house was right on the road side, some of the bigger jobs took the whole group. The largest was a three duct install over 150 metres and a second one that required a 40-metre concrete cut to be done, duct installed and re-concreted.

It was a general rule that, after each session, it was back to Dave and Dori's for a beer or tea and cake. This was a good time to relax, review the day and get to know each other a little better. After a few sessions the individual members created a tight knit and friendly bunch, one of the many plus points of the project.

As house kits started to be released by B4RN they were fitted to houses that already had ducts. As the project went on, dig days changed from just ducting to house kit and duct installing at the same time. By the end of June 2022, after only three months, 97% of properties were ducted and 91% had house kits installed.

From the start of whole project, Dave Henderson worked with Stan Jenkins to identify main feed duct routes through the two villages, and to secure some of the wayleaves required from the larger landowners close to the village for the main fibre feed.

As the project became more detailed and as more households became connected, because of his previous work with Stan, Dave took on the role of dealing with the house-specific wayleaves, talking to owners, planning and agreeing routes, drawing up maps and getting signatures.

Considering both villages are small and most

properties have road side curtilage, there were still 19 wayleaves required, as well as a key one to cover all the connections across Gamblesby village green, which was owned by the parish council.

Once the group's 7mm ducting work started, B4RN's contractors began to install the roadway and verge main 16mm ducts, and the separate runs to all the Toby Boxes, whose location had already been marked by the group. In early June sufficient 16mm ducting was installed to start blowing fibre, to install the main feed from Melmerby to Kirkoswald, and then once this was in place, to the individual properties.

Some of the group had a fun day being shown how to splice fibre, and were amazed at just how hard it was. Tom Sawyer got the prize for most successful splices achieved–two in four hours! Once fibre was being blown, B4RN started splicing, and in late-June the first properties were installed on the network. Some of the group also got involved installing routers, and this proved a great way of showing to the property owners just how fast the service was running, and that their speeds were in line with that promised by B4RN. It was a very satisfying time to see the whole process coming together.

Most properties were online by the end of August, with just a couple installed in early September.

During this latter stage some of the group were able to advise and assist householders with some issues with the new service. Sean and Arnold had already created a VoIP decision tree, and those who needed VoIP were supported in getting a service provision. There was also some work in getting a full wi-fi service in some of the older sandstone houses with very thick walls. Again the group were able to advise and suggest some solutions, most of which were taken up by the homeowners.

As a result of the work carried out by the group at the close of the project there were a total of 11 properties in Unthank and 60 in Gamblesby. A further 3 have subsequently gone live, giving an uptake of 74% including the community centre and the Methodist chapel.



Towards the end of August the group agreed that the work was close to completion and decided to formally disband. After receiving all the householder donations the loan was repaid to the parish council, and the remaining £300 left in the consumables fund was donated to the Gamblesby Community Centre. The last thing done before the group closed down was to have a 'bring and share' supper at the end of October, which also included the members' partners, as a thank you for their understanding during the project.

The highlight of the evening was the B4RNacle award ceremony when the group members received thanks for all their efforts over the past months. The awards were a light-hearted way of recognising the



effort and enthusiasm that the members of the group had given to the project; to have completed it in such a short time was a truly astounding feat.

The 2022 Gamblesby and Unthank B4RNacle awards were as follows:

Arnold Fairless - Versatile Virtuoso

Chris Gibson - Drilling Demon

Dave Henderson - B4RN Botherer

Dori Henderson - Digging Diva and Gardening Guru (2 Awards)

Mike Korner - Mapping Maestro

Sean Moon - Awesome Allrounder

Tom Sawyer - Mattock Master and Splicing Supremo (2 Awards)

Hugh Stewart - Professor of P-Clips

Dave Trickett - Gutter Gremlin

Especially during the last phase of the project installing routers and getting households live, Dave and other members of the group had occasion to contact the helpdesk at B4RN to resolve issues. At all times the helpdesk gave excellent support and resolved active issues quickly and effectively. The group has also been impressed since everything went live by the rapid response to any problems on the network, and the fact that they can ring the helpdesk and get issues resolved promptly.

After all the positives of the Gamblesby and Unthank project and the great satisfaction felt after it was all done, there was only one really sore point in the whole process. This eventually led to a significant change in the way B4RN dealt with things.

B4RN had already indicated their need to stop the dig grants and the group understood this and supported the reasons for this. But the manner in which it took place, and the impact on active B4RN projects already in build, had not been adequately considered, nor had any of the various groups been consulted. B4RN's unannounced blanket email notification price-change letter on 29th April 2022 caused enormous consternation within the group, and to other local groups as well, when they realised the effect on their individual projects and the impact on their group and individual credibility, given that the dig grants were integral in getting households to sign up at the start.

The May Bank Holiday weekend was crammed with emails, phone calls and face to face meetings as the

groups tried to understand the extent of the impact on their projects and how issues arising could be raised with B4RN. It was decided that a meeting with B4RN management was urgently required. Due to the closeness of the May Bank Holiday, most leads were unavailable to attend, so it was Hugh, Dave and Chris Eakin, the Mungrisdale lead volunteer, who were able to meet the B4RN management team in Gamblesby Community Centre on the evening of 4th May 2022. B4RN sent Tom Rigg, Nick Hall, Martin May and Stan Jenkins. Unfortunately, Michael Lee (B4RN CEO) was in Covid isolation and could not attend.

The meeting lasted two and a half hours, and during a painful, and at times very tense discussion the various problems that would be faced by the local groups, should the immediate dig grant removal proceed, were detailed. For those who are familiar with any project work, an alteration in financing is a fundamental change and, therefore, requires a reworking of a project's scope. As each project was at a different stage in the build, each would have to be treated differently.

It took some time before the B4RN representatives realised that indeed that they had not considered these implications, and in the days that followed B4RN agreed to modify the dig grant removal process to accommodate this. It was agreed that all active projects would be completed under the existing dig grant regime, and only new projects would be subject to the new dig grant rules.

While the B4RN management team advised that they did carry out a risk assessment of what might happen when the price and amendment letter was issued, no-one spotted the above fundamental flaw, and no volunteer group or B4RN local champions were asked to review what they proposed. It was an unforgivable error.

While Dave, Hugh and Chris had the attention of the B4RN management team, they also outlined some changes for consideration to improve the wider operation, mainly associated with how volunteer groups are managed. B4RN said no other volunteer group had ever taken the time to provide them with any feedback of their operations.

So this was yet another first for the Gamblesby and Unthank Group–one of many! B4RN took these suggestions away to take a further look to see if they could be incorporated, but we have never had any feed-back.

As a result of the work carried out by the group, at the close of the project there were a total of 11 properties connected in Unthank, and 60 in Gamblesby. Subsequently, a further 3 have gone live, giving a take-up of 74% including the community centre and the Methodist chapel.

Kirkoswald, by Sue Quinn

Dave Ryall asked me for a suggestion for the siting of the cabinet. It was discussed at a parish council meeting and Nevílle Jackson, Kirkoswald born and bred, agreed to survey the area. On the day Dave came he was shown five possibilities. The pros and cons of each had been discussed with Johnnie Haugh,

another parish councillor with an in-depth knowledge of the area. Dave was amazed to be given so many choices with so much thought being given to the resulting effect on the whole project.

We had different people coordinating the volunteer activity in the areas within the parish. My area was Kirkoswald village. The first garden I was asked to give advice on during the dig came as a surprise. It was like confronting the north face of the Eiger and I was panicking as we climbed the different terraces. There were concrete areas, steps, drops of several feet and lots of trees. One of the helpers was John Holiday, father of the house owner of the house next door. He has had an allotment for years, and although he is over 80, he can dig for England. By the time we reached the top John and Bill had the beginnings of a plan to dig a trench to serve both houses and by the time we got back to the bottom, the plan was firmed up to include a third house. John was a great ambassador of the B4RN project despite the fact he did not have a computer and had never used one.

Just before the digs started, I had a major operation and was physically challenged. I went to the site of the first joint dig across several gardens and discussed the plan with some of the volunteers. A couple of days later I met with a few volunteers and watched as they began. Access at one point was a lot easier. It turned out a local had come with his chainsaw to trim a tree and some bushes to help, even though he did not want B4RN for himself. After a long day the volunteers had had enough but there was still some work to do. With all that was going on I forgot about it. Feeling a bit worried, I returned to see the area. It was all done. Hurrah, and thank you to the volunteers who had finished the job.

A big volunteer dig was through the garden of the Fethers pub (The Featherstone Arms). The pub is on the main street, which is a steep hill with rows of gardens with big walls and long drops between gardens. The Fethers was the key to access for several houses so there were lots of ducts to fit in a trench and several trenches going off the main one. There was a big wall to get through first. Then an overgrown area full of brambles and nettles. There was then a long run down the garden, then divisions leading to surface-mounted connections. Needless to say, it was a popular dig with lots of volunteers, and a finish in the pub later.

One lot of connections depended on a long dig across the vicarage garden. The vicar's husband did not want a connection, but the vicar was happy for us to come through the garden. After a long day leaving connections for seven houses, the volunteers came back to our house for a drink. This proved to be the first of quite a few jolly social occasions in the garden. Two couples had recently moved to the village and it was a great opportunity for them to meet some of their neighbours.

Another dig was across the garden of James, who had a bad back, but he kept us going with snacks and drinks.

Irene Sanderson, coordinator from Highbank Hill and project artist and photographer, came along as well as several other volunteers. All the photographs following are from her.

The ducts needed to go in several directions after a dig from the field across the garden through trees and hedges and thick walls. The dig volunteers ended in our garden with a few more alcoholic drinks.

Brian Smythe organised the project in Parkhead where he lives. This was a difficult area, and after a few visits from Stan Jenkins they had a plan.

Nearly all the residents agreed to pool their dig grants to achieve connections. They decided to pay contractors to do the work.

There was a hand-held mole plough across some gardens, some surface mounting and some hard digs.

It was a big job, but one resident, Wendy Smith, a parish councillor and a volunteer for the project, was very pleased with their connection. She and her husband download television programmes to watch later. The old connection was so bad it was only possible to download one a day. The first download with B4RN took seconds.



Stan and Flick explaining the plan to Brian and his team of contractors in the barn.



Graham with the Ditch Witch.



Nadine Dorries meets the B4RN team. Stan, Tom and Nick.



B4RN volunteer Johnny Haugh had to work in small spaces to get the boxes fitted on one property.





#TeamB4RN engineers Pete Henderson and Lucy Hawkins.

Kirkoswald build

A mixture of volunteer soft dig, and B4RN civils team for the hard dig, they took a duct up to every property boundary. In parallel with the installation of the infrastructure, the volunteers were coordinating the installation of the house kits and the final link from the boundary of the property to the properties. In some cases the volunteers performed this work or the residents used local contractors such as Dave Rogerson from Levens and Will Dehany from Middleton. Frank Brown from Cantstfield and Barry Cheeseman from Heversham came to blow the fibre. Trained contractors have become the new normal these days, and it takes the pressure off the local volunteers and frees them for other jobs on the project.

Irene Sanderson, a local artist, started to photograph and draw what she saw in her role as a coordinator. Her work is copyrighted, but examples are shown with her permission. Her work also caught the attention of both Nadine Dorries and Neil Hudson who were very impressed with the quality of Irene's work. Nadine Dorries was the Secretary of State for DCMS, which was responsible for BDUK, and Neil Hudson is the MP for Penrith and the Borders.

#TeamB4RN engineer Pete was spotted buzzing about connecting a customer under a bees' nest in Renwick and Kirkoswald. The suit is thanks to local beekeeper Peter Morgan.

Once the ducting installation was completed, B4RN installed the control cabinets and blew the fibre through the network. The fusers came and joined all the fibres together.

The final phase of the project was the installation of the B4RN routers by volunteers and the go-live of service which occurred between May 2022 and early 2023.



Sue Quinn and her MBE spade award.



Brian Smythe and his MBE spade award.

The last phase of the project also included the collection of the dig grants from residents who had used volunteers to do their work and refund the money to a community fund. This community fund is being used to procure for the parish three additional defibrillators in Staffield, High Bankhill and Parkhead, thus giving access to a defibrillator to most properties in the parish. We are also installing additional bench seats, contributing to repairs in the community shop, and making a significant contribution to repairs and renovation work for All Saints Church, Renwick.

The current count of B4RN connections in Kirkoswald Parish is 266 domestic and business properties out of a total of 466. Free connections for community buildings include two churches, Kirkoswald Village Hall and Kirkoswald Primary School.

Brian Smythe has the gratitude of the parish council and the people of the parish. He received a certificate from the Lord High Sheriff recognising his efforts for the community.

Brian and Sue were awarded Member of the B4RN Empire (MBE) spades for all their work on the project. They were also featured in the Borderlands promotional video. Borderlands Inclusive Growth Deal - the first two years.

46 kilometres of trench was dug for the Kirkoswald project.

Beyond the book

The Borderlands video



First meeting of volunteers took place on the 23rd October 2020.



Jorj demonstrates how to dig a course neatly.



How to dig through farmland.



How to dig through a garden.

The Art Of Achieving Hyperfast Broadband

by Irene Sanderson

Two measly Megabits per second; one Word document of a patent of 10 pages of 5000 words may be represented in as little as 27kb, but one image file if prepared ready for printing on an A5 flyer, may need as many as10 megabytes. My image files kept bouncing back to me as too large for the email postbag. And on the telly at weekend peak viewing, the main picture was of the spinning spiral of internet exhaustion for our hamlet of High Bank Hill.

Month after month, parish council reports on the efforts of Brian Smythe and the parish council on the trail of broadband improvement brought nothing but disappointment. For years they listed investigations, siftings and applications for all the latest schemes.

When the cabinet for BT FTTC fibre arrived in our main village, Kirkoswald, just one mile away, the superfast broadband fell short of us. The sunken conduit for extending the BT cabling is threaded under the verge past our house, but gracing it with fibre was not deemed financially viable; the lids of the inspection pits rotted through and thistles grew up tall in the manholes.



Jorj Haston from B4RN showing the hinging method with turf.



27 October 2021 Renwick: First sod cut by volunteer.



First garden trench.



First house kit box fitted
.



1st of November 2021 saw the arrival of the contractors for mole-ploughing.

In early 2020, Brian Smythe and the parish council found news of B4RN. It was a new dawn. We applied for the voucher to pay for the connection to hyperfast fibre broadband. At the beginning of October there was a meeting for the whole parish to view the plans that B4RN had drawn up. Satellite images of the parish and map version were threaded with coded routes for cables, outlined like arteries for the chunky pipes, splitting into slender lines marked with squares for chambers and into the final individual threads, ending in little cyan dots for connections.

Each household would be connected to the B4RN network by one glass filament no wider than a human hair, along which information would flicker at hundreds of megabits per second. The future was lit up! And immediately, along with Stuart who lives around the corner and whom I had never met before, I signed up as a volunteer. We were desperate for liberation into the wider world and were eager to find out what would be required. However, for 28 years working in my studio at home, out and about all over the place to study and paint, I had little idea of the people living in my community. And now I had to rely on their goodwill and cooperation to get what I wanted.

The volunteers were to work together with each household to find where the fibre could function best in the home, and then dig the trench, get the ducting in place up to the house, and get the kit ready to take into the house.

The fibre is tough, but brittle and dangerous if handled with its sheath exposed. If wound too tight then the light signal is impeded by the bend. Directing it around obstacles, and along the walls, and along the trenches dug through the gardens, and finally through the walls and connecting to the router inside, was a skill, Some work was needed to get the households to complete these preparations as the contractors set to work, up fields and down



Rob Robson and his mighty mole plough and main workforce.



