Copper switch-off:

Leaving a legacy for the Future

White paper

Foreword

Ireland faces many challenges in the coming years, not least from the economic and social consequences of the Covid-19 pandemic. We all hope that circumstances will improve so that the recovery can start soon. Whilst we have always appreciated the need for widespread availability of broadband, the Covid-19 crisis has really reinforced the essential need for reliable high-speed broadband, with Fibre to the Premises (FTTP) the preferred technology.

The benefits of FTTP are wide ranging. International studies have demonstrated clear economic benefits, whether measured in terms of the number of new start-up businesses or GDP growth. Society stands to benefit from enhanced services including e-Government, access to enhanced medical services and more flexible and better ways of working. A dedicated fibre line to every business and residential premise offers higher speeds, greater reliability and better performance than other competing technologies.

Our traditional access networks based on copper have reached the ceiling of broadband speed. We acknowledged this some years ago and accordingly began the rollout of our rural fibre network. We have since commenced the second phase of this commercial investment and have now passed 749,000 premises on our way to a target of

1.8 million. Such investment will not only create benefits for all our customers but promote Ireland internationally as a digital economy.

Fully unlocking Ireland's potential compared to competing destinations for job creation, exports and investments, requires that we as a nation urgently transition from copper to fibre. The speed and success of this transition will depend on a number of factors such as government policy and regulatory support to enable the promotion of fibre ahead of copper, and allowing customers to move to that new network when available, ultimately leading to a withdrawal of copper services from the market.

This white paper considers the conditions that will allow and encourage migration to these modern networks including the National Broadband Plan and for the switch-off of legacy copper services.

I believe these conditions promote transparency for our retail providers, their customers, and provide certainty for the business case of private investors and a return on the Irish taxpayers' investment.

Carolan Lennon

CEO

Ireland's call

Ireland's citizens and businesses require access to fast and reliable broadband services. This is a central feature of our Government's policy:[1] "*In the area of communications, the government's goal is to provide a world class communications network with high quality services, supporting connected communities and enabling citizens to embrace digital opportunities, in a safe environment.*

The government supports economic growth, jobs, competitiveness and social inclusion through a range of policies and regulation designed to facilitate a more digitally connected economy and society. It is focused on ensuring the availability of high quality broadband to every premises in Ireland, balanced regulation to foster investment and innovation, as well as protecting and empowering individuals, communities and businesses in their use of digital technologies."

The Covid-19 pandemic has demonstrated a clear need for increased fibre broadband deployment, principally due to the large increase in the number of people working from home in the State. A recent survey by think-tank Eurofound revealed that approximately 40% of paid hours worked by employees in Ireland were performed from home at the height of the crisis, the fourth highest figure in the EU:[2]

"*Telecommunications, networks and connectivity are more vital than ever, with so much of our society confined to their homes and much of the economy depending on them. Networks need to be robust and flexible enough to deal with the additional traffic for working, doing business or e-learning and education online, but also for important social activities: from streaming or gaming to video calls with friends and families.*"

The Government's publication of the Remote Work Strategy, which will provide a legislative basis for employees to request the ability to work from home, and which contains an objective that remote working should be the norm for 20% of public sector workers, will ensure significantly increased rates of remote working will remain the norm even after the end of public health restrictions.

A joint eir and Tech Beat survey on remote working in December 2020, based on 263 responses, found that 55% of remote workers say they have achieved a better work/life balance, while only 11% say they do not wish to continue regularly working from home when public

