

Case Study 3:

North Wales LFFN (Local Full Fibre Network) Challenge Fund Project

“The success of the North Wales project, with the value added by the Ambition North Wales team, set a similar South Wales project off on a stronger footing, allowing Careers Wales to streamline the process and for Welsh Government to manage the process itself, through the PSBA project.”

Vital local services including leisure centres, tourist destinations and youth centres across North Wales, South East Wales, Pembrokeshire and other areas can now access internet speeds at least ten times faster than their old mostly copper-based connections thanks to a £11.5 million UK Government investment. All 620 buildings now have greatly improved and ultra-reliable connectivity to help improve the productivity and user experience of the public services they offer and, as their requirements increase in the future, they will be able to tap into speeds of more than a gigabit (1,000 megabits) per second. It means doctors and police officers can save time waiting for large files such as x-rays and CCTV footage to download, care home residents will get better access to online therapy and entertainment, and library users will enjoy faster Wi-Fi for surfing the web.

In North Wales, £6.5m of UK funding has seen 311 public buildings upgraded including in Colwyn Bay, Rhuddlan, Rhyl, Llandudno, Wrexham and smaller towns and villages like Betws-y-Coed and Cerrigydrudion. The upgrades were delivered via the North Wales Local Full Fibre Networks (LFFN) Challenge Fund Project - Denbighshire-led and working with the six local authorities that make up Ambition North Wales - to help roll out the next generation of faster, full fibre broadband connections to eligible public buildings in locations that are unlikely to benefit from commercial investment.

Specific projects delivered in North Wales included:

Betsi Cadwaladr University Health Board (BCUHB) is the largest health organisation in Wales, providing a full range of primary, community, mental health and acute hospital services for a population of around circa 700,000 people across the six counties of North Wales (Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire and Wrexham) as well as some parts of mid Wales, Cheshire and Shropshire.

BCUHB employs around 19,000 staff and has a budget of around £1.87 billion, being responsible for the operation of three district general hospitals (Ysbyty Gwynedd in Bangor, Ysbyty Glan Clwyd in Bodelwyddan and Wrexham Maelor Hospital), with 500 to 600 beds each and full Accident & Emergency wards, as well as 22 other acute and community hospitals, and a network of over 90 health centres, clinics, community health team bases and mental health units. BCUHB also coordinates the work of 121 GP practices and NHS services provided by North Wales Dentists, Opticians and Pharmacies.

Taking up the narrative, Dave Slocombe, Data Communications Manager at BCUHB, comments that the reason for applying for LFFN funding was to futureproof wide area connectivity to the three main hospital sites, as well as to the 22 acute and community hospitals:

“LFFN provided a strategic opportunity to improve the capacity and robustness of BCUHB’s Wide Area Network – migrating the majority of sites from Fibre-to-the-Cabinet (copper to the premises, with its inherent bandwidth limitations, especially if the premises is a long way from the cabinet) to Fibre-to-the-Premises.”

BCUHB examined all sites that were on Public Sector Broadband Aggregated Network (PSBA – managed by BT), with Phase 1 of LFFN being to migrate as many sites as possible to Fibre-to-the-Premises. Phase 1 was completed successfully and, in parallel, BCUHB looked at migrating the telephony systems in the key sites to Cisco Call Manager (IP-based system):

“We had circa 140 discrete analogue PBX’s/Switches from a plethora of manufacturers. We built a Cisco-based call manager solution to use across the Board and, by definition, this relies more heavily on the network infrastructure than the old PBX systems. We had lots of ISDN telephony going into those hospitals.”



Having installed Cisco Call Manager in circa 25 sites, Dave recognised that if there was a problem with the exchange there was essentially now a ‘single point of failure’, with all telephony systems now being IP-based. To counteract this scenario, a pair of WAN access circuits was installed at each hospital, utilising BT R02 (Resilience Option 2) – diversely-routed fibre connections from the sites to separate BT exchanges. For example, at the Bangor site, one link goes to the Bangor exchange and one link goes to the Caernarfon exchange. If one link fails, there is a separate link available to ensure the hospital systems keep running:

“Last year, there was a major fire in the exchange in Bangor. Had we not built in the resilience using R02 and had the second link to Caernarfon, the fire would have taken down digital and telephony connections to the hospital. So a significant

portion of the telephony system and the digital function, i.e. access to power systems, all the nationally-hosted systems, would have been lost. This could have resulted in the hospital being closed. The systems switched over automatically to the Caernarfon exchange and hospital operations were unaffected.”

Events that negatively impact the exchanges etc are often beyond the control of BCUHB but can materially affect network performance, so Dave is trying to build in as much resilience as possible, as well as performance. Dave confirms that LFFN Phase 1 was all about building in bandwidth to futureproof the networks but, additionally, through LFFN funding, BCUHB has achieved RO2 (LFFN Phase 2) which provided secondary auxiliary circuits into the hospital sites in order to support digital activity and improve the liability position in those facilities. The project has also facilitated compliance with the Network of Information Systems Directive, a 2018 Government mandate which governs organisations that serve the public to ensure that their infrastructure is robust and resilient. Dave confirmed that the installation process is ongoing, with the aim being to have the hospital sites migrated over by Christmas 2023.