Flick from B4RN came to explain things.



Flick at the meeting in a B4RN.



Determining the course of the ducting.

dales, ploughing in the main trunk duct housing the bundle of fibres.

Twenty three of the 30 households of High Bank Hill signed up. The remaining seven households could not make use of the opportunity, but they too were kept in loop and provided with a connection for the future.

To get our fibre, Stuart and I had to complete the paperwork and then complete the practicalities for the ducting of the fibre from the main trunk into our homes.

We were advised in turn by Brian Smythe and Sue Quinn of the parish council and by Stan Jenkins of B4RN.

I also took on the role of self-appointed artist in residence recording with camera and sketchbook our parish at this change. These photographs and illustrations are a graphic reminder of how the community came together to achieve a long-held dream.

Here are a few of my images...



The following pages are a photo diary of the installations. We have never had such a well-documented project before, and thank Irene for her permission to use them in the book.



Flick explaining what needs doing.





The volunteers and Flick.



Tea break.



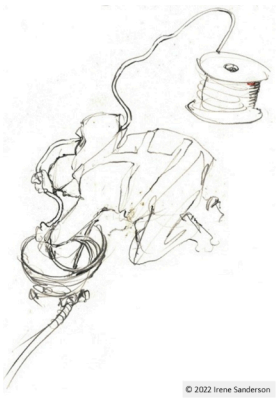
Ready to roll.



Ready to unroll.



Jorj keeping an eye on everything.



Unrolling the duct.



On 15th December 2021 we moled under the road to Renwick Mill.



The 15th December 2021 job at Renwick Mill also involved hand-digging.









By 1st December 2022: we were cutting across the B6413.



On 6th January 2022 we were ploughing in the ducting down from High Bank Hill to the Raven Beck













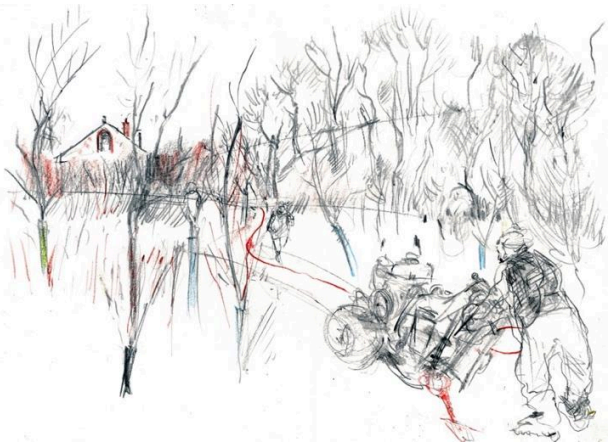


Lunch at the Raven Beck.

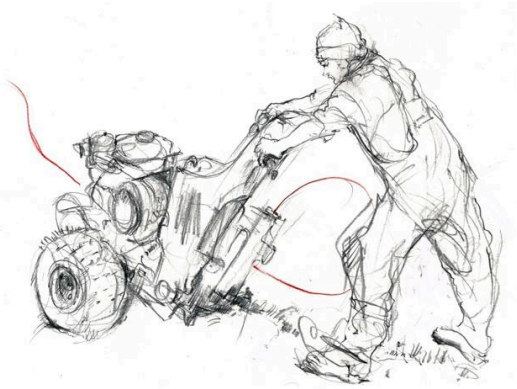


We celebrated Harry's 21st birthday on 10th January 2022.











On the 15th January 2022 we saw Graham using the Ditch Witch plough through the orchard at Chapel House.



Barry, Frank and Flick arrive to blow house fibre with Stan.



Barry using the nano to blow the fibre to Flick.



The 18th of January 2022 saw Flick catching fibre, and inspection of fitted house kits prior to blow from Barry.





Howard Quinn, who looked after the rolls of ducting, let us collect some on the 19th of January 2022..



Duct store.





On the 23rd of January 2022 we were trained how to introduce the fibre into the house.



Dave Rogerson from Levens showed how to thread the fibre through.



Dave mid way through fitting a house kit.



Volunteers fitting house kit.



Dave demonstrating how to fit external house kit box.



Dave with his long drill.





First house kit fitted.



On the 2nd of March 2022 we entered Kirkoswald.



31 March 2022.



Winter.was still with us on the 31st March.



Flick shows the cabinet has arrived in Kirkoswald.



Looking at the terrain with Nadine Dorries and Dr Neil Hudson MP.



Putting places to maps.



Talking to the contractors and volunteers.



Nadine Dorries holds a fibre, watched by Dr Neil Hudson MP.



Secretary of state Nadine Dorries with Dr Neil Hudson MP Inspect the mole-ploughing.



Overlooking the Eden Valley.



The marked spot for the house duct to enter the property.



The plough in action.



Branching off the core with a house duct.



And moving on with the main core.





The 4th of April 2022 found us heading for Renwick and the fellside.



By the 9th of April 2022 we were at Berrymoor.





Stuart was delighted by his connection after hours of digging his trench.





Onwards and upwards to Renwick and the fellside.













Hard house dig..



Easy house dig..



13 May 2022:.



13 May 2022.:



17 May 2022 James Clapham and Rob Staveley fusing.



13 May 2022.



17 May 2022.





Rob Staveley fusing a bullet.









27 May 2022: Entering Kirkoswald.





7 June 2022: Back Street, Kirkoswald.

















Renwick 24th June.





21 June 2022: Gamblesby.



21 June 2022: Gamblesby.



21 June 2022: Melmerby the neighbouring parish going live first.











Renwick 24th June.



New toys arrive.



It is down here somewhere!



Off loaded multi-reeler.



Just missed the traffic jam.



23 June 2022: On the way to Renwick.



The B4RN blowers with Frank.





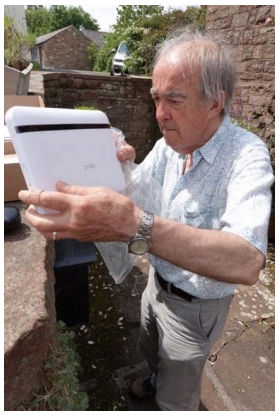


Blowing core duct.





Fleeting core duct.



24 June 2022: The arrival of the routers.





29 June 2022: Renwick.



, Barry and Dave blowing house fibres at Brookside. On the11th July 2022:



The cabinet is live.



Working on the cabinet chamber.



The cabinet.



July 2022. Fusing at Potter Bank.





July 2022: Connecting fibre at High Bank Hill.



Fusing the fibre at a house.



July 2022: Pete from B4RN connecting fibre for house kits.



Elaine from B4RN installing routers.

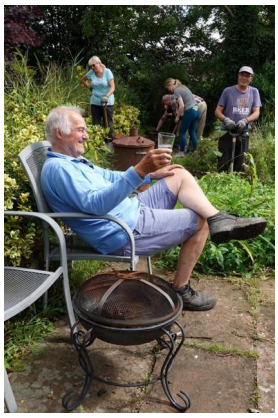
Essential movers



Sue Quinn



Bill King and Howard Quinn.



Bill King



Ruth Anderson, Howard and Kate Hobbs, and Nick Anderson



Sue Quinn and Ruth Anderson.



Nick Anderson



Cindy and Jim..



Brian checking maps.



Stan Jenkins' story

Stan had been a volunteer on the Chipping project when he lived there with his wife Fiona, who was the vicar. He had bought a house in Lazonby a few years previously to prepare for retirement, and he knew the difference between the two connections. He really wanted B4RN in Lazonby! Once they moved in, he contacted the local parish council who told him to talk to Brian Smythe in Kirkoswald.

At that time Brian was checking out all the supplier options for the area as they had the choice of BT FTTC, Voneus and B4RN. Brian had been a project manager and he was very methodical and organised, and after much work and meetings they decided to go with B4RN.

Because Stan had been involved with B4RN, he attended meetings and they offered him the job of community engagement and development officer (CEDO), which is to help communities engage and develop their projects. Covid had hit, and his normal job was on hold as it involved travel, so he took the job. This was in March 2021, a few months before their move to Lazonby.

The breakout point for the connection would be in Melmerby, where B4RN already had a link to the ZAYO fibre. Then it would go to Gamblesby, and on to Kirkoswald. Stan had helped plan the routes in Chipping, so he helped out with all these routes and wayleaves, and found a site for the cabinet and a champion in Dave Henderson for Gamblesby, and the villagers joined in. Gamblesby had already got fibre into some homes from Voneus, but it was fed with a single wireless feed that was not very fast or reliable, so they all signed up to B4RN.

Route 1 to Kirkoswald was completed very quickly and efficiently, thanks to the work of the volunteers, and all the gardens were dug, and house kits fitted. Peter Morgan, a local contractor approved by B4RN, did a lot of them in Kirkoswald, helped by Will Dehany and Dave Rogerson.

Vouchers, as mentioned before, went into a community pot in Kirkoswald. The parish council were the receivers of the money and paid out for drills and drill bits etc. In Gamblesby they did not want a pot, so they turned down the dig grants and asked home owners for a £15 donation to cover their materials costs and the volunteers did the work for free. This kept down the amount of money needed to build the project and was a bit more like 'the old days' when B4RN was starting up—true community spirit.

Stan says the main reasons he enjoys his work is the people, the different characters he meets and works with, and the pleasure of getting the job done with their help.

Stan still has not managed to get his connection in Lazonby. This is due to funding not being available and a lot of confusion over whether BT or Voneus or Fibrus are going to win the procurement. This is a constant battle for all the rural villages. If everyone in the village signed up for B4RN they could apply for vouchers, but one cannot expect people to sign up if they are being told another operator is due to start work in the area.

Nor can one expect people to buy shares in B4RN for the same reason.

Sue has six holiday cottages in Kirkoswald, and with sub-megabit internet she found she was losing business because families with teenagers would not come, as the kids could not do their schoolwork or stream videos or keep in touch with friends. Mobiles do not work unless you walk right down the lane, and the BT phone line crackles and keeps going off. Getting B4RN has meant they can do absolutely anything now, wifi calling means the mobiles work and Sue's newspaper comes in instantly instead of taking half an hour to load. She can administer the business, do DEFRA submissions, online banking and shopping, and she says it was well worth making the effort to get the connection to her property. Strangely enough they used to live in the first house in the country to get rural fibre in 2009! It came in after they left it, but it does seem like it is a small world. Their house is in the rural fibre video in the blue link box.

The Connecting Cumbria project was a great success in Kirkoswald, as you can read in a case study from Sue and Richard Bottom via a link in the blue box.



Beyond the book

Sue and Richard

2009 rural fibre video

A Coordinator's Story

By Kevin Tea

I first used the internet back in the early 1990s when all access was through typed in string commands, very different from what we have today.

In 1995 I joined a four year European Commission project looking at how the emerging technologies could benefit the geographically disadvantaged—Eurospeak for those stuck in the back of beyond. Fast forward a couple of decades and B4RN and a pandemic made working from home, from Kirkoswald, a reality!

As the possibility of a gigabit connection through B4RN became a reality, a series of volunteer roles were identified. As my DIY skills were on a par with Stalin's record on human rights, I volunteered to be the coordinator for my immediate neighbourhood of around 30 houses.

My first task was to leaflet all the households with information on how the rollout would happen. Further flyers were distributed as new stages were reached.

I liaised with the team in the field, literally, and with those digging up roads and pavements for trenches to lay fibre.

It was not a difficult or challenging role, but at get togethers of the neighbourhood coordinators we shared experiences, problems and solutions, all of us binding over one aim—getting ultra fast broadband throughout the village.



Village meeting.



The Great Salkeld team. Carol Beveridge, Janet Bowden, Nigel Patrick, and Donna Webster.

Great Salkeld

Great Salkeld is a small village and civil parish in the Eden District of Cumbria, England, a few miles to the north east of Penrith and bordering the River Eden.

Donna's story

Donna Webster says her work had dried up during Covid, when Nigel Patrick approached her and said, 'I could work with you, can you help?'

They had all talked to Brian and attended meetings, and Nigel understood the difficulties, but then when lockdown happened everything changed. It was all very slow to start with; the world and B4RN had to readjust how things would happen, and they could not hold open events or go door knocking to raise interest and funding. They got a Facebook group running and pushed leaflets through doors. Jenny joined her, and, as she had a farming background, she knew a lot of people and could reassure them that B4RN would be different. A previous alternative network had not been successful in the area, and people were very sceptical about another one.

The outskirts of the village, where there was no decent service at all, were very supportive, and it was like 'pushing on an open door with those people' she says. They were happy to give wayleaves and to help in any way. In order to start the project they first had to get sign-ups, and then raise the funding in shares to bridge the gap between the vouchers and the cost of the build. A very helpful person in the village told them about the top-up scheme run by the council which would match the funding up to the cap put up by BDUK, thus meaning the first half of the vouchers would be double the value, and this meant the money would come in larger amounts when people came live. The amount of funding did not alter, it just came in on the first customers, which helped with follow-on customers.

At this point, Donna remembers there was massive confusion over it all, not helped by Covid and people in government departments working from home, possibly with bad connections. It was really frustrating trying to get answers. The problem with registering and a hold-up with delivery meant vouchers expired, and so were lost to the project. All this took a lot of organising and it was stressful.

Once the Covid restrictions started to lift they swung into action. Stan Jenkins was brilliant, and they held several meetings in the village hall or pub, and he could answer any question thrown at him in his quiet calm

way. There was no need to hard sell, as B4RN sells itself. Slowly, the villagers came to believe what they were saying. This is a prime example of the FOUR As in action. At each meeting the people signed up, and when they had over 50% of the homes signed up, B4RN could get on with the planning.

This project did not have a large management team, basically there was just Nigel, Donna and Jenny, the first As. They did however have many second As, the Adopters. Because of them, and the reputation B4RN already had, and the fact that they had Stan and Helen and Flick from the mothership, between them they won over the Apathetics. As has been mentioned previously, apathetic is not a very nice word, but it covers a multitude of reasons why some people were not interested until it was explained properly to them. This project did exactly that, and the majority became Adopters.



Donna, Nigel and Jenny.



Tony Middleton on the mole plough.

Because they were a team of three, they could make decisions very quickly. The parish council were supportive, and they reported back to them regularly, but did not have to wait for them to decide on anything. This speeded things up, and soon Flick and Helen were there and they walked the routes, changed some of them to suit conditions and landowners, and avoided the few bits where there were issues. Every project has its fourth A, the Anti people, who either demand payment for wayleave, which is impossible with the B4RN model, or those who think the internet is the work of the devil, or those who think people are doing it for what they can get out of it.

With hindsight, Donna thinks at least one of the Antis could have been brought round by someone else approaching them, maybe B4RN could have won them over—but it is what it is. Other parishes have had the same issue, and you cannot win them all. One Anti was particularly galling to her, as to reach a family, they had to do a road crossing, which increased the costs by £5000. Most of the area is owned by three large estates, and she says it was an absolute joy and a privilege to be allowed to walk the routes with the landowners and to note down where they wanted the route to go; she really enjoyed that part. They finally managed to collect enough money to start, and then it all went frantic.

Tony Middleton was the main contractor and he brought the duct up to every property.

As time went on, B4RN really 'sold itself'. She and Jenny still did door knocking in the village centre and chased up holiday home owners, of which there are a large proportion in the area. There was an army of Adopters by now, and they volunteered to do all the garden digs and installs. The dig grants were to go into a community pot. B4RN contractors were also used to do this work, but Donna did the house assessments first to be sure the install was done where the customer wanted it.

When things went wrong Flick was always there at the end of a phone or an email to get it sorted out. The expiry dates on the vouchers were making her feel things were out of control, and she did not know whether she was a mother hen or a headless chicken some days.