[1] https://www.gov.ie/en/policy/435802-communications-and-digital/

[2] Burke-Kennedy, K., 'Ireland had one of highest rates of home-working during Covid-19 crisis', The Irish Times, 1 October 2020.
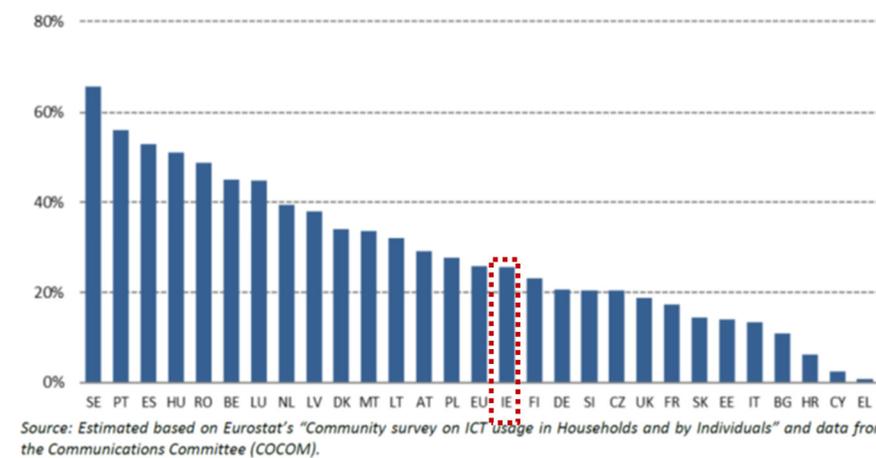
health restrictions ease. This demonstrates the scale of demand for remote working that is likely to persist in Ireland.

US research found that fibre broadband access increases rates of remote working. The research also demonstrated that, among surveyed workers, the average number of days worked from home per month was 12.8 days for FTTP users compared with 11.5 days for cable internet users and 10.2 days for DSL users.[3]

A quantitative model estimation by SQW in 2013 projected that faster broadband speeds (although not FTTP per se) would generate increase in teleworking, in turn generating about 60 million hours of leisure time per annum in the UK by 2024,[4] as a result of commute reductions.

As it stands Ireland is some way behind many of its peers in the European Union as illustrated in the European Commission's most recent scorecard report, the Digital and Society Index (DESI)[5]. Here Ireland ranks only 23 out of 28 for connectivity to high speed broadband.

Figure 1: Households with a fixed broadband subscription of at least 100 Mbps (% of households), 2019

Source: Estimated based on Eurostat's "Community survey on ICT usage in Households and by Individuals" and data from the Communications Committee (COCOM).

Through industry and State Aid investment the availability of FTTP for every home and business in Ireland will soon become a reality. However, the success of open eir's commercial investment, the State's investment in the National Broadband Plan (NBP), and the speed at which Ireland can push to become a leader in Europe, is reliant on a supportive regulatory regime to develop a framework that

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[3] RVA (2011), Broadband Consumer Research.
[4] SQW (2013), UK Broadband Impact Study.
[5] https://ec.europa.eu/digital-single-market/en/scoreboard/ireland

incentivises a timely and orderly migration from the legacy copper-based services to modern FTTP services.

"Even with willing operators and customers, regulatory barriers to exchange closure and/or PSTN switch-off can delay migration."[6]

How will high speed broadband be delivered in Ireland?

In Ireland high speed broadband is being delivered through a combination of:

- commercial investment by the telecommunications sector
- State intervention in those areas where commercial providers acting alone will not provide this service, the National Broadband Plan (NBP)

The NBP has commenced rollout and the first premises were connected to the NBP FTTP network in January 2021. open eir is pleased to support the rollout of the NBP providing access to our civil engineering network assets.

Over the years open eir has been at the forefront of commercial investment in the so-called commercial area. In the near term this has placed Ireland in a relatively advantageous position as recognised in

a recent European Commission study[7]. *"In terms of fixed coverage, Ireland outperforms the EU on DSL (at 93%, compared to 91% the EU average)… and especially on VDSL (92%, ranking third in the EU, far above the EU average of 59%)."* However this is only a short term benefit. Current technology that is transmitted over copper cables has a physical cap on the maximum download speeds at up to 100Mbps[8] and much lower upload speeds. Whilst such speeds may be acceptable to some broadband users at the current time, history shows us that broadband speed demands are continually growing.

Faster broadband also tends to be associated with higher rates of remote working, which in turn carries environmental benefits by reducing commuting and associated greenhouse gases. The network over which these services are provided needs to be modernised. The copper network that has served us so well in the past will, in the next 5 to 7 years, be replaced with modern, reliable, future proofed and scalable high capacity networks largely based on FTTP technologies.

open eir is in the midst of the network transformation process with a multi-annual investment programme. The first phase, our rural FTTP broadband programme, was completed in summer 2019 passing 340,000 premises. The second phase, our Ireland's Fibre Network

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[6] Copper switch-off European experience and practical considerations by WIK-Consult

[7] https://ec.europa.eu/digital-single-market/en/scoreboard/ireland

[8] The DSL broadband speed on a line is a function of the distance of the premises and the serving network node.