Dave acknowledges that the project was a massive investment, circa £1m, for BCUHB and that it is often difficult to promote the benefits of such systems – “How does a WAN benefit the patients? Dave believes it helps because there is such a range of hospital facilities that are now digitally-enabled, as part of a robust Digital Innovation Strategy there is a need to ensure that the infrastructure that delivers those applications is robust and performs as it is required.

Dave concluded by identifying the role of the PMO team, Stuart Whitfield in particular, as adding value through facilitating collaboration and awareness of opportunities:

“Stuart has always invited me to project Boards and to partake heavily in all aspects of the LFFN project. He has been exceptional in bringing all relevant parties together and building that level of collaboration. He as an enabler for us in terms of how he communicated the opportunity and how he supported the bid. His understanding of our goals and ambitions was second to none. If it wasn't for the programme, and Stuart's willingness to support it, we may not be where we are today in terms of WAN infrastructure for the current and future needs of BCUHB.”



Neil Payne, IT Support Manager at **Conwy County Borough Council**, recognises that broadband connectivity and broadband speeds are an ongoing issue in rural areas:

“There are always those hard-to-reach areas where provision is an issue. LFFN funding was brought to our attention by Ambition North Wales, and we were asked if we had key sites where we would like fibre to be installed to the premises where it was previously unavailable. The sites had to be public-use.”

Neil confirms that Conwy Council identified circa 30 buildings throughout the County that would benefit from a “Fibre-to-the-Premises’ upgrade but identifies that the Council was also looking for added value from the project:

“One of the consequential benefits that was noted early on was that such funding would “light up” additional properties, e.g. if the Council upgraded the exchange

serving a community hall in a small village, bringing fibre to that property would provide access to such infrastructure for houses and residential properties in that village also. Once that meeting hall or that school was on fibre, having the exchange installed would mean that others could access fibre easily as well."

To this end, Conwy County Borough Council looked at the smallest villages which did not necessarily have a Council-owned building, but did have buildings where Council meetings would take place. In such locations, the Council would fund the installation and fund the system for the first year via LFFN, and then the community had the choice to either stay with Conwy Council IT, who would charge slightly more than BT as the link is managed and therefore more secure and more resilient, or to cut ties and work with BT independently, which would be cheaper in the long run. Neil comments that the important part was getting that exchange located in the village and getting that Fibre-to-the-Premises link in the initial building.



Neil identifies the standout installation of the LFFN project as the provision of Fibre-to-the-Premises at one of the Council's outdoor educational centres in Llanrwst which has been "hanging on by a piece of copper for many years". The LFFN funding allowed the Council to get fibre to the property for the first time, with previous discussions with BT providing a quote of circa £250k to get a link to the property.

"The LFFN project delivered a link to this facility and, from Conwy's perspective, that was highly valuable. It is an outdoor education facility but better systems means more can be offered in terms of classwork whilst at the Centre and also better connectivity and communications when required."

Neil concluded by confirming circa 60 sites in Conwy benefited directly – Council sites and other eligible public buildings – with around 300 'halo' sites, residential buildings and so on that weren't eligible under the funding criteria, benefiting indirectly from the upgraded exchange infrastructure.

"Stuart and the Ambition North Wales team provided a valuable conduit between the Council and BT, alleviating the pressure on our team and our resources. They were certainly helpful in driving the project through when Covid and other external factors threatened to have a detrimental impact on progress."



Gyrfa Cymru
Careers Wales

Careers Wales, a wholly-owned subsidiary of Welsh Government, provides an all age, independent and impartial careers information, advice and guidance service for Wales, with 700 staff across 45 office locations.

Richard Wall, IT Systems Engineer at Careers Wales, comments that the organisation had a significant number of SDSL (Symmetric Digital Subscriber Lines) across North Wales, transmitting digital data over the copper wires of the telephone network. The organisation was using 10MB SDSL lines, classed as old-school technology and resulting in speed issues for staff working remotely, particularly in moving to Cloud services.

Because of the bandwidth restrictions, Careers Wales was looking to upgrade its systems and was made aware of the LFFN funding by Ambition North Wales. Richard comments that the options were, "Do we go into the LFFN project which would mean slightly longer lead times but significantly reduced costs, or do we undertake the work independently?"

The decision was made to go with LFFN funding and all line/router infrastructure in North Wales was upgraded. Richard confirms that Fibre-to-the Cabinet (80Mb) was sufficient for Careers Wales' requirements as the organisation makes use of Office 365 with lots of virtual synchronisation of working documents and split tunnelling for a lot of remote working staff.

In terms of benefits seen as a result of LFFN funding, Richard comments that Careers Wales has seen cost reductions of 50% on total, annual leased-line costs – a significant saving for the organisation – in addition to the increased bandwidth and robustness provided by the new infrastructure. Over and above the tangible benefits, Richard acknowledges that the project was centrally managed through Stuart and the Ambition North Wales team, which "took a lot of paperwork" off Richard's desk and made the process highly streamlined.

"We were provided with a roadmap by Stuart for each stage of the North Wales project, identifying when they would be completed, and we were kept informed of any bottlenecks/problems."

Richard concludes by stating that:

"The staff are very happy with the systems but the main area of impact is the cost savings, facilitated by the LFFN project. The success of the North Wales project, with the value added by the Ambition North Wales team, set a similar South Wales project off on a stronger footing, allowing Careers Wales to streamline the process and for Welsh Government to manage the process itself, through the PSBA project."