Nigel patches in their 100th customer with Tom Rigg, COO at B4RN.

The pressure on organisers was even greater in this area, due to previous altnet provision and the lack of a service from BT, and they did not want to let their community down, or neighbours to think badly of them, she adds—quite understandably.

B4RN by this time had brought in Connect+.This meant people still in contract with another supplier could have B4RN as well for £5 a month if the contract had less than 12 months to go This helped to get more of the installs done at the same time, as it is always harder to go back later to do them, and the vouchers would have been lost. They also had to explain to the third As that they could still pay for Sky or BT Sport even if they were not their internet customers. Donna says she learned a lot! She also met everyone and made lots of new friends.

Great Salkeld is a conservation village, and everyone there is now well aware of the low impact that bringing world class connectivity can have if done properly. A few people said later they did not sign up at first because they did not want to see loads of poles and wires in the village. All B4RN's infrastructure is underground, but they did not realise this. They do now. More people have now asked to join the network, because, as has been said before, it sells itself.

Once the fibre was blown and fused, Jenny helped the B4RN connections team putting routers on, and Donna

helped them set up their devices and check the wifi signal in the old houses. She advised them on mesh wifi boosters, showed them how speed tests can vary, and helped them with alternative landline choices.

She preempted a lot of problems by publishing her own speed tests on the Facebook page to show the vagaries of testing.Donna says that, when she agreed to help Nigel, at first she just thought it would be a few leaflet drops and that B4RN would do everything else. She had not realised that a couple of years of hard labour would be required. But she does not regret it, 'It fits in with my value base,' she says.

Because of Covid, and because BDUK kept changing their minds about voucher,s it made it all harder. The fact that B4RN had all this to cope with too, meant that they were not as organised as they could have been. But as she says, 'Who else would help us'? And they are all so grateful they could work with B4RN and help themselves.

She says her children who live in Sussex are very jealous of her connection.

Donna's advice to B4RN to make things easier for future projects, is a handout showing the different stages in order, subject to government changes. This could speed up the process if people knew up front what was going to be involved and can follow a working template.

After the project was finished they had earned a surplus of dig grants. As customers came live and the voucher money was paid to B4RN, the dig grant was paid into a special fund they had set up for their charity at a local bank. The volunteers who earned it, and the village, decide together where they will spend it. Currently they have had many good ideas, ranging from a generator to keep the hall warm as a 'safe space' during power cuts, safety measures on the main road which is a long straight 'rat run' and solar powered street lights. The village will decide which is of the most benefit to the majority.

Great Salkeld dug 23 kilometres of trench.

Eventually it was to planned to carry on down the Eden Valley to join on to existing infrastructure, but the funding for the southern routes was taken by procurement so the projects stalled, but could probably happen one day as major telecoms providers avoid the rural areas; (as seen in the previous Cheshire chapter).



The Great Salkeld celebration with the supporters.

Mungrisdale



Mungrisdale village hall.

Farmers in Mungrisdale had been lobbying for 20 years to get BT to provide them with decent internet. The hamlet and surrounding area is served by four different telephone exchanges, all outside the parish. Everyone had a dismal service on long copper lines often travelling for miles over the Lake District fells. Each quadrant of the parish had to do its own application to BT, and all were put off with either delays or eye-watering estimates, and no promise of trying to get to everyone in the parish. A community group was formed. They rang B4RN, who said they were not working in the area. Unlike the previous villages, Mungrisdale was nowhere near a connected parish to join on to it, nor were they near a breakout point on the Zayo fibre which feeds the other parishes from B4RN's main feed.

Chris Eakin, who is one of the locals and who quickly concluded BT had no serious interest in Mungrisdale, decided to jump in and persuade B4RN that the parish was worth coming to, despite the obstacles.

Little did he realise it would take over the next two years of his life. He contacted B4RN who said 'No', again. Undeterred he carried on until someone listened to him. He told B4RN there were 150 homes and almost all of them relied on mobile broadband for their internet, and many businesses in the area too. Vouchers could be obtained, and, crucially, upfront, he guaranteed pledges of £150,000 of investment to bridge any gap. This was being promised in private conversations with Chris, from a few individuals, who were desperate for a decent connection. In some cases it was because they worked from home.



The Mungrisdale team.

He gathered around 20 volunteers to join him and B4RN arranged a training session in his garden, and a few also attended the training workshops at Melling.

They went round door knocking to see how many residents wanted the service, as that would determine whether B4RN would take them on—or not. Also in the decision was the voucher and top-up money. The top-up-pot is the fund that a couple of forward thinking councils (Cumbria and Northumberland) have made available, so double the voucher money is claimed up to the cap. This literally means the first 50% of houses get it, and then the money the parish has raised is claimed back when the houses go live and the vouchers are paid out, thus making the money available again to complete the project. But the pot was nearly empty and also delaying them at this time was a lot of rule changes by the government about the vouchers

themselves. It all meant that B4RN could not start a project until they knew what was going on.

The next issue was Covid. That meant all their meetings were online, and with sub-megabit broadband it was a real struggle.Even using mobile data became really unstable because everyone was using up its limited capability.

By the time a year had gone by, Chris was wondering why he had ever started. He felt he could not just walk away, as he had got the people to invest and told everyone it was going to happen, but outside factors beyond his control kept messing things up.



Robson Contractors.



A map of field drains.



The badger sett.

Eventually, things came together and the project was approved. Robson Contractors were to do the digging. The problem then was that nobody could tell Chris precisely when they were coming. When they eventually came to Mungrisdale they could not start work because the farmers were harvesting the grass. Nevertheless, they finally got going and Chris says they were absolutely brilliant.

Chris and some of the group had got wayleaves and finalised the routes ready for them, but the contractors understood farmers, and fine-tuned some of the routes to avoid drains or problem areas. Mungrisdale has more than its fair share of rain and so field drains are prolific. Drains are one of the main reasons a farmer does not want anyone digging in his fields! Some farms are well-documented, but usually farmers rely on memory as to where their drains are. Often it is a case of 'Ring Grandad' but here they knew where they were.

Field drains are usually about 3 feet deep, as that is the optimum for good drainage. The B4RN duct is about 2 feet deep, so theoretically they exist together



High fives.



Minus 13 degrees, as Dave drives up the M6 to carry on working.



One of the remote houses.



Frank Brown and Barry Cheeseman fixing a blockage.

happily. The problems come when either drains go shallow over a dip, or erosion has worn land away.

But one crisis took everyone by surprise. A well-known area of badger setts expanded unexpectedly and suddenly a length of conduit and fibre was running right across the top of a new badger tunnel. Over the coming days, B4RN staff had to endure jokes about badgers and their wifi connections while sorting the issue out. Chris says B4RN dealt with this with remarkable efficiency. With cooperation from the farmer, they changed the route and Robsons moled right round the opposite side of the field again to avoid them.

There were high fives all round heading back over to start Route 1 at Mungrisdale Near Keswick.

B4RN then changed the rules about dig grants. This was explained in a previous story, but Chris also met the B4RN management to make it clear to them how it had affected the credibility of the organisation in his community. He had promised everyone they would get it and it was now all his fault they would not. Luckily they won the battle and the community got the grants. This was a lesson learned for B4RN, but, again, another very stressful and time-wasting matter for the project to deal with.

Tim Farron, a Cumbrian MP, campaigned on their behalf, because at one time it looked like they would not get any vouchers as BDUK and B4RN seemed to be in chaos.

Some of the villagers dug their own gardens to get the duct through, but the majority was done by B4RN contractors. Dave Rogerson from Levens was a constant visitor, shooting up the motorway to fix the house kits on the wall. It was -13°C one day when he was heading up there.

Eventually the job got done, and Frank and Barry came to blow the fibre and deal with blockages.



Tea and mince pies for the fusers.



Fusing the bullets in the field chambers.



Fusing the chamber bullet to bring everything live.

B4RN sent in the fusers to work their magic and Matt, one of the house fusers, got tea and mince pies.

The cabinet was installed at the village hall and the project was live.

This project did not use any volunteer labour during the blowing and fusing phases; B4RN had taken all this off the volunteers' shoulders as they morphed into a professional telecoms company.

The village hall hosted the cabinet and got a free service, for which they are very grateful, having only had half a meg before. They can run their classes much easier now, wifi calling works and everyone is very pleased with the quality.

The Quaker meeting house also has a free service, and they think it is wonderful. So do their guests. They run a coffee shop/cafe for the fell walkers and the money raised goes to a charity—the Northern Fells—which raises money for vulnerable people.



Sharp Edge on Blencathra. Photo by *Chris Eakin.*



Sharp Edge on Blencathra. Photo by *Chris Eakin.*



Swineside in Mungrisdale. Photo by Chris Eakin.

The Mill Inn pub loves it, as do their guests, and more stay there now as it has a decent internet connection.

The parish boundary is Sharp Edge on Blencathra, an infamous mountain rescue spot, and they get lots of walkers.

They had a party; the official switch on for B4RN in Mungrisdale involved a local farmer's turnip cutter! More than 70 people, including local volunteers, were at the event at the village hall



Chris was awarded the MBE spade for his remarkable staying power and helping his community get its Gig.

Mungrisdale dug 60 kilometres of duct in their project and had about 90% take up in their central patch.

It took two years from start to finish, with the bulk of the actual build being done within 6 months.

Chris Eakin and his MBE spade award.



The village party.

When they went live Blencathra was featured in the publicity.



Farmer's daughter Kristina Fell made the local papers flying the flag on Mungrisdale's parish boundary - Blencathra's Sharp Edge.

THE KESWICK REMINDER

CHUFFED TO GIGABITS WITH VILLAGE'S NEW BROADBAND

Decade-long battle to end community's digital deprivation is finally over



MAKING THE CONNECTION: Farmer Robert Jackson bursts a balloon in a turnip cutter to fire a blast of air down a conduit and switch on the fibre broadband.

MUNGRISDALE in the Northern Fells is going from being one of the most digitally deprived parishes in the country to one of the best served.

Full gigabit fibre broadband has gone live at Mungrisdale Village Hall. It is a key moment in more than a decade's battle to end the broadband isolation of this forgotten corner of the Lake District.

Half of the parish is open fell with the boundary running dramatically along Blencathra's Sharp Edge. Neighbouring areas have commonly had fibre cabinets in the villages for years while Mungrisdale has been left to struggle on with yesterday's copper wires running for miles and miles from four telephone exchanges all which are outside the parish.

For two years, volunteers led by former BBC News Channel presenter Chris Eakin, have been working closely with B4RN, Broadband for the Rural North, based in Lancashire, to bring fibre not only to the parish but directly to each of 150 properties – so called fibre to the premises.

B4RN is active in parts of the Eden valley but its network is 15 miles from Mungrisdale so locals pledged a minimum of £200,000 investment to ease the burden of the extra cost of bridging the gap from Penrith.

As a not-for-profit, community organisation, B4RN lay their fibre across farmland without paying the landowners. In Mungrisdale, almost all of the 50 landowners agreed to sign a wayleave. It is a process run entirely by the volunteers.

"It simply could not happen without the goodwill of the landowners, who are mostly farmers," said Chris Eakin.

"This feels like a once in a lifetime opportunity for Mungrisdale. Most people understand that broadband is the latest vital utility. Yet, without B4RN, there was a real danger we would be expected to muddle on with mobile or satellite broadband and all their weaknesses and expense. That risks exacerbating the digital divide.

"A B4RN project is about self-help. We have had 20 volunteers on this. It absorbs colossal time and energy but without that commitment you get left behind. Now, our parish has a couple of off-grid houses with no mains electricity but full gigabit fibre broadband. It is incredible."

Dairy farmer Steven Hunter, in Berrier, is looking forward to getting maximum benefit from a quarter-of-a-million pounds investment on three robotic milk and feed machines. They look after 160 friesians, and the remote monitoring will now be more reliable with fast internet.

"This is quite something," he said. "And I might even use online auctions. I haven't dared before now because they keep buffering."

On the day of the official switch-on, village hall trustee and B4RN volunteer Mike Sutton said: "Yesterday we had about half a megabit dribbling in on the old phone line. Today, it is 960 megabits. I can't believe Mungrisdale has gone from bottom to top of the pile!"

The first 35 house have gone live this wee and the whole proje should be finished with a few months.



CONNECTED: Resident Kristina Fell flying the flag for Broadband for the Rural North on Sharp Edge.

"Yesterday we had about half a megabit dribbling in on the old phone line. Today, it is 960 megabits"

MIKE SUTTON

Article courtesy of The Keswick Reminder.

Chapter 19

Staff and Directors

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Staff

We start with a volunteer's story about the time we got our first office at the Auction Mart, when we did not have any staff at all, and the whole network was being built by the communities.

Judy contributed her three ha'pence by tying patch leads for the cabinets and checking the answerphone service. Obviously, as more and more people were connected, it became necessary to have a help line to field queries and problems. I would check the messages first thing in the morning and Judy would do the afternoon round-up, which was far busier. Most of the queries had to do with payments and the setting up of standing orders, there was very little technical help needed, apart from the odd person who managed to stay connected to their old provider and couldn't understand why their service was no faster. It was with great relish that all problems, perceived or otherwise, were solved with speed and alacrity. usually by Ian Threlfall, Pat or Barry. Even serious problems, such as United Utilities just happening to sever the fibre before a B4RN Show and Tell event, were solved with speed that made the incumbent look pathetic. A couple of hours was the benchmark – none of your 'We'll be there a week next Tuesday' malarkey.

The tying of patch leads was just a little side job to be undertaken at home sitting on the settee. This was just in case Judy had any time she needed to fill to ensure that she was never idle! It is a simple job of taking small pieces of cable out of their delivery bags and cutting them to a certain length before putting them back in a single bag. This saves time when splicing. It is a great help to arrive at a cabinet with the patch leads already together rather than having to stand in the cold opening up to 288 bags with icy fingers. It's a good example of all the seemingly tiny things people can do to help, which make everything run more smoothly and swiftly.



Judy was also instrumental in the setting up of the B4RN office in the old Barclays Bank building next to Lancaster Auction Mart. Before B4RN was a viable business, all the office work was managed by volunteers, but it was essential that our admin processes were capable of coping with the expected volume of clients in the future. So, a crash course in bookkeeping and 'Learn Yerself Sage' was Judy's brief. Other game people helped, and a good team was born that kept things in order during the early days. Iain was once again called upon to make shelves and fittings to furnish the office and house records and kit. There were many trips back and forth to Lancaster to ensure the office space was business-like and habitable. The old Barclays Bank sign needed to be painted over, but proved to be a bit of a challenge. It was obviously made of something plasticy that didn't like to be covered in paint, but after several coats only the ghostly outline of Barclays remained and a banner proclaiming B4RN was hung about the main entrance.



The Management committee.



Kristina Fournier.



Jennifer Schofield and Amy Lis.

Until 2015, B4RN was managed by Barry and a management committee formed from the WenNet group and representatives from the original Phase 1 parishes. Mary Jackson had joined as the company secretary, but as B4RN grew there was a need to formalise the organisation. Barry and Monica were appointed as directors, and Monica became Company Secretary. A new office and depot was found at Melling.

Volunteers had been helping Barry with all the accounts, Mary dealt with all the standing orders and customer records, Pat Close from Arkholme and Judy and Sheena from Lowgill had manned the phones and helpdesk. Monica worked with Barry on the organisational side of things. Now, Monica brought in more staff, often recruited from volunteers or their families, all local folk.