(IFN) initiative, commenced in the summer of 2019 and the rollout has progressed at pace. This is an ambitious project which relies upon €500m of investment from eir. The IFN will push high speed broadband to 1.4 million homes and businesses and employ 1,000 eir staff and contractors for the duration of the build. As part of the project we will build approximately 50,000 km of new fibre routes which is more than enough to circumnavigate the globe. Once completed, our fibre network will cover 84% of the premises in Ireland and 90% of that network will be served by FTTP. As of December 2020, we have passed 749,000 premises with FTTP through our rural broadband and IFN initiatives. Virgin Media and SIRO have also continued to rollout and invest in their networks, but to a lesser degree.

Once the NBP rolls out through the remainder of the country on eir's poles and ducts, Ireland could have a near ubiquitous fibre broadband network, making it one of the most connected countries in the world for fixed broadband. The new European regulatory framework, referred to as the Code[9], which will be transposed into Irish law shortly, recognises the need to encourage the deployment of very high capacity networks, and to support migration from legacy infrastructure. Article 81 of the Code provides the basis for a national protocol to be established for legacy migration. This paper is in

accordance with Article 81(1) (and the relevant Irish legislation when transposed) to notify ComReg of open eir's "*plan to decommission or replace with a new infrastructure parts of the network, including legacy infrastructure necessary to operate a copper network*".

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[9] The European Electronic Communications Code, Directive (EU) 2018/1972

Tomorrow's world

Benefits to Irish economy, society and environment

Research on greater fibre broadband penetration and access to high internet speeds, consistent with copper switch-off, overwhelmingly shows a beneficial impact on business activity and the economy. This arises largely through creating easier access to markets, a more flexible workforce, and the development of business models that are digitally dependent and more flexible than those that rely solely on more traditional markets.

An OECD analysis of the effect of FTTP networks in 290 municipalities in Sweden in 2015, found that 10% higher fibre penetration was correlated with 0.08 more company registrations per 1,000 inhabitants per year across those areas.[10] The same analysis further found that, on average, 10% higher fibre penetration is correlated with a 1.1% higher employment rate, when controlling for other significant factors such as urbanisation level, population evolution, income, education level and business creation.

Similar attempts to measure the effect of higher fibre broadband penetration on employment have been carried out elsewhere. In an Oxera study for the UK's Broadband Stakeholder Group, it was found that, if speeds are higher relative to other surrounding areas (or similar, competing areas), new or established businesses may also be attracted into the area from elsewhere, thereby boosting the level of business activity in the local area. The evidence, it says, shows an expected increase between 0.4% and 3.2% in the number of businesses operating in the area where speed is doubled.[11] This is reinforced by a study of French municipalities and the effect of available broadband speed, which observed 4.8% more start-ups in municipalities with ultrafast broadband compared to the ones with slower access[12].

As might be anticipated, the reduction of obstacles to business development and improved access to markets provided by high-speed broadband has been measured to have a demonstrable benefit to the whole economy, leading to improved GDP. A study by WIK, Ecorys, and VVA Consulting, which supports the finding of a link between broadband speeds and GDP growth, suggests that

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[10] In other words, about one additional company registration per 12000 inhabitants, Mölleryd. B. (2015), Development of High-speed Networks and the Role of Municipal Networks, OECD Science, Technology and Industry Policy Papers, No. 26, OECD Publishing, Paris.

[11] Oxera, Impact at a local level of full-fibre and 5G investments, Broadband Stakeholder Group, September 2019, with estimated productivity gains based on an assumption of the impact of a doubling of speed; Ipsos MORI (2018), based on an increase in connection speed of 100–200 Mbit/s; and Hasbi (2017), which estimated the impact of very high speed broadband availability in the local area.