Kristina Fournier was taken on shortly after Alistair, to head up the administration and be general office manager. Her great expertise was honed by working within French financial systems. She dealt with the customer accounts and joined Monica in managing the share register. As B4RN grew rapidly more help was needed with accounts, phone calls and paperwork in general, so two more office staff appeared, and together they made an awesome team. Amy Lis was the first, shortly followed by Jennifer Schofield. These two were favourites of the Dent champions who sent them some chocolate lollipops. They still work at B4RN but in more senior positions.

Pat carried on being the helpdesk until we could afford more staff. Pat had been a volunteer from the early days, always bringing tea out to the diggers and helping with fleeting when the blowers came. She also learned how to fuse and helped with house installs. Her knowledge of IT came from a career managing the department for a secondary school, and dealing with customers came naturally to her. The volunteer helpdesk who triaged all the calls learned how to do the easy ones and passed the harder ones on to Pat. In those days they were escalated to Ian Threlfall if investigation was required on the network, and he liaised with The Networking People aka TNP who helped with the technical side before Tom joined us. Ian was one of the original management team and had run the WenNet wifi network.

Pat didn't want a full time job as she was retired, but she agreed to be a contractor and often works three days a week, and covers for the helpdesk at weekends or evenings when needed.

Pat's story

I got involved with B4RN because we have a farm that was never going to get a normal commercial broadband connection, and the start of the B4RN project coincided with my retirement as the network manager in a large secondary school. I wasn't in quite at the start but soon got involved,

The call came from Chris one morning; 'Pat' she said 'I've got a digger available if you can find him somewhere to dig.' A phone call to one of our local farmers who had already agreed in principle to allow us to lay duct across his land and the Arkholme phase of the B4RN dig began. This didn't come out of the blue; it was the culmination of several months of planning, fundraising and negotiating with local landowners, but at last we were off. B4RN was coming to Arkholme.

Once the project was underway my involvement went through various stages.

The Tea Lady

The first phase of the project was very labour intensive. There was lots of hand digging and dragging duct around, which my back wasn't up to. So I became the Tea Lady. Volunteer diggers ran on tea and cake so I brewed up three or four times a day and carried it out to wherever they were digging. I'm sure there are photos around of me struggling across muddy fields carrying my red crate of hot drinks and biscuits. There may even be a picture of me flat on my face in the mud after my welly stuck in a sink hole, but still the tea got through.

I wasn't alone. The B4RN army marches on cake, and keeping them supplied could be a major operation. Ones that stick in my mind are the home-made scones with jam and cream served by one Arkholme household and the cherry cake that fuelled the Whittington dig.

The Technician

Once enough duct was in place we needed to start installing fibre. With the help of technicians from our suppliers we learnt the arts of fibre blowing, fleeting, catching sponges and all the other skills needed to get the fibre into the various properties. This was new territory for me, but it soon became second nature. I was involved with most of the projects fed from Arkholme, and Chris tells me I keep popping up in her photos all over the place.

From installing fibre I moved on to splicing FTUs (fibre termination units) for Genexis routers. Most of the villages on the Arkholme end of the project have FTUs spliced by me. It wasn't all without incident; I have another claim to fame as the first entry in the accident log. I stood up too quickly after kneeling on the floor splicing an FTU, and when I put my weight on the foot, which had gone to sleep, it gave way leaving me with a nasty sprain.

Configuring Genexis routers was another of my jobs. In the early phase these had to be configured individually. This involved connecting them to a network and manually copying the configuration onto them. The installers never had enough pre-configured routers so I spent many evenings sitting at home copying the config onto new routers which could be dropped off where needed the following day. Ian Threlfall from WenNet did a lot too.

The administrator

As the network grew it soon became obvious that the administration wasn't keeping pace with the installation; someone was needed to make sure that the accounts were set up in a timely manner. B4RN moved on to receiving money by direct debit by 2015, and now the direct debit has to be set up before the connection is turned on. But then getting customers live was the priority and banking almost an afterthought. This became my job along with checking deliveries at the auction mart office. One of my memories from this time is having a delivery of around 200 routers for which the serial numbers had to be entered into the system. Two of us spent the best part of a day doing this and I'm sure there were numerous typos and errors. The next day a bar-code reader was ordered so we wouldn't have to go through that again.

We all sighed with relief when Kristina arrived to take over and bring order to the office. I carried on helping with the bookkeeping until Catherine was taken on and I could move onto something else. A sign of how B4RN has grown is that the first time Kristina and I prepared the paperwork for the end of year accounts, she took three lever arch files of invoices and related documents to the accountants. Recently the files containing the equivalent documents occupied a shelf running the full length of Kristina's office.

IT support tech

With the administration under control and more volunteers learning house kit installation, I moved back into my home territory of tech support. There was no formal support system, we didn't even have a dedicated phone line (or anyone to man it full time). Emails and requests for help mainly came in by word of mouth through the volunteer chain and were passed along until they reached someone who could deal with them.

Most of the queries were to do with setting up the system, understanding speed tests, connecting to wifi and getting the wireless signal through the house. It is much the same with today's issues.

Fibre breaks were rare although we did have some bizarre ones. I remember one 'should have gone to Specsavers' moment where someone removing a garden hedge was cutting through the roots and thought some of them were a bit strange. He only realised what he had done when his and his neighbour's internet stopped working. Animals knocking connectors off the outside wall, rodents chewing fibre and runaway lawnmowers cutting through fibres were also not unknown. One of my favourite stories was a cat tangling itself up in fibre that had been blown into a property and was coiled up waiting for final installation.

Once we moved to Melling there was the opportunity for a more formal support system. For one thing there was more room for staff. A receptionist was taken on so phone calls could be answered and messages taken. There was still a degree of passing calls along until they hit someone who had the answer. I learnt a lot about wide area network infrastructure, which was new territory for me, and about how Genexis routers worked.

Slowly the team grew from two part-time staff (me and a network support engineer part of whose job was first line support) backed up by Tom when needed. Today we have eight full-time tech support staff on the frontline. They are backed up by a growing team of connections and network support technicians. But the queries aren't much different from those of the early days—internal wifi coverage, apparent slow speeds, getting their devices to connect to the wifi and suchlike, with the occasional 'I've put a spade through my fibre' type call.

Eleven years on I'm still around; I don't do as much now, I spend a few hours a week in the office helping out on the phones, but I work mainly from home, fielding emergency calls in the evening and helping out if there is a major outage.

I'm also the link between the support desk and the BUG (B4RN User Group) which meets on Zoom every Friday and runs its own Facebook group and website.



The computer club on Zoom. L/R Pat, Chris, David, Hugh, Phil, remote groups



WenNet club in the cowshed.



The computer club from the WrayNet days in Wray Institute.



Ray and Patrick, stalwarts of the club, get their spade awards



At a computer club workshop on home network security.

How times have moved on! The first computer club in Wray in 2003 consisted of 4 desktop PCs that were shared by the village, and meetings were also held in Brenda's 'cowshed' where the photo shows her showing Rosemary how to book show tickets online.

Now everyone has their own device and can also join in online. Remote groups can still join in via Zoom.

The old computer club from the Wray and WenNet days is now renamed the B4RN User Group or Bug.

The group carries on meeting. Even though most people do not have computers any more, they are more likely to struggle with getting wifi to multiple smart televisions or smart devices in their homes. Gone are the days when the internet mainly fed a single PC in the home. The internet of things (IoT) is amongst us, wifi calling on smartphones means that in many areas where there is no mobile signal, people can use their smartphones with wifi calling now if they know how. Choosing which VoIP service is another issue they can advise on. It is also a social gathering every Friday. https://www.thebug.org.uk

The BUG is available for anyone who needs help, whether it is for their own connection or for help in building their own network. The volunteers who attend the Zoom meetings have a vast range of experience between them.

They also have resumed the actual meetings which stopped during Covid, and meet on the first Friday of every month, as well as virtually too, at Melling. They really enjoy sharing apples.

Once we got enough customers and income coming from them, and Monica had sorted the loans with Barry, we got our new premises in Melling and could start paying staff. We took on Alistair first, he was a fusion splicer by then. We had originally paid Bruce and Iain in shares, but then took them on properly as staff. Kristina, Amy and Jennifer managed the office, but Barry needed more help with the network.

Tom joins us

Tom Rigg had been one of the early volunteers, writing to B4RN in August 2011 to offer his help even before we had launched our project. Below is his first email.

FTTH Broadband for the Rural North. B4RN ×

Tom Rigg <tsrigg@gmail.com> Wed, 24 Aug 2011, 10:21
to info, Stuart, bobmuirhead26

Hello,

I have recently been made aware of the B4RN project and would like to express interest in becoming a part of it, I work within the team that supports the CLEO network (Cumbria and Lancashire Education Online) for Schools, we specialize in providing high-speed broadband connections across the two counties, this includes tackling rural areas in order to reach all of the schools.

I used to work for "Lancaster University Network Services" which, until recently, supported the CLEO network, I have now been TUPE'd to "One Connect Limited" doing the same job.

There are three of us in our team here that would like to be a part of B4RN, we are myself Tom Rigg, Bob Muirhead and Stuart Wilson. We posses different skills that can all be put to use within the project. I specialize in Dark Fibre connections to rural schools dealing with G655 and G652 types of fibre, from splicing in Bullet enclosures sat in road side chambers and splice trays in comms cabs, to lighting the fibre and applying configuration to the routing equipment to make the connection live. I have listed some of my qualifications below that I think are relevant to the project:

- City and Guilds 3667-02 Combined Unit 2 Internal Fibre and Unit 3 external Fibre Completed at LUCID Optical Services Ltd in Sedbergh.
- Streetworks Traffic management - Signing,Lighting and Guarding.
- Construction Skills Certification Scheme.

Bob Muirhead has worked with myself on various Dark Fibre connections and has expressed interest in the technology, so he would be a great candidate to attend one of the City and Guilds courses your offering. He currently specializes in copper connections to schools, mainly ADSL2+ and SHDSL including configuration work on the DSLAMS to make the connections live.

Stuart Wilson is part of our Radio Broadband project connecting schools across hard to reach areas, in relation to B4RN he has experience with cable ducting from chamber to chamber and installing Telecom grade 48v UPS systems in roadside cabinets. He is our fully qualified electrician who is extremely hard working and will always get the job done.

As local people from Silverdale, Caton and Carnforth we are all for seeing this project a success and would be proud to be a part of it. The idea of taking shares for work at the beginning sits well with us, I hope you feel we would be suitable people to help out.

Thanks,

Tom Rigg.

Elm House, Cove Road
Silverdale
LA5 0SQ
07977594353
07997030559

Tom's first email to Barry.

Tom had worked at LUNS and moved to OneConnect when the council gave them the contract to maintain CLEO network. He carried on helping WenNet and Nick, and he got the feed into the village for the NRSP unit's new project. This involved a bit of subterfuge, but in improving the feed to the school, the Living Lab and WenNet were able to continue for more projects.



Tom's sponsored duct, under the car park at Abbeystead.

Tom came to volunteer help to B4RN in 2012, before any of us learned how to do enclosures, and he did a lot of work, installing the enclosures (bullets) and trays in his spare time and taught us the tricks. The sponsored duct with his name on is buried in the trench at Abbeystead Hall car park, which takes electricity to the cabinet and fibre into the hall. As soon as we could, we employed him. Tom became our COO. (chief operations officer).



The bullet Tom did to bring Bleasdale live.



The WrayNet and WenNet feed at the village school.



Tom bringing the BT feed live for the university project.



The cabinet Tom brought live for WrayNet and WenNet.

The photo is the bullet that Tom did in the Bleasdale breakout chamber.

Tom says, 'I went from OneConnect Ltd (Openreach) back to Lancaster University (LUNS) first and had an even more secure position there, career path set out and all that comes with it. And I remember the phone call when Barry rang me at work in 2015, he asked if I was in... The look on the uni guys' faces when I didn't hesitate, it was a done deal on that phone call.

'I valued what B4RN stood for, its direction, and what it was doing in support of the communities, it reminded me of why I went to the uni in the first place–we were connecting rural primary schools with 2-10Mbps over dial-up and ADSL and making a difference in their lives.

'I didn't care about the money and job protection I got at the uni, it was like I was set free and I've loved every minute since!'

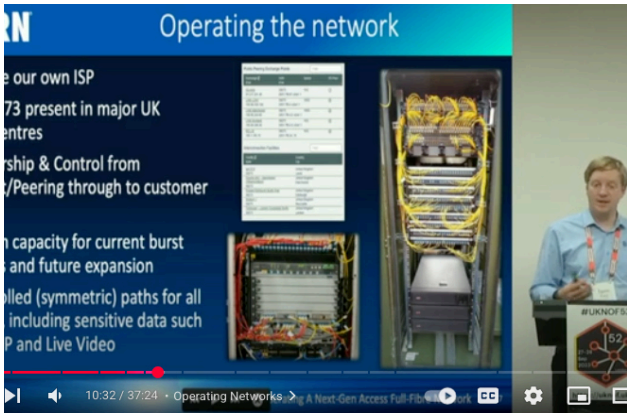
Tom still runs the network and has trained many more who have then become staff.

He is often a speaker at industry events as B4RN is leading the way for rural builds in the UK

LINX114: Physical Infrastructure: Challenges in Build for AltNets (Tom Rigg, B4RN), and also many other presentations for others who wish to do similar work.



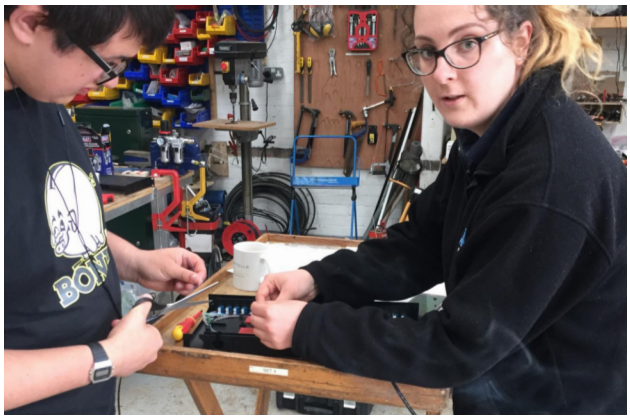
Tom presenting at industry events.



Our network.



More space for duct deliveries.



Hugh Tamlin and Alex Colton building cabinet trays in the workshop.



Civils work in Kirkoswald. Photo by Irene Sanderson.

He's also implemented the upgrade of the network with the Halo project to enable a 400 Gbps resilient loop round the UK [The Heart of B4RN I Kubus I Juniper - Short Version]

Tom also speaks at our showtell days and helps new communities understand the ethos of the organisation.

Tom is now our chief executive officer and a director of the company.

The new office space at Melling had a huge storage yard, and used to be the village station. It also can accommodate larger deliveries. Bringing the world to the village suddenly took on a new meaning. The workshop enables staff to work on the cabinets before they are delivered to site, preparing the electrics and installing the fittings for trays and switches. This saved using the gazebo or Frank's caravan trailer and made it all more efficient. Repairs and preparation could be done in there and a large storeroom for stock meant it could be kept dry and clean instead of at a farm outside in the weather.

There is a huge network operations centre upstairs where staff monitor the network. It also became the helpdesk centre when more staff were taken on in the years between 2016 and the present. Martin May was the first helpdesk employee, and as time moved on more staff were taken on.

Initially TNP staff (The Networking People) who had originally formed out of the Lancaster University Network Services (LUNS) had helped Barry run the network side of things. Once Tom Rigg (also one of the LUNS team who had helped the WrayNet and WenNet network projects) came to B4RN, he recruited and trained staff to do the management of the network.

B4RN were granted code powers in 2016. This meant they were allowed to dig in public places like roads. This really speeded up deployment of

networks, as council permits had been very expensive and took a lot of time to arrange.

A civils team was formed, which undertook all the streetworks jobs, and blowing of core fibre with Frank and Bruce. When PIA (Physical Infrastructure Access) came in and we could use Openreach ducts, they managed all that too.

Local youngsters were taken on as network engineers, and have been trained up to senior level and run the core team under Alistair.

As the years went by even more staff were needed. We now have a fully-staffed helpdesk of staff and NOC engineers are on call 24/7. We took on staff for organising vouchers when the funding became available as vouchers are a big administration headache.

A full connections team is also available now. This replaces many of the jobs the volunteers used to do, but a more professional approach is needed due to the volume of people wanting to connect.

Story of the blue pound

If you paint a pound coin blue, and use it to pay someone and then track it, the length of time it stays in the community reflects how sustainable that community is.

We now employ 80 local people. They are paid in blue pounds; they buy their meat from the butcher across the yard, their lunches from the local cafes and spend on groceries and stuff in the local shops. We pay our shareholders interest on their shares. We supply local small schools and churches with a free service (saving blue pounds). We also bring jobs into the area, which helps us gain local support.



B4RN to Botton Head

By Catherine Taylor

We live over 6 miles from the telephone exchange, so our internet was never much good. As the World Wide Web grew, so did our sons, and increasingly, we wanted to be online.

We tried a dongle, which was fine for a year or two, then satellite, but that was an expensive facility– especially when you went over your allowance.

Along with a few neighbours we looked for alternatives for rural connectivity. Then came B4RN. Andrew attended the launch meeting at the Storey, and was one of the first investors in B4RN. We got involved because of talking to the WrayNet and WenNet people, and started engaging with locals who would take part in and support the project. A public meeting was held at Tatham Fells School and things started to happen.

It took a while to get wayleaves. Direct connections don't always work; there are objects and sometime landowners in the way but alternatives can usually be worked out.

Trenches were dug and duct was laid using diggers, not mole-ploughs. Robert had been involved with digging in Quernmore, and along with Andrew and Stephen, helped take the route through from Thursgill, Greenbank, Dixons, Botton Head, Whitray, Bank End, and Lythe Bank. Despite some challenges it got done, and we had a connection in March 2015 when Iain and Al came with the B4RN splicing trailer to splice and connect.

Just as we were connected we were looking forward to submitting our Rural Payments Agency (RPA) forms online when they put it back a year and wanted it on paper!

I started working at B4RN in 2017 when there was about 20 staff. There are now around 80. I enjoy my work, and knowing we are improving connectivity in the hard to reach rural areas is rewarding.

My role is interesting and varied. I consider myself fortunate to work in a modern office with great colleagues and happy customers.

My story, by Monica Lee

B4RN started as a thought in the early 2000's . A long time ago Barry and I put together a proposal for a wireless network for Abbeystead. That was shelved for lack of funding, but later Barry came along with the suggestion of a community fibre network covering the seven parishes between Quernmore and Arkholme. He had been working with WenNet CIC who had created a fibre network in there local area and evidenced its possibilities. The reasoning behind the geographical spread of the plan was the possibility of accessing the main north-south trunk fibre route at two points, one in Quernmore and one

in Arkholme. Barry had also discussed the Arkholme end of the proposal with The WenNet group, and we joined them to try to make progress with it.

In 2011 Barry, Chris and Lindsey Annison registered an Industrial and Provident Society under the name B4RN. We chose this company structure to ensure that the society's assets could never be sold and would belong to the community in perpetuity, formalised the management committee. This expanded as activists became aware of B4RN and bought into the idea. Exciting but scary times. Initially, we met in people's houses, and then, as B4RN grew in size, in village pubs and village halls.

We were desperate for money and investigated various possible sources of funding for the project. Barry had submitted a proposal to the Defra Rural Development Programme for England for £750,000, in partnership with Lancaster City Council, for funding for a FTTH network. The bid was successful, but was integrated into LCC plans. This was done on the explicit understanding that B4RN's element of the project would be maintained. To our intense frustration this did not happen, largely because of the involvement of BT, and so we lost this funding. We sent an open letter to Eddie Sutton, who was the Assistant CEO, in County Hall, Preston. (see a copy of the letter at the end of this chapter) This was eventually discussed in Parliamentary circles, and the relationship between OpenReach and the LCC was finally put under scrutiny. Unfortunately, too late to help us. We were rather disheartened after this experience, and gave up on hoping for government grants, so we decided to proceed on the basis of the network being entirely constructed and funded by the community. The proposal was for a 1000Mbps connection to every property in the seven parishes, at a time when the officially stated government position was that a connection speed of 2 Mbps would be satisfactory for the lifetime of any network currently being constructed.

We managed to bring enough landowners on board to lay fibre from Quernmore cabinet through to Abbeystead, and enough community investment to pay for the fibre and ducting. This was principally raised through shares in B4RN, and loans from the community that were secured against B4RN equipment of similar value. No bank would support us. In 2013 we got the loan of a Land Rover from the Prince's Trust, and secured a loan of £300,000 from the Esmee Fairburn trust in 2014, plus a small grant from the Lancaster University Turbine group. All of these were exceptionally important for our survival. B4RN's finances remained very fragile for many years, with much anxiety about stalling creditors for long enough until new investment became available to cover previously incurred debt.

We succeeded in generating national interest in the project. John & Andrew Metcalfe from Hare Appletree, conducted the well-publicised first dig on their land on March 15th, 2012, attended by Eric Ollerenshaw, MP for Lancaster & Fleetwood, and around 100 volunteers, setting B4RN and Quernmore on the map. The One Show came to see us on 23rd May 2012 (https://b4rn.org.uk/about-b4rn/news-events/bbcs-the-one-show-b4rn-feature) and Maria Miller, the Secretary of State, visited on 30 April 2013 https://b4rn.org.uk/about-b4rn/news-events/a-grand-day-out. We hosted both of these at my house as B4RN had no premises. Later, Prince Charles (now HRH King Charles) came to see B4RN on 1st April 2015, and he made our 1000th connection.

In 2014 we rented a small office at the Lancaster Farmers' Auction Mart, and at the same time employed our first two paid staff, Kristina Fournier for office work and Alistair Adams-Huset for fieldwork. In 2015 we moved the centre of operations to Melling. The loan from Esmee Fairburn placed a charge upon the company, and interactions with other bodies necessitated more formal governance structure and hence a Board of Directors. Most of the management committee chose not to come on the board, so Barry and I became Founding Directors. Barry was Chair, and I replaced Mary Jackson as Company Secretary.

Much of the volunteer work described in this book focuses on digging and installing - we focused on the office bits. Things like developing a robust (financially, and legally sound) system for share purchase and withdrawal, the management of EIS certification and of payment of interest; insurance and contracts with external agencies; setting up HR systems and benefits from scratch for our brand new employees; and establishing the community loans, which eventually amounted to £3.5 million in round figures. Lots of communication with volunteers, landowners, shareholders and stakeholders - all the basic office and finance jobs that are needed to get the whole thing moving. We were proud of what we did, even if no one really noticed!

The original thought processes and ways of working, which had been appropriate for an organisation of volunteers with no employees, were still dominant as B4RN grew to 35 staff over a couple of years. Working with volunteers is different to that of structuring and managing an organisation of employees; particularly an organisation with a hard job to do in a rapidly changing environment, and we needed to develop a culture that accommodated working with both volunteers and employees at the same time. We worked towards an organisation that was agile, with an emergent, strategic focus that was committed to the best service and quality and treated people internally and externally with respect and support. An organisation proud of itself and what it stands for. From the beginning we supported both flexible working, and home working – features which after Covid are now commonplace, but at the time were definitely a bit strange. We also put effort into keeping in touch with the wider community developing a system of social gatherings which were well received but sadly stopped during Covid. We succeeded in creating an organisation with proper regard for employment law and workers' rights, with an appropriate structure for both paid staff and volunteers working side by side.

B4RN is now a very different company to the one we started with – it covers a large area and provides superb leading-edge, resilient, sustainable, environment and climate-friendly service to all who want it within B4RN-land. B4RN is well known as a leader within the industry. - and has come a very, very long way from its humble roots. But one thing has not changed. The B4RN ethos is a family one, of quick friendly help and respect for all – be they staff or customers, old codgers or young hopefuls. B4RN remains rooted in its communities, and would not survive without the continued support and good will of volunteers, diggers, tea and cake providers, landowners and investors. B4RN helps communities by giving free service to communal places, social tariffs and working towards reducing the digital divide. People normally see and praise B4RN as a network builder and provider, but we were innovative in much of what we did. The B4RN culture, organisation and governance did not happen naturally. We have fostered it from the start and are determined to maintain it.

Directors


Chris Carr, Chair

Chris Carr

Director and Chairman. Chris Carr is a Yorkshireman by birth and studied law at Oxford. He was Principal of St Martin's College in Lancaster for 10 years and the first Vice Chancellor of the University of Cumbria before retiring in 2009. He is a Deputy Lieutenant of Lancashire.

Chris lives in Aughton and with Hilary championed the drive to bring B4RN to the village. Chris remains active in digging in the B4RN network beyond the boundaries of Aughton and joined the management committee of B4RN early in 2015.


Monica Lee. Company Secretary

Monica Lee

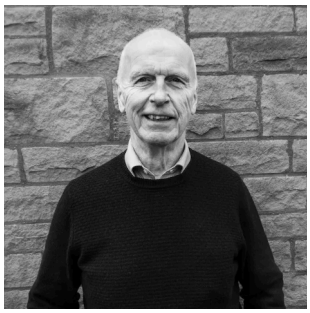
Director and Company Secretary. Monica Lee was Visiting Professor of HRD at Newcastle Business School, and based at Lancaster University Management School for many years.

She has worked with a wide portfolio of organisations in the UK, Central Europe, CIS and the USA, coordinating and collaborating in management development, research and teaching initiatives. She is a chartered psychologist, and is a Fellow of the CIPD and the RSA.

She is actively involved in the local community and is Chair of Governors of Cawthorne's Endowed School, Abbeystead, and a Trustee of the Cawthorne Educational Foundation.

She is also a Director of L&K Group Ltd. which comprises a group of companies that serve the agricultural communities in the North West. She is a founding member of B4RN, and is one of the first directors as well as being on the management team. Monica also started the Friends of B4RN charity.

She sees the amazing effect that B4RN has upon isolated rural communities and is in awe of such a large co-operative volunteer effort that is changing people's lives.


Peter Hearne

Peter Hearne

Director. Peter Hearne was born and raised locally and has spent most of his adult life in and around the Lune Valley. Convinced that the B4RN venture would be of massive benefit to the community, he was an early investor and has been an enthusiastic supporter of the B4RN project from the beginning.

Originally qualifying as a Works Manager specialising in production planning and control, Peter spent much of his early career in sales and marketing roles for large multi-nationals before building his own technology business from the early 1980s onwards. His on-going business interests reflect his long-term involvement with the built environment, with a special interest in historic listed buildings.

Formerly Chair of Governors of Beaumont College and a Director and Treasurer of North Lancashire Citizens Advice, Peter has been actively involved in community and voluntary work for over 30 years.

In all, Peter has close to 50 years' experience in the development and management of organisations in both the commercial and charitable sectors, experience that he now brings to the board of B4RN.



Ivan Sedgwick

Ivan Sedgwick

Director. Ivan Sedgwick is a native of Hampshire but married a Lancastrian. They have had a base in Gressingham since 1991 and now live there full time, having previously worked in London and New York.

He helped connect the dots to get B4RN through their and their neighbours' land, and to their own properties.

He is involved in small-company finance and serves as a trustee for a number of charities. He joined the B4RN board in 2022.



Michael Lee

Michael Lee

Director and Chief Strategy Officer. Michael grew up in the Forest of Bowland in Lancashire and read engineering in Cambridge. His early career was in the army, where as an officer he served in the Royal Electrical and Mechanical Engineers and then later the Royal Dragoon Guards. He undertook tours of duty in both Iraq and Afghanistan.

During his post-military career he has managed engineering projects for the oil and gas sector, and worked as a specialist consult with a focus on operational improvement and communications.

Michael started work with B4RN in February 2021.



Tom Rigg, CEO

Tom Rigg

Director and Chief Executive Officer. Tom Rigg is the friendly and highly experienced Chief Executive Officer of B4RN, a multi-award-winning community-led ISP based in Lancashire. With over 15 years of telecommunications experience, Tom has been instrumental in developing and delivering broadband services across the North. Under his leadership, Broadband for the Rural North Ltd is building a reliable and future-proof full-fibre broadband network, delivering to those hardest to reach.

Tom passionately advocates for the transformative power of high-speed broadband and the importance of providing equal access to digital services for all. He firmly believes that community-led broadband initiatives, such as B4RN, can help bridge the digital divide and bring the benefits of the digital age to rural areas. If you have any questions about B4RN or want to chat about broadband, Tom is always happy to help!



Caroline Raynor

Caroline Rayner

Director. Caroline grew up and went to school in Morecambe, before studying law with French in Nottingham and Montpellier. She attended law school in Nottingham and completed her legal training at a local firm in Lancaster, qualifying as a solicitor in 2008. She is proud to have practised locally ever since.

She is a specialist in employment law, and enjoys advising businesses of all shapes and sizes both locally and further afield. She is engaged with the local community and is involved with a Lancaster-based charity which she assists with HR and other strategic issues, having previously been the first female secretary for another local charity that is over 300 years old. She is regularly involved in knowledge sharing with local businesses and contributing to the media on employment and HR and employment law issues.

Senior staff



Mary Woodward.

Mary Woodward

Chief Financial Officer. Mary is a dynamic & highly motivated professional. Commercially focused & results driven with a proven track record of delivering significant improvements to Performance targets. Outgoing and energetic personality. Excellent organisation, presentation and communication skills. A competent leader as well as a valuable senior team member,

Mary is a Fellow of the Chartered Institute of Accountants England & Wales (ICAEW), qualifying in 1993. Mary has worked at senior management & director level for a number of businesses in a variety of industries & has a wealth of experience managing business finance.



Luke Kelsall.

Luke Kelsall

Chief Information Officer. Luke has over 20 years of experience in the telecommunications industry, spanning both IT and infrastructure leadership roles, His early work at Legend Communications included pioneering involvement in one of the world's first cloud infrastructure offerings, Demon Virtual Servers. He has developed deep expertise in infrastructure management, cloud computing, software solutions, performance optimisation, and cybersecurity best practices. With a proven track record of innovation, operational excellence, and change management in high-stakes environments, he continues to deliver strategic value at the intersection of technology and business.

Elaine Elrick, Chief Delivery Officer. Awaiting bio.

Mr Eddie Sutton Assistant Chief Executive, PO Box 78
County Hall,
Preston
PR1 8XJ[1]

Cc The Oversight and Scrutiny Committee, Jane Parkinson, Chair , japarkinson@lancaster.gov.uk Jenny Kay, Democratic Support Officer, jkay@lancaster.gov.uk BDUK Adrian Wooster, adrian@wooster.org.uk,
Eric Ollerenshaw, MP for for Lancaster and Fleetwood, eric.ollerenshaw.mp@parliament.uk
Neelie Kroes, EC Vice President, Digital Agenda for Europe, neelie.kroes@ec.europa.eu

From: B4RN Management Team B4RN Lancaster Auction Mart Wyresdale Road Golgotha Lancaster, LA1 3QJ 9th July 2012

Dear Mr Sutton
Thank you for your email and attached letter to the Trustees of Broadband for the Rural North (B4RN), containing the Analysys Mason Report, and dated 12th June 2012. We are also aware of your presentation to the Oversight and Scrutiny Committee (OSC) referring to B4RN on 4th July 2012.
Both your letter and presentation evidence a lack of understanding of B4RN's position and intent. At the OSC meeting you stated that your approach to the rural areas was no different to that of B4RN. We find this surprising and my letter is intended to clarify the position.