[12] Henseler-Unger, I., The Socio-Economic Benefits of FTTH, Wik Consult, FTTH Conference 2018.

achieving 55% of broadband connections based on fibre by 2025 in Europe would result in GDP levels 0.54% higher than the status quo, while the less realistic scenario of achieving all-fibre connectivity by 2025 would result in a GDP increase by that point of 0.95% above the status quo.[13]

Further, an increase in fibre penetration has been linked to environmental benefits, through reduced CO2 emissions and more energy efficiency networks. An assessment of data on fixed broadband subscribers in the EU (plus Norway and Iceland) has shown that deployment of fibre infrastructure could lead to environmental benefits resulting in 88% less greenhouse gas emissions per gigabit in Europe, relative to the mix of copper and cable technologies in use in 2008.[14]

Finally, by switching off copper and moving customers to fibre networks, new and innovative healthcare solutions and applications including remote care opportunities can be better explored and implemented. An example of this is the town of Nuenen in the Netherlands, where the elderly population is linked over fibre-based high-speed networks to create a video-based platform of community

exchange which has been shown to reduce loneliness.[15] Looking further into the future, tactile internet solutions such as remote surgery may also be enabled through fibre-based solutions.

Benefits to consumers

The benefits to consumers of switching off the copper and rolling out FTTP will flow to those consumers that actively use and pursue the opportunities inherent in a broadband connection. Users of voice only lines will not see any immediate benefit when shifting to fibre. Hence the interest and willingness of consumers to pay for fibre-based services and interest in copper switch-off will vary.

Compared to legacy broadband technologies, FTTP offers consumers a superior experience both in terms of bandwidth it offers and its reliability.

A consumer survey in Sweden found that more FTTP customers were happy with their service compared with (legacy) DSL customers (82% versus 50%). Further, 87% of the FTTP users highlighted the high bandwidth as a benefit of FTTP based services, 62% the wider range of services available and 51% a better value for money.[16]

In Ireland, the Department of Communications, Climate Action and Energy (DCCAE) commissioned a study by PWC in 2018 to assess the

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[13] WIK-Consult, ECORYS and VVA Consulting (2016): Support for the preparation of the impact assessment accompanying the review of the regulatory framework for e-communications, Study for the European Commission, DG Communications Networks, Content & Technology.
[14] Aleksix, S. and Lovric, A. (2014), Energy Consumption and Environment Implications of Wired Access Networks, American Journal of Engineering and Applied Sciences 4 (4), pp. 531-539.

[15] What Fibre to the Home can do for your community, FTTH Council Europe
[16] The socio-economic impact of FTTH by WIK for the FTTH Council Europe (2018)

costs and benefits of the NBP. In that report, PWC suggested that a household within the intervention area might benefit €740 per annum from the roll-out and uptake of FTTP. This conclusion was based on gaining the ability to work remotely, saving time on productive or value adding online activity and engaging in online shopping.[17] Such benefits would also be available to consumers broadly across Ireland in the commercial areas.

The benefits to consumers of migrating away from copper to fibre-based services, however, are not likely to come without some level of disruption and inconvenience. This could include service outages over a short period or when equipment at a premise is changed and there is a need to reconfigure set-ups. Here a clear communication strategy and guidelines for copper switch-off can help alleviate such concerns.

Finally, there will be consumers who, despite the broad roll-out of FTTP in both intervention and commercial areas, find themselves continuing to rely on copper services. This could be due to long term restrictions on access or other factors beyond the control of operators making installation of new networks difficult or impossible. For some this may be a source of disappointment, and for others such as those only relying on voice only this may be of no concern. Nevertheless, here it is important that clear conditions are set for the transition from copper to fibre services.

Benefits to business segment / enterprise

Overall FTTP enables innovation and new business opportunities in the knowledge economy, driving enterprises and organisations to adopt new business models and marketing strategies. Accordingly, many large enterprises will already be using fibre optic networks due to the high bandwidth, high reliability and high security requirements. However, small and medium-size businesses (SMEs) can also easily be served by FTTP and avail of the advantages fibre offers. For example, for most businesses reliability is a leading factor when deciding what type of broadband service to choose. By design, a fibre connection is far less likely to be impacted by service interruptions which make it an attractive choice.