The nature of the B4RN Organisation.

B4RN is a not-for-profit company registered with the Financial Services Authority under the Industrial and Provident Societies Act 1965 using the community benefit option, and thus it is a cooperative Social Enterprise. There is a maximum shareholding of £20,000 and any surplus has to go back into the community. The workforce is derived from the community, and local jobs are being created to support B4RN. This is a community initiative with community benefits. It was established by people living in Bowland and the Lune Valley, with the aim of installing 100% coverage 1,000Mbps fibre to the home (FTTH) to those properties, initially in 8 parishes, who cannot otherwise get superfast broadband (SFBB). B4RN has made it clear that it is keen not to extend itself to areas that would be provided with SFBB by the County Council/BT.

Connection speeds and coverage.

Much of the related publicity and correspondence implies that LCC/BT will provide SFBB to B4RN areas, but this has usually been couched in terms of 'up to' a certain speed, and a variety of percentage figures have been given to indicate what proportion of the rural population will receive SFBB. The EU and UK government target for SFBB is to have download speeds of greater than 30Mbps for 2015, and 100Mbs for 2020. Therefore SFBB schemes under consideration now need to show future proofing with 100Mbs guaranteed for 2020 or accept that what is proposed at present is a very short term measure.
The position of B4RN is clear. The community project will provide 1000Mbps, ten times the EU and UK target, to **every** property for which it is requested in the parishes which it covers. As noted by Peter Cochrane, former Chief Technology Officer for BT, in his testimony to the House of Lords on Tuesday 20 March 2012[2], FTTH is the best future-proof form of broadband.
The position of the LCC/BT project is less clear to us. B4RN have repeatedly requested information about actual line speeds in each area (a simple exercise usually done by automated test equipment overnight) and confirmation of exactly what speeds are being promised for each postcode rather than the estimates normally provided. These factual data have not been forthcoming and B4RN has been forced to guess which areas BT will be unable to provide with SFBB. BT has already committed to laying fibre to its cabinets, and thus 40-80Mbps capable FTTC is part of its natural commercial and competitive development. All those homes and businesses near the cabinets will benefit greatly from FTTC. The rural community is largely composed of SME's who will not receive that benefit. You say in your letter that, "*The remaining 3% of businesses and homes (20,000 premises) are located in Lancashire's most remote rural areas where the physical environment requires the assistance of local communities to make SFBB available.*" Despite receiving additional funding, and as explained by Brendan Dick, Managing Director, BT Regions on the One Show[3], it is not commercially viable for BT to provide SFBB to these rural areas.
It is these remaining 3% of properties that B4RN seeks to help. For these communities the key

difference between working with the LCC/BT or B4RN is that with the former, once connected, all the profit generated goes to BT shareholders. In the latter the community have control over charges, and everything goes back to the community. This is a major distinction between the two, and highlights one of the reasons for B4RN's popularity. In addition, B4RN's connection speed is likely to be so significantly better than that proposed by BT that B4RN is receiving regular requests to extend the planned area of provision, and is working with those areas to help them.

Competition and cooperation.

B4RN was not established to compete with BT. Its aim was to step into places current County Council and BT plans cannot reach. It is a community initiative and not a commercial one. It is not exclusive: B4RN intends to offer open access for alternative operators, including BT. Although in your letter you say that you have offered to work with B4RN, the following actions of the LCC and BT strongly suggest that B4RN is seen as an unwelcome competitor.

1. B4RN's requests for information have been repeatedly ignored.
2. Some of the documentation the LCC have circulated about B4RN and SFBB provision in the rural north west has, at best, been misleading.

[2]http://www.parliament.uk/business/committees/committees-a-z/lords-select/communications- committee/news/broadband-evidence-cochrane/

[3] http://b4rn.org.uk/bbcs-the-one-show-b4rn-feature

Some of the recent claims made for future provision by BT in parishes such as Arkholme, if true, point to the need to examine them for the charge of anti-competitive behaviour.

4. Despite being an inclusive community project, the area's access to community funding has been actively blocked by the LCC. This occurred at the inception of the project, when the £750,000 bid to Defra Rural Development Programme for England (RDPE) made by Lancaster City Council for funding for the FTTH broadband initiative was integrated into LCC plans on the explicit understanding that the remit of the project (1000Gbps FTTH for 100% of the core parishes, 7 of which are now in the B4RN project) would be maintained. This did not happen, and led to the establishment of B4RN.
5. The LCC (as a government body) recently competed against B4RN (a community initiative) for the Defra Rural Community Broadband Fund, (RCBF). It was at this stage that B4RN submitted a formal challenge to the LCC State Aid application.
6. Given that the LCC has strong commercial links with BT[4], it is hard to see that it as an impartial facilitator of the provision of SFBB.

Conclusion.

It is difficult to understand why BT has the support of the LCC in obtaining substantial amounts of public funding to roll out an inferior service that is not future-proof, whilst B4RN relies on private investment and sponsorship to cover the seed-corn costs of a self-sustaining project that will transform the community - one that has been lauded as visionary at the EU[5] and has recently been honoured with the ISPA **Internet Hero of the Year Award**[6]

Progression of this innovative community initiative is at present significantly challenged by the LCC's counterproductive actions. B4RN would like to work with the LCC to achieve SFBB across the whole of Lancashire, including the technologically impoverished 3%,

Monica Lee
Professor Monica Lee
On behalf of the B4RN Management Team

Types of Broadband provision – for reference.

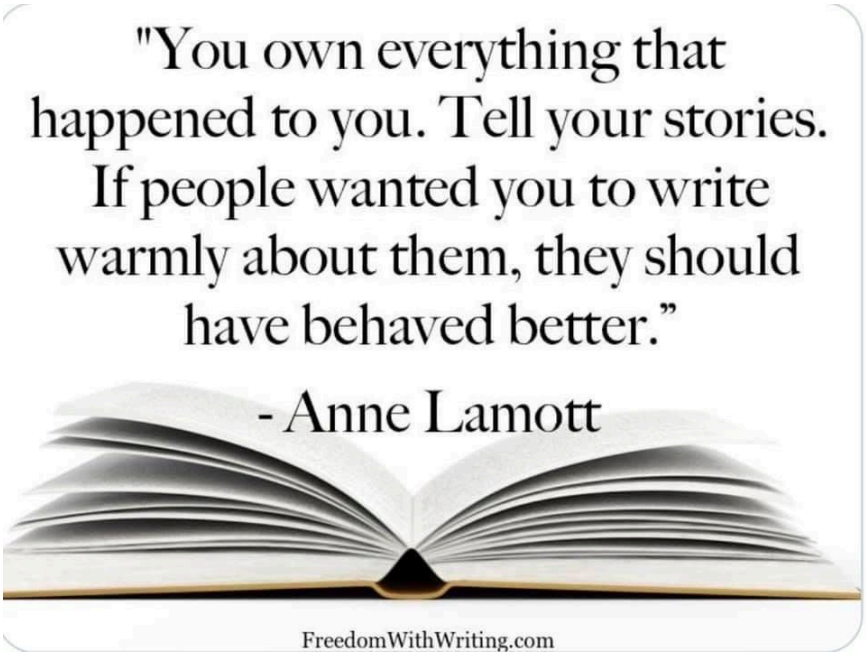
Fibre to the home (FTTH) provides 1000Mbps low maintenance symmetrical service and is recommended as the best future- proof form of broadband

Fibre to the Cabinet (FTTC), by which fibre is brought to a cabinet in the core of a community and then alternative methods such as copper or wireless take it to the homes. This can provide SFBB to houses near the cabinet, but speeds drop of rapidly with distance from the cabinet. This can give up to 80Mbps and thus is not future-proof.

Satellite can be used to meet rural Internet access needs in some places, but it has downsides such as high cost data rates and high latency making real time communication difficult, and can not deliver 'SFBB' as defined by the EU and the UK.

[4] http://www.oneconnectlimited.co.uk/about-us.aspx
[5] http://b4rn.org.uk/b4rn-invited-to-present-to-eu-digital-champs
[6] http://www.thinkbroadband.com/news/5319-ispa-awards-2012-winners.html

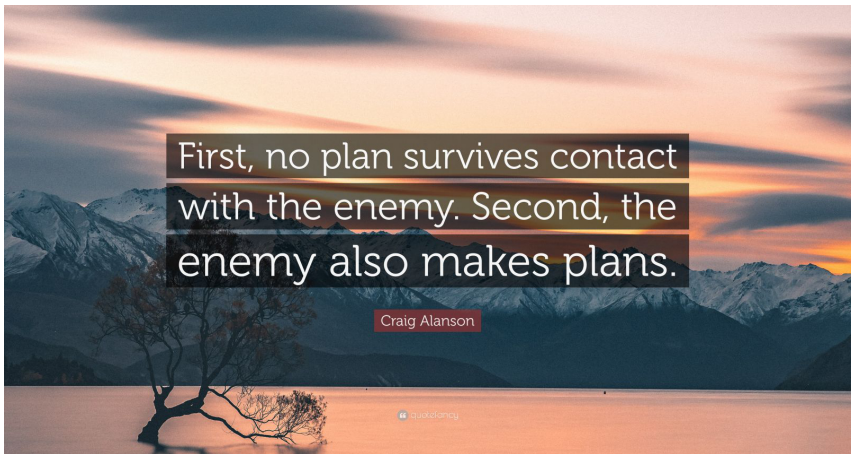
Epilogue



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Epilogue



In the army they say no plan survives contact with the enemy. (Helmuth Von Moltke) So, too, with this book.

The people who built B4RN faced common foes in the form of the geography and geology of the landscapes, and the weather, to which unique answers had to be found.

Political, social and competitive challenges from both outside and inside the communities were faced, with humour and determination (and tea and cake); answers to most were found, but others are still elusive.

The experience of building B4RN, how it changed the communities, and what it meant personally, is what this book is about.

But there is more. So we asked six people who know the B4RN story from different angles to give us their perspectives. Kira offers a social view, Ian looks at the market conditions B4RN had to deal with, Peter at the technology trends that enabled B4RN, Lloyd at the contribution B4RN has made to improving access to high-speed communications in rural communities, Philip at the political angle, and Lindsey sums it all up with a unique self-portrait and thanks to the thousands of people, from many walks of life, who came together to JFDI.

The B4RN family tree

By Kira Allmann, Co-editor

This book started with the image of a tree. When you think of a mighty tree, it's easy to imagine its expansive branches, stretching outward, toward the sky. For a tree this impressive to thrive, it also needs powerful roots - roots that spread as far as its branches but are often mostly invisible, anchoring the tree underground. What is often most striking about the tree is what we can easily see and touch about it: its lush canopy, its calloused trunk, and the wildlife that make their homes in its branches, but without the hidden network of roots, the tree and the ecosystem it enables would not exist.

B4RN is like this tree. The underground network of ducts and fibres that make up the B4RN network have brought new life, new people, new energy, new opportunities to some of the UK's most technologically isolated and neglected areas. As the network grew, more communities have connected, and the tree has continued to grow and branch.

It wasn't, and isn't, easy. Twenty years of struggle went into the germination and roots before the tiny shoot emerged that grew into the B4RN family tree. The seed germinated on the 15th of August, 2011, when it was registered with the Financial Conduct Authority https://mutuals.fca.org.uk/Search/Society/7915.

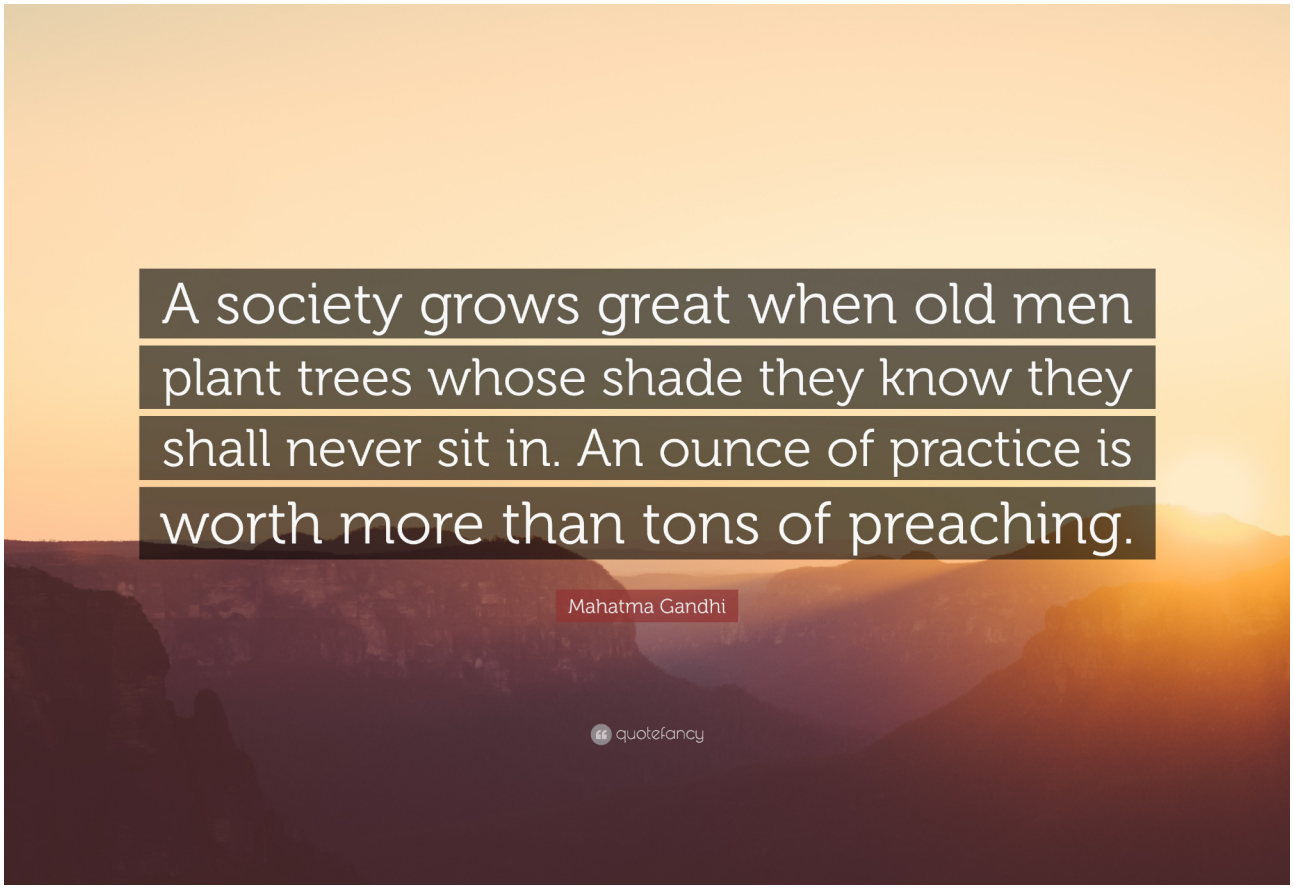
But, like any tree that must survive in hostile environments, the roots now go deep and wide to let B4RN thrive in the face of many challenges, from weather to bureaucracy.

B4RN is the unique product of its environment. But similar environments exist everywhere. The lessons learned by B4RN provide a useful starter for others who are actively developing and adapting to their own unique circumstances.

And while the network is world-class from a technical viewpoint, its social impact has been, and remains its most important result, as the stories here clearly show.

The B4RN story is about people coming together to build something they share, not only for today's communities, but for future generations. B4RN shows that it is possible, sometimes, for those who plant also to enjoy the fruits of their labour.

Like B4RN itself, this book is a big undertaking, and like B4RN, it is made up from the many stories about and by the people who built B4RN. The community has now written the book and supplied the photos - the history, like the network, is theirs.



Mahatma Gandhi quotes a Greek proverb.

The B4RNraising

By Ian Grant, Co-editor

B4RN, or to give it its full name, Broadband for the Rural North, did not spring fully-formed into life in 2011. Events 30 years before ensured that the farmers and housewives of Cumbria could end their isolation from the digital world and relieve their frustration only by JFDI (Just F* * * * * * Doing It) themselves.

The 1979 Conservative government under Margaret Thatcher promised to revitalise the moribund telecommunications sector by ending British Telecommunications' monopoly, permitting alternative equipment and service suppliers, and privatising BT.

To back this policy, it commissioned Martin Beesley to provide a viable economic argument.

On 15 April 1981 industry minister Sir Keith Joseph told Parliament that Beesley had reached "radical conclusions about network services" that would "transform the United Kingdom market for telecommunications."

Beesley's main conclusions were that voice and data services were fast becoming integrated, that BT's monopoly on the use of its infrastructure and devices that could attach to the network was incompatible with the government's desire to attract more services and suppliers, and that BT had to be freed from the financial constraints of government budgets.

MPs were concerned that Beesley's plan would result in higher prices of communications services, particularly in remote rural areas. "The amount that BT can invest does not depend on what the taxpayer provides through the government," Sir Keith Joseph told MPs. "The vast bulk of investment comes from depreciation provisions and the rest from retained profits."

To control BT's pricing power the government introduced a regulator, later renamed Ofcom, and a universal service obligation, which required BT to provide a service to whoever asked for it (within reason, and 'reason' included cost of provision).

Political acceptance of most of Beesley's thinking led to the listing of 50.2% of BT shares in 1983. This gave the government a £3.961 billion windfall. Subsequent sales of government shares in 1991 and 1993 saw the government net a further £10 billion. It also gave up the 'Golden Share' that gave it control over who could own BT.

At the same time, BT scientists and engineers were developing technologies based on optical fibres rather than copper wires. In his 1979 PhD thesis, Peter Cochrane, head of BT's future networks R&D, had shown that the technical limitations posed by copper cables would fundamentally limit the coming digital revolution. This prompted BT's then-chairman, Sir George Jefferson, to issue a 'Just Do It' order, and kicked off BT's long lines (core network) digitisation programme, extending fibre down to all local switches.

In the years that followed, the transformation of BT's operations and services by digital transmission and switching was radical, and the constraints of the copper local loop loomed large. By 1986 Cochrane showed

that optical fibre was provably cheaper to install and run than copper networks under all circumstances. "The accumulation of evidence was so overwhelming that there was little discussion; and for the BT chairman and board, that future was a given," Cochrane says.

By 1990 BT had largely replaced all the copper in its 200,000 km long lines network, and was fast converting it to digital operation. This allowed BT to shrink its workforce from 242,000 to 135,000, without forced redundancies or strikes. Such a large transformation in so short a time was radical but well-managed, and paved the way for the extension of fibre in the local loop and customer services.

This meant that the UK was, alongside Japan and the USA, one of three world telecommunications leaders. All three had refined the vision, systems developments, and manufacturing capabilities for the impending local loop roll-out. Beesley's vision seemed within reach, and that liberalisation of the national telecommunications market had worked. Competition was the key.

Curiously, nothing happened. Network operators everywhere claimed, based on up-front costs, that the fibre loop was just too expensive.

Cochrane was more than sceptical of the claimed costs of fibre provision and its future operations. "As I started to look at the problem, I was surprised to find people accounting on a very limited basis," he says. "Not only were their base numbers dubious, the accounting models left a lot to be desired."

Cochrane's analysis went beyond the up-front cost and depreciation models in use to include a more sophisticated model of the total lifetime cost of ownership. He uncovered more than 13 elements that BT's accounting system did not embrace, and these were vital in describing accurately the true financial picture.

They included elements such as a 90 per cent reduction in network failures, improved network resilience, the recovery of copper, lead and plastic, the sale of redundant buildings estimated at 90 per cent of BT's real estate, operational automation, a vast reduction in the 'man-in-van' fleet, energy savings, staffing reductions, rental of empty duct space, dark fibre network provision, ease of upgrade, etc.

All this fell on deaf ears, despite the proof demonstrated in the now-transformed long lines network. "It was as if some form of irrational economics blindness kicked in overnight," Cochrane says. "Globally, it seemed as though a transition from science to a new belief system had occurred with 'don't confuse me with facts' as the new mantra."

Cochrane confirmed the error in BT's financial approach in 2010 when he designed the Jersey Telecom (JT) all-fibre network. The roll-out in 2012 gave Jersey residents a future-proofed network capable of gigabit per second (Gbps) transmission rates. This led to a doubling of JT's business within five years, and has had a growing impact on the island's overall economy.

The reason for the change in financial thinking is beyond the scope of this article. But as seminal economist Adam Smith noted nearly 300 years ago, a businessman's interest "is always in some respects different from, and even opposite to, that of the public...(They) have generally an interest to deceive and even oppress the public."

Fast forward 30 years: Beesley's vision of a dynamic market in telecommunications services is still just a vision. Charismatic entrepreneur Richard Branson has assembled Virgin Media mostly from bankrupt American cable television firms that had failed in the UK.

The four mobile network operators depend largely on lines leased from BT and Virgin Media, who operate an effective duopoly in telecommunications infrastructure. The services market is moribund, as the incumbents choose to 'sweat their assets'. But people are aware of the (cheaper) communications opportunities offered by the internet, and want more.

Following the banking crisis of 2008, the Labour government is concerned that the UK is falling behind its economic and industrial competitors. It promises high-speed broadband to all, and is thinking about the neglected rural areas. Ofcom proposes a universal interface to allow local and rural network operators to access the BT infrastructure for backhaul. The idea is quickly buried.

In 2009 the government publishes the Digital Britain report, which promises universal access to 2 Mbps by 2012, and higher speeds to two-thirds of the country using fibre to the cabinet. In 2010 Ofcom pushes for 24 Mbps as the lower limit of 'superfast broadband'. With the 2010 election looming, Labour confirms the 2 Mbps for all promise; the Tories promise 100 Mbps to most, but not all.

In April 2011 the Tory/LibDem coalition government proposes to spend GBP1.4 billion (about 60% of it from European sources) to extend fibre to homes across the UK, but particularly to rural areas. It welcomes plans by Fujitsu, along with Virgin Media and Talk-Talk, to build a 1000 Mbps fibre to the home network, mostly in rural areas. It sets up a quango, Broadband Delivery UK (BDUK), under the Culture Secretary, to oversee a network suppliers' auction and to monitor subsequent delivery. It decides that county councils will work with BDUK to set budgets and to commission the actual work from the suppliers.

BT wins every BDUK contract. It subsequently spends £1.2 billion on an abortive attempt to compete with Sky in streaming live sports.

BT's effective policy is to avoid capital expenditure as far as possible while defending its monopoly where it can. Underpinned by BDUK money, it extends its fibre network to street cabinets, mostly in cities and towns where it competes with Virgin Media, and charges exorbitant prices for fibre to the home. It campaigns to promise broadband services to rural communities, to research demand, and to demoralise would-be competitors.

It becomes obvious that, in practice, rural businesses, farms and homes are largely ignored, except where local competition threatens BT.

The countryside, and indeed parts of cities, remain broadband deserts, except for the communities covered by B4RN and a few very small local network operators. By January 2021, fewer than 10% of Cumbria's 272,000 premises can get a fibre connection.

On 1 April 2022 the government announces Project Gigabit, "a £5 billion programme to enable hard-to-reach communities to access gigabit-capable broadband."

In December 2022 BDUK awards a £108 million contract to a Northern Ireland network builder to connect 59,000 Cumbrian homes. The announcement carries a warning: "Please note the premises to be reached by the contract is subject to change following detailed planning by the supplier or due to technical reasons during the lifetime of the contract."

Meanwhile, B4RN customers celebrate the 10th anniversary of their 1000 Mbps service.

A valley that changed communities and lives

By Professor Peter Cochrane, OBE, DSc

Some 15 years ago farming communities across the UK were paralysed by a government decision to go digital for all documentation. Unfortunately, the farming communities were isolated with very poor, or non-existent, broadband. None of the established service providers would address this problem as they thought it was not economically viable.

So Chris, a Cumbrian farmer, and the Wennet team (who had built a wireless network) stepped forward to address the problem. With no technical expertise, industrial experience, or concept of the magnitude of what they were about to undertake, they assumed a DIY solution was possible. With advice from a very few industry experts, and especially Lindsey Annison, they fashioned an embryonic B4RN vision and started digging. They were soon joined by industry expert Barry Forde, and with his technical vision the rest is now history!

At the time, optical fibre technology was seen as esoteric, requiring high levels of training, manual dexterity and deep expertise. So farmers and their wives seemed a very unlikely workforce for a new venture. But Chris overturned these misconceptions; she defeated every practical challenge with a community team spanning teenagers to pensioners.

After the first farm was connected, the vision and span rapidly expanded to embrace whole communities. And so, one village at a time, B4RN entered the DIY broadband catalogue of successes.

In a nutshell, the culture that the B4RN team created was simply

'If you want broadband to your farm or village—start digging.'

Against all the odds, this approach became infectious, and rapidly spread from village to village. Local government, the telecoms industry, and the regulator Ofcom, were not exactly overjoyed or particularly helpful; after all B4RN was not even a limited company. So problems born of officialdom came thick and fast, but the ingenuity and drive of Chris, Lindsey, and Barry to 'Just Do It' saw road, river, and bridge crossings—among many other obstacles— overcome.

As an industry expert at the time, I was on the sidelines proffering advice and 'how to' details now and again. On a site visit I was immediately impressed by the quality of the work, the capability of the team, and the world-class broadband service they had established in their first community.

At that time, I could not have guessed how quickly B4RN would grow, and what it would become over the following years. I will never forget a whole day spent with the B4RN team, and a tour of the area. Chris's pride in the team and what they had achieved was palpable, and so was her joy. We had a coffe- and-connect session in the local tea rooms—the only one on the planet providing 1 Gbps connectivity. The coffee was good too! Chris awarded me one of the famous 'Lindsey spades' for my contributions to the project.



Peter is awarded his MBE spade.



Jane and Peter enjoying the service at Wray Tea Rooms.

Today, it would be easy to say it was an obvious opportunity and it was only a matter of getting people together, teaching them what to do, and the rest is a given. But that would be a gross understatement of the achievement. As an industry leader, I fully appreciate what it actually takes to create success against all the odds that B4RN faced. Without a galvanised and capable team, and the leadership and skills of Barry and his management team, it would never have happened.

For me, the most remarkable aspects of the B4RN creation are the early collaboration of two experts (Barry and Lindsey) and the sheer drive of a farmer (Chris) and her steely determination. Unless you've done something like this, there is no way you can fully appreciate the hard work, the hours spent, and the endless problems overcome.

During my life, I have come to respect many groups of people, but especially farmers, because they don't take, and will not be discouraged, by BS.

Today B4RN serves communities from Northumberland to Norfolk and Surrey and brings world-class broadband to thousands of customers that no other supplier considers worthwhile. Only 15 years ago the industry scoffed at the B4RN vision, and no-one foresaw the outcome. And it all started with the frustration of just one small corner of Lancashire and the people of grit.

As a friend, colleague and admirer of all that B4RN has done and achieved, I can salute you as champions of broadband, workers of miracles, and changers of lives!

What you have achieved is so impressive, and so - very well done to you all.

Waking the dragon

By Lloyd Felton, County Broadband

My own interests in trying to address what we were already recognising as 'the digital divide' started in 2003, when frustration at lack of connectivity in East Anglia led me to try and find a solution to the problem.

After playing with some early fixed wireless technology, we built some small wireless networks in two villages that we managed to link to local exchanges via simple ADSL lines.

We soon realised we were onto something, and it became obvious that delivering broadband was not something we were going to be able to continue to do as a hobby. There was a demand, and we (the collective 'we' from across the country) wanted to provide a solution.

My own answer was to form a company, County Broadband Limited, and to embark on a community engagement campaign. At the time, this was as much about educating people as to why they were going to need faster broadband in the coming years, as it was about showing them how we could deliver it today.

What I didn't know in those very early years, was that there was a handful of people around the country who were all committed to the same ideal. Some, like me, were doing community projects, built on a commercial model and personal equity investment, while others, such as B4RN, were championing an entirely community-centric proposition.

For a long time, we carried on independently, oblivious to one another. But slowly we learned of different projects in different parts of the country, and of an organisation that had formed called the Community Broadband Network (CBN) which began to put on events where we could meet like-minded people with shared ambitions.

Lindsey Annison arranged many of these events and we all inspired each other. This group later became INCA (Independent Networks Cooperative) and put on their own events.

As the movement for faster broadband grew over the next few years, we, the 'alternative network' pioneers, were trying to raise community support for our own rural projects, funded either with our own funds, as in my case in the early years—or with the funds of whole communities, as in the case of B4RN.

In response, BT began to build 'island projects' right in the middle of where altnets were building. Meanwhile, at the same time, BT was telling the government it could not afford to build in areas of far greater populations and density than was the case with the altnets, and required subsidies.

It soon became clear to many of us that we had 'woken the dragon', and BT was beginning to mobilise a tactical response unit to stop us, the altnets, from gaining a foothold.

So it was, we were to become brothers (and sisters) in arms, bonded by a belief in what we were doing, and in the mistrust many of us felt for BT. As the incumbent provider, BT had scores of lawyers and lobbyists who were well-skilled in dealing with a government that was naïve to the technology and ignorant as to the demand about to sweep the county. BT's seductive pitch was that the only safe decision was to give all the



Lindsey Annison and Lloyd Felton, chatting with David Isenbergh, an American broadband campaigner, and a pigeon.

government's subsidy money to it, a former government-owned company that still operated under the name of British Telecommunications.

However, it was only on 17th September 2010 that I really got to spend some time with B4RN. This was a day before a major conference in Rheged, Penrith, in the middle of Cumbria, on rural broadband that had been organised by Rory Stewart, the MP for Cumbria at that time. Present were myself, Chris from B4RN, Lindsey Annison, who was equally fanatical about broadband, and David S. Isenberg, a community and net neutral advocate from Michigan, USA.

This is also the first time I got to meet Ed Vaizey MP, minister for broadband, and Bill Murphy, managing director, Next Generation Access, BT Group. Most of us in the altnet sector would agree, it was Bill who was responsible for driving BT's strategy. He did a good job.

On the whole, the government bought BT's story, and when it launched its first 'Superfast Broadband' nationwide subsidy programme, it was BT that got nearly every taxpayer penny that went into it. Somehow, BT persuaded UK government that the altnets were not credible suppliers, and that creating competition in the sector was not in the best interests of the public.

Some 13 years later, that same altnet sector has attracted more than £20 billion pounds worth of investment to meet demand. This is more than the combined value of all the money invested by BT from subsidies and retained profits.

B4RN was the first altnet to rely purely on its own resources to build fibre networks. Indeed, it had no choice. But its genius was to build the network of the people, by the people, for the people.

As such, it played a crucial part in the birth of the altnet sector, and the sizeable investment in the UK it would later bring.

The hostile environment



By Philip Virgo

Author of Cashing in on the Chips (1979) and campaigner on digital and communications policy ever since.