Many businesses today are looking towards cloud services as they create new methods in which to do business, and ways to reduce operating costs. In cloud computing, where computing power and information is moved to the cloud, low latency and high capacity are critical requirements. FTTP technologies fulfil these requirements and ensure a good user experience.

Having employees using FTTP can also allow for more flexible working arrangements such as working from home, which helps employees save time and cost of travel between the home and workplace which generally contribute to higher productivity for the companies and

[17] PwC, NBP Cost Benefit Analysis Report, April 2019, p.7.

work-life balance for employees. To facilitate remote working, employees must be able to avail of appropriate upload speeds, which are not always available with copper technology.

The PWC report on behalf of the DCCAE from 2018, quantified significant enterprise benefits in the intervention area arising from (i) farm enterprises, (ii) SME enterprises, (iii) white collar workers commuting to employment outside of the intervention area and (iv) job creation for existing enterprises. The SME benefits cumulated to a total of €332m (real NPV) while commuting benefits were the highest totalling €930m (real NPV), both over a 25-year period.

As noted by PWC, the significance of this later benefit corresponds with the view of enterprise policymakers (e.g. DJEI) who hold the view that the ability of employees to work remotely, including teleconferencing "out-of-hours", is an increasingly important constituent of Ireland's FDI competitiveness.

Benefits for telecom infrastructure providers (Commercial Area)

International experience suggests that the process of copper switch-off can be slow and unstructured. This can have many explanations, but often two types of regulation complicate the process: access regulation allowing access seekers to stay on legacy networks longer than required and consumer protection such as universal service

obligations to keep certain services functional and protection of critical and vulnerable users.

In this regard, having a clear framework in place that provides an access provider like open eir, and also access seekers, with clarity and certainty on the conditions allowing for copper switch-off in the commercial area, can improve investor confidence. This in turn can boost take-up efforts which is a critical factor in supporting a positive FTTP business case, while providing increased incentives for roll-out; thereby creating a positive feedback loop.

FTTP provides a more-predictable, reliable and future-proof fixed broadband service in comparison to copper. Although the FTTC solutions eir has invested in can bring life back to copper lines, the quality and reliability improvements are surpassed by FTTP with fewer faults and more weather resilient properties. Fibre-based networks also require less maintenance and less energy relative to their copper counterparts, and the reduction in the number of exchange premises can offer savings from retirement of space bringing about operating expenditure reductions.

As users migrate to FTTP, the overall utilisation of the legacy copper network will decline, and there will come a point where it is inefficient to maintain parallel FTTP and legacy networks. In this regard, having

clear conditions for full and final migration along with the copper switch off, is a clear benefit to industry.

Benefits to NBI (in the Intervention Area)

National Broadband Ireland (NBI) has the task of building, operating and maintaining a fibre-based broadband network within the intervention area.[18] NBI will be a wholesale operator, selling services to retail operators, who in turn deal directly with home and business broadband customers. In providing those wholesale services, NBI will provide its own technical infrastructure but will to a large extent rely on civil engineering infrastructure such as ducts and poles from open eir. Indeed, the DCCAE made clear that as much as possible of the network infrastructure will comprise the re-use of existing poles and ducts, which NBI will lease from existing infrastructure owners, such as open eir. NBI will provide an alternative to eir's legacy services and ultimately render its copper network in the intervention area obsolete.

Significant benefits are expected from NBI's deployment of a broadband network in the intervention area. These range from accessibility to improved broadband services, which would increase the economic competitiveness and attractiveness of the intervention areas for investors to positive impact on job creation and a broad range of other public policy priorities, including in the areas of social

inclusion, tourism and public sector reform. The cost benefit analysis conducted by PwC on behalf of the DCCAE for the NBP, estimates a net benefit NPV of €858m over a 25-year period, with a benefit cost ratio of 1.3.

As noted in the previous section, having a clear framework in place that provides clarity and certainty on the conditions allowing for copper switch-off, can improve investor confidence. This also applies to NBI in the intervention area. With agreement on the conditions for copper switch-off, NBI will have a roadmap on which to better plan its roll-out and customer uptake. Since we are still in the early days of deployment in the intervention area, this additional clarity will be able to feed into the preparatory activities related to design of the network deployment, and hence, help NBI realise cost and resource management efficiencies. Furthermore, NBI foresee it will take between five to seven years to reach all 537,596 premises in the intervention area, but 15 years to fully migrate services to its network. The proposals in this white paper will significantly fast-track this to the benefit of NBI, which in turn will speed up the economic-wide benefits as noted above.