"It's just a wide area network in a hostile environment. And the most hostile part of the environment is the politics."

I have never forgotten Barry Forde's pithy summary of why every vested interest in the communications world wanted B4RN to go away or fail.

By showing that community volunteers could be trained within days to work to international standards, using equipment and materials loaned by suppliers (thus threatening technical and professional skills hierarchies), through bypassing the lucrative wayleave industry and the even more lucrative central government planning and procurement industry to deliver robust, reliable, unsubidised, quality of service at a fraction of the cost of anyone else, B4RN was an embarrassment to the Establishment. It had to be made to go away.

I was a pupil of Michael Beesley at London Business School in the 1970s and was the Conservative advisor on IT and telecoms policy for the 1983 general election.

At the time my brother, Neil Virgo, was a countryside officer in Cumbria, and we talked of using telecoms to bring jobs to the countryside without spoiling the landscape. He was out camping the night the Chernobyl fallout came down and–long story short–is buried in Lazenby churchyard looking towards the fells.

But I was still campaigning for radical change in how communications networks are built when Cumbria's then-MP Rory Stewart brought communications minister Ed Vaizey and the Obama advisors to the Rheged Conference in September, 2010, to explain on how to bring broadband to remote areas. All those fertile words fell on stony ground, and the conference has been airbrushed out of history.

The Westminster civil servants persuaded the minister that local government could not be trusted to deliver consistent quality of service and value for money. They then proceeded to waste years and billions of pounds to prove only that central government can be trusted to waste years and billions of pounds before delivering anything at all.

Meanwhile B4RN went ahead.

It demonstrated what can be done for a fraction of the money that HM Government eventually spent to bribe BT to do what it had postponed after being nearly bankrupted by local loop unbundling.

The other achievement of B4RN, possibly its most politically relevant, is to demonstrate that community self-help can deliver more appropriate solutions more reliably and consistently than central government, of whatever hue.

And then you win

By Lindsey Annison, third co-founder of B4RN

The story of B4RN isn't simply about the many people who have joined our ranks over the years—from our first shareholder, Walter Willcox, onwards. It isn't about geography, geology, rural and remote—all of which our incredible team has overcome. It isn't about technology—fibre optics are well-understood and proven. It includes politics. And some phenomenal connections amongst people world-wide trying to achieve one thing—connectivity and ubiquitous comms.

When I first sought a broadband connection (around 1995, as a single mum recently returned to the UK with 2 small kids), I had no idea how entrenched in political matters I would end up. So much so that not only did I end up a regular in St Stephens Tavern opposite the Palace of Westminster, in Russell Square with the Broadband Stakeholder Group, speaking at events, visiting Number 10, Houses of Parliament, Portcullis House etc, and more, but I also became a parish councillor, simply to state the case for rural broadband on my own doorstep.

I also organised the first ever broadband conferences in Great Britain (Barry Forde was my first ever keynote speaker), and the conferences continue today under INCA, which basically took over my Digital Dales events company.

The story of B4RN is not, and should not, be my story. However, in telling what I have done, perhaps many of the folk I have had the privilege to meet over the years, many of whom have contributed to B4RN, directly or indirectly, can also be heard.

Recently, I was told that all my political activism was a waste of my life. More than 20 years of it. I beg to differ. Without approaching those in those hallowed halls in London, we would still be stuck in the late 1990s, technologically speaking. Pressure from us yogurt knitters out in t'sticks let us be heard above the lobbyists from the telcos—in particular, the incumbent.

The Campaign for Unmetered Telecoms (CUT), which most people online today have not a clue about, was absolutely integral in paving the way for projects such as Digital Dales, ABC, B4RN and many more.

For me, personally, CUT ended the horror of having a £1600 phone bill for a quarter, all calls to the same number—Dial Pipex. That number gave me access, through a 9.6k US Robotics modem, to 't'interweb'. Its audible handshake routine still makes me break into a cold sweat, as do many others who lived through dial-up debt.

FRIACO (Flat Rate Internet Access Call Origination) changed the lives of the early adopters of the internet for the good. Erol Ziya, John Wilson, Charlie Sands, and all the others should have received medals for their work,

What did FRIACO mean for us early adopters? Instead of paying per call, at xp per minute, we paid a flat rate each month. Suddenly, it wasn't just the geeks and those with research budgets in academia who could get online. Everybody could.

I was there, clutching my 72-page phone bills in the bank manager's office in the Yorkshire Dales, scared rigid, when FRIACO came into being. Not just in Britain, but across Europe. Game changer.

Then, one time in London, I was lucky enough to meet a few of those behind CUT and Consume, several of whom joined forces with me to fight the next battle—ubiquitous, affordable, broadband access for all. We called it the Access to Broadband Campaign (ABC), and Digital Dales, based in Wensleydale, was the event arm of that campaign.

The CUT folk remain, for me and others who were dependent on the Net in the mid 90s, and for all of you now who cannot imagine life without access to the internet—some of the greatest unsung heroes of the last 40+ years. Most people who use the internet now will not have heard of CUT or FRIACO or Erol or ABC etc. You should thank them anyway.

Without FRIACO, the vast majority of you could not afford to be online today. These folk were on BBC News regularly, fighting for unlimited access, before most of the world had even heard the sound of a modem trying to dial in: then they went back to mopping floors in cafes in Shepherd's Bush, or to Arwain in Wales, and their day jobs.

The other winning part of the formula was when 2.4Ghz was made licence-free. This made wifi available to all (all of the community and mesh broadband networks, for starters) trying to build with affordable kit, such as re-purposed old computers running LocustWorld etc. software, probably written by a kid in a bedroom, whom you have also probably never heard about, especially when you call fibre optic broadband wi-fi!

Accessible, affordable and ubiquitous. That was the slogan for the Access to Broadband Campaign, which came after CUT, and as I was fighting for rural broadband. Joining forces with a group that already had several hardcore political wins under its belt made it all somewhat easier. There is some comfort in numbers, but not much when you are up against shiny-shoed lobbyists in suits that cost more than you earn in a year. And civil servants and MPs who can only read an email once their secretary has printed it out. Often, it is deeply frustrating. Sigh.

Anyway, some of the tactics we used to undermine these overpaid, morally-destitute and predatory lobbyists shall stay private; I think we will need them again for current and future issues, even 25 years later.

ABC built upon the work I had started with Digital Dales, trying to educate people about broadband and the internet in rural areas.

I was very lucky to be given a loan by a canny bank manager in the Yorkshire Dales, who had never heard of the internet and couldn't get his head round why I only ever phoned one number. He asked me to explain the whole online thing to him, prior to giving me a loan, and absolutely nailed how I could pay him and his bank back when I explained how difficult it was to find anything online.

At that time, domain names were very new. Barely anybody had one and they were ridiculously expensive. To find information back then, you had to know the IP address of the website that held it. For instance, one of the BBC.co.uk addresses was 151.101.192.81. Without those numbers, you could not access the BBC online information.

The door to my office, which doubled as a noticeboard, held row after row of IP addresses. These are all numbers and quite hard for most people to memorise. The World Wide Web launched only in 1993, and Google did not exist until 1998. However, my door made a really good search engine in the 90s.

We all lived on Internet Relay Chat (IRC), and bulletin boards, all accessed through IP addresses. Everything was text-based because there was no bandwidth to share more than ASCII art and emoticons. But people around the world were desperate for something better—a chance to talk, share video, innovate, to try more. We could see the future, but it seemed unreachable to many of us.

In USA, you didn't have £1600 phone bills. Local calls were free. You could ring a local number from your modem. Internet Service Providers were based locally and calls were free, not a paid national call rate per second or minute as, in most of Europe. No 72- page phone bills to your ISP in the USA!

The UK was falling behind, rapidly, in a key growth sector, and the difference between USA and Europe etc was beginning to look stark. Europe adopted CUT's proposal for FRIACO under much duress. But, it was brilliantly proposed and proved a no-brainer for adoption—the telcos caved. Europe began to adopt t'interweb. (BT alone threw over £30 million in one campaign to teach Brits the word 'broadband'.)

I salute everybody involved in CUT to this day. You should, too. It changed the entire face of the internet, globally. And led to projects such as B4RN, which simply would not have been possible without FRIACO. It was, and shall always be, the 20th/21st century equivalent of the Penny Post, which allowed everybody and anybody, however poor, wherever they lived, to send a letter for 1d...a penny.

B4RN is doing the network equivalent by giving everybody a gigabit symmetrical (upload and download) internet connection for £30 a month.

Once FRIACO was implemented, the reduction in the number of pages in my phone bill brought me money and time to pursue a T1 line, which theoretically gave me 1.5 Mbps. In Europe, this doesn't exist, and in UK, it is more commonly known as a leased line. I rang BT for a quote. £27,000. A year.

I was trying to set up an internet marketing business to pay back my lovely bank manager for bailing me out of those quarterly four figure BT bills. Nobody should have had to pay so much to access the internet. Ever. That had to come to an end.

Many of us upped our activism once BT showed its hand on that lunacy by conceding on FRIACO.

After the first City of London event, the Community Broadband Network, funded mainly by communications minister Stephen Timms and the Department of Trade & Industry, came into being. I was the CEO (Community Engagement Officer) for CBN, and ran the forums, designed the website, organised events, and brought together over 50 community broadband projects across the UK and beyond.

We built community networks in our own villages; see Wennet, Edenfaster, 10 and you are there, Pateley Bridge, South Witham and many, many more. BT tried to stop us, often in ways that defended its monopoly rather than showing a desire to service its customers.

When sailing one time, I was introduced to this idea: when you have one person trying to JFDI, you have a power of 1. Two people, a power of 2^ (squared) so a power of 4. Three people is 3^ = a power of 9.

This is the network effect first popularised by Ethernet inventor Bob Metcalfe, and which has driven the growth of the internet. Bob said the value of the network is proportional to the square of its members, while the cost is the direct cost of building it. I believe over 2000 people have now been involved in B4RN. That means 2000^. That means, B4RN has a power of 4 million now. Unbelievable and amazing! Also not to be trifled with, one feels.

With that in mind, we adopted four letters: JFDI. And so we did!

For over two decades, I fought for the very people who have become involved in B4RN over this last decade or more. This includes suppliers who have benefited from B4RN's growth eg Emtelle. The strategy was to meet up, share ideas, gather forces against the 'baddies', lobby those in London who seemed utterly clueless about the demand (and the internet!), and bring together the stakeholders in corporate, community and politics to talk and solve problems.

I organised conferences despite nobody else seeing how very important the internet would be. I set up all-hands colloquia when folk in Whitehall and Westminster could not grasp that attendance could NOT be inclusive if the cost of a one-day event was more than a monthly wage for many. I organised events from Heathrow Hilton (thank you, Cisco, childhood friend!) to Aviemore (thank you, Struan Ski School!) to Ropemakers Walk in the City of London (thank you, Simmons and Simmons) to Dumfries and Galloway, to Lincolnshire, Harrogate, Catterick, Derbyshire, Wray, Oxon and more.

We often had a pub lunch paid for by sponsors, but I often paid for train tickets and accommodation for attendees, just so that we had all stakeholders present, however skint. My accountant was pulling his hair out—"What are you doing?" he shouted at me regularly.

I doorstepped many politicians and civil servants in Portcullis House and in Whitehall, even though I lived in Cumbria. And I printed (or rather, ironed on in those weird trouser presses in hotel rooms!) t-shirts with slogans such as "Rural broadband may contain nuts and fibre" and wore them shamelessly/proudly at national events.

The CEOs of the likes of Telewest, VM, Hughes, Geo, Vtesse, even BT, made time to see and speak to me. On one notable occasion, a fibre network operator persuaded me into a sewer below the London Olympics.

Did I waste my time? I don't believe so. I think all of the above factors helped to change how many people saw the internet and broadband, and especially B4RN. I believe many either did not like change, or were afraid of it, or could not believe that information technology and the internet were going to revolutionise and disrupt society in the new millennium.

I am also the first to question, looking at the dross being pumped out today in pursuit of a completely surveilled population, whether we did a good thing. Looking at you, Tiktok.

Why did I JFDI? I thought it was better to get people together and communicating because the alternative was

unacceptable. At the time, the UK infrastructure for comms was so dire and so incestuous/controlled by a single entity, that barely anybody could communicate at all. Mobile coverage was pretty poor, and data rates, well...

The movement grew. Why? Because we were speaking the truth. Picking the low-hanging fruit of the urban connections was not going to improve the overall economy; rural areas needed decent broadband even more than urban areas because of the distances involved and the low density of essential services.

We roped in people like Tref at Timico to race a pigeon with a USB data stick strapped to its leg to prove that a pigeon was faster than the clunky BT core network. https://www.ispreview.co.uk/story/2010/09/16/uk-business-isp-timico-challenges-pigeon-to-beat-rural-broadband.html

Chris even showed up at Rheged for a big event about rural broadband and collared communications minister Ed Vaizey as he was having a smoke, to point out that her plastic pigeon had travelled far faster up the M6 from Lancashire to Cumbria than data could at the time. Link to Rheged conference with Lindsey speaking 2010 here

We did what we could to encourage, cajole, educate and beg those in the ivory towers to hear us. When they didn't, we set to. It started with three of us but rapidly grew into what one could call a land army. Armed with tea and cake, and mole ploughs, and gifted miles of fibre, and energy, together we built it.

All those many, many efforts—often seemingly trivial– led to B4RN. I have spoken around the world about it at events, as have many others, and I am unbelievably thankful for the many opportunities to do so, and to see similar projects springing up from all the hard work so many, many people put in.

B4RN is a brilliant example of how efficient, effective and mind-blowing it is to harness those in a community for a common cause. Not just a single community, such as a village, but the wider community, those who share a common need or goal. I mean a community where people have family ties, historic ties, job ties, a feeling of belonging that they cannot even explain, and to honour that by contributing their skills, time and energy to support and build something bigger than themselves, for the general good. 'Community' is such a powerful term, when you consider it.

Our broadband community reaches around the globe. At one event, we were lucky enough to meet the sherpas who built, with the help of Dave Hughes and others, the first wireless mesh network to help those trying to climb Everest. B4RN now has access to people with technical expertise and thoughts of how to overcome difficulties, on pretty much every single aspect of network building, be it economic, technical, political, legal, etc. It is a foolish politician who cannot appreciate the untapped power and passion of those who care about where and how they live!

Then, of course, there have been the moments of bonkers genius like the pigeon, and Twicket (https://en.wikipedia.org/wiki/Twicket), and John Popham's (RIP, dear friend) extraordinary coverage of, passion and imagination for all such things. He is just one of the army who made B4RN (and all the other B4.....s) possible.

Making money isn't the be all and end all. Yes, it helps. However, non-profits don't and never should operate at a loss. B4RN operates as a CBS (CommunityBenefit Society) and all of our profits are ploughed back into

the community we serve, not leached out to distant shareholders, as with most other network operators.

I am so very, very proud of B4RN and the part I played in it. Do I see ways that it could be improved? Of course. But I am no longer really a part of it.

I wish the company all the very best for the future, and I do so hope that others will read this book and understand just what a phenomenon B4RN is, the history of how it came to be, and the potential for similar projects, not just in broadband, but across all aspects of community infrastructure.

People Power is the most extraordinary thing to behold and B4RN shows just how amazing that force can be.

Whatever your community needs, I hope that this book will show that it is truly possible. Tea and #cake helps, but also a rugged determination... and ask for forgiveness later when some stupid bureaucracy "forbids" you for doing the commonsensical and logical thing so...

J.F.D.I.



Image copyright Lindsey Annison.

Thank you

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