With increased clarity on copper switch-off, NBI will be in a better position to reap the benefits of efficient and timely deployment, ultimately ensuring an efficient use of taxpayers' money.

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[18] The network will provide fibre to the premises FTTH connectivity in the vast majority of cases, with provision for wireless alternatives for up to 2% of the hardest-to-reach premises.

Leaving a legacy

The Irish landscape for fibre deployment will change dramatically over the next five years. We believe that the migration to fibre should initially be consumer led. In order to ensure that retailers and consumers can make informed decisions over time, a three-stage transition from copper to fibre services is required.

Stage 1: Consumer led migration

Where FTTP is available at the premises[19], open eir should be allowed to stop selling wholesale copper services when a customer moves premises, changes service or switches provider.[20]

This is the first "stop sell" event and is implemented at a premises level. The "stop sell" will be progressively applied as premises are added to open eir's Pre-Qualification file. A variant of this is successfully being implemented in France.

Where a customer wishes to stay with their existing service provider on copper-based services they remain free to do so. In circumstances where a copper line is inactive when the fibre is deployed, then that premises will only be eligible for ordering fibre.

Once premises have transitioned to FTTP there will not be an option to migrate backwards to the legacy network.

Stage 2: Incentivising exchange area led migration

When 75% of all premises within an open eir exchange area are capable of ordering fibre, the second transition stage occurs.

In order to communicate the increasing costs of maintaining a copper service into the future, open eir should be allowed to increase the wholesale copper only prices for voice and broadband services, up to the entry level FTTP profile speed wholesale price for premises passed by FTTP.

At this stage, the wholesale price of FTTC will remain at the voluntary committed prices offered by open eir to ComReg on 8 January 2021. This will allow existing FTTC customers to stay with their retail provider in the medium term if desired.

Such wholesale pricing signals on the price of copper are proposed to be implemented in the UK and have already been successfully implemented in New Zealand. This approach recognises the increasing costs of maintaining the legacy network and will also provide the correct migration signals to retail operators, encouraging further FTTP adoption from their customers.

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[19] This includes where a premise is passed by open eir or NBI.
[20] This approach applies to the consumer and small business mass market only.

Stage 3: Completing the transition and copper switch-off

When 95% of all premises within an open eir exchange area are capable of ordering fibre, the final transition stage occurs. As this milestone is achieved, the full list of copper access regulatory remedies including those voluntary behaviours offered to ComReg by open eir, are automatically lifted for the entire exchange area.

In addition, when 95% of all premises within an open eir exchange are capable of ordering fibre, open eir will commit that within the next three years, all remaining premises within that exchange area will have broadband with speeds greater than 30Mbps made available to them.

The calculation of the stage 3 milestone will include premises where open eir has been denied access to prepare FTTP, for example multi-dwelling units.

End users who have not acted will be terminated on the cessation date (unless self-declared to be a vulnerable user or a user providing critical national infrastructure).

This lifting of regulatory obligations and similar wholesale deployment commitments are also proposed in the UK.

Communication Plan to consumers and businesses

To complement the three-stage transition from copper to fibre services as set out above, a structured programme providing information to home and business owners on the availability of FTTP and the network changes in the area will be required. This will facilitate the migration to better modern networks and allow the switch-off and ultimate removal of copper lines.

Communications at Stage 1: Consumer led migration

Within 28 days of premises being able to order fibre in an area, open eir will provide the home and business owners with information on the benefits of FTTP. It will also provide clear information on the "stop sell" and associated timelines.

Communications at Stage 2: Incentivising exchange area led migration

As the availability of fibre in an exchange area is dependent on the roll-out by open eir, NBI and Siro, ComReg will have a role to play in publishing updates as to the progress and availability of FTTP within exchange areas.

Communications at Stage 3: Completing the transition and copper switch-off

When 95% of all premises within an open eir exchange area are capable of ordering fibre, open eir will inform the remaining consumer and small business copper customers in that exchange area who are passed by FTTP, that their existing copper services will be withdrawn in 12 months' time, advising them to contact their existing retail provider and/or retail provider of choice to discuss their options. The withdrawal notices will be progressively issued to the remaining 5% as premises are added to open eir's Pre-Qualification file.

These customers will also receive a reminder of this notice within three months and one month of the withdrawal of their copper services.

For vulnerable users reliant on special services for medical emergency and users providing critical national infrastructure, more time may be needed to identify suitable replacement services. Such users may request the withdrawal period to be extended from 12 months to 18 months. While such services are not the responsibility of open eir, open eir will work with the existing retail providers to facilitate solutions where possible. However, these services may no longer rely on an open eir connection, and it may be that alternative solutions are available in the wider market, which may be a choice for the consumer or business to purchase instead.

Communication Plan to telecom industry

As part of open eir's existing regulatory obligations, the availability of FTTP at a premises is published in advance to retailers, 28 days before an FTTP service can be ordered at that premise.

Continued information across the three stages of transition will help all retailers communicate and sell to their customers, detailing the journey they will take towards copper switch-off.

Industry Communication: Stage 1: Consumer led migration

After a premise first appears on open eir's Pre-Qualification file, the existing active copper service of that premise will no longer be available to order to operators. However, the relevant operator will continue to be able to maintain the existing copper service only.

Industry Communication: Stage 2: Incentivising exchange area led migration

When 75% of all premises within an open eir exchange area are capable of ordering fibre, that information will be made available by ComReg.

When an open eir exchange area reaches the 75% milestone, open eir will inform operators at least six months in advance of the proposed price increase on existing copper services within that exchange area.

Such a price increase will not exceed the wholesale entry level FTTH Bitstream price.

In the case of open eir exchanges that are subject to pricing regulation, that price increase will not impact eir's voluntary commitment of those wholesale prices for FTTC broadband services.

Industry Communication: Stage 3: Completing the transition and copper switch-off

When 95% of all premises within an open eir exchange are capable of ordering fibre, that information will be made available by ComReg.

When an open eir exchange reaches the 95% milestone, open eir will inform operators at least 12 months in advance, that there will be a withdrawal of access to copper-based services within that exchange.

Any copper lines who have not acted upon will be terminated on the cessation date (unless considered to be a critical user).

Business to businesses market

The large business to business and government market is typically characterised by multi-year contracts for multi-geographic locations throughout Ireland. Such frameworks, tenders, and contracts can involve the requirement for a number of copper-based solutions. Consequently, an alternative transition from copper to fibre services is required in these circumstances.

These copper-based services will first move to end-of-sale, and subsequently to end-of-life, on a product-by-product basis nationally rather than on a location-by-location basis. During that time, open eir's voluntary commitment on its copper-based broadband and voice wholesale prices will remain in place for those services.

The current IFN programme is expected to be completed in 2024, and open eir will make a formal announcement by 2025 regarding the withdrawal of access to these copper-based services and associated timelines.

Conclusion

Ireland is lagging behind its European peers in respect of FTTP availability. This can be reversed over the next few years through a combination of commercial and State investment in the deployment of FTTP high speed broadband networks, ensuring Ireland continues to be an attractive place to live and to do business.

At the same time as modern networks are deployed, it is important to encourage an orderly and timely transition from the legacy copper network to the faster and more reliable FTTP networks. We believe the protocol put forward in this paper provides a fair and reasonable basis for the progressive transition from legacy services, as the new networks are rolled out. At each stage, the pace of change accelerates in areas as the modern network becomes more widely available. In turn, this facilitates a quick switch-off of the legacy copper network when rollout is completed in an area. Doing nothing now and waiting until the FTTP network is fully rolled out is not desirable or efficient.

open eir looks forward to open and constructive engagement with ComReg and Industry Stakeholders to codify the national protocol to enable the digital transformation, and the timely switch-off of the legacy copper services and network. Recognising the due regulatory process to establish national regulatory policy, we hope that the protocol can be implemented at the earliest opportunity.