

# The National Broadband Plan

Challenging expectation and delivery

May 2017

John Earley...

The logo for airfibre, featuring the word "airfibre" in a lowercase, sans-serif font. The letters are dark blue. A light blue, curved swoosh underline is positioned beneath the text, starting under the 'a' and ending under the 'e', curving upwards at both ends.

airfibre

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## Forward

The author wishes to acknowledge and thank Declan Drummond of Threefold Limited for his input research to this paper.

John Earley was a founder member of the management team that pioneered the rollout of the Metronet (UK) network in the UK which from a zero start has grown to be a significant independent telecommunications operator with more than 5,000 business Internet customers and revenues in excess of £25 million.

John's remit within Metronet was to extend the network (specialises in last mile wireless connectivity to circumvent BT tails) to Cities beyond the start up location of Manchester (Birmingham, Leeds and Liverpool). He also developed Metronet's CCTV connectivity services that were adopted by 11 City / Borough councils as well as the second and third largest Police Forces in England.

Sponsoring an MBO in 2012, John took Airfibre out of Metronet ownership and has since worked to develop the Airfibre business in Ireland.

In commenting to this report, John said, "Neither I nor Airfibre have a vested interest in the NBP. I don't believe it will have any impact upon what Airfibre is doing and I don't anticipate playing a part in it. My motivation for writing the paper comes from my own confusion as to what is intended for delivery and how it can possibly be delivered as discussed."

## Introduction

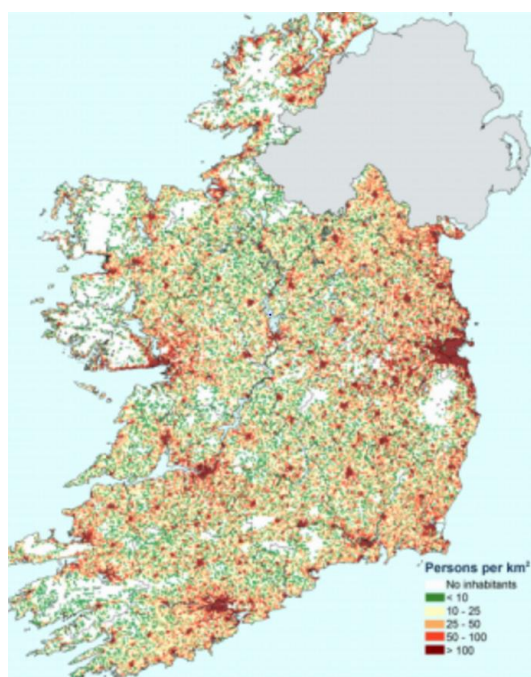
Such is the public appetite for decent Internet services rarely a week goes by without media comment to the National Broadband Plan (NBP).

An eclectic mix of interests - politics, media and legacy network operators - combine to ensure that there is confusion with regard to what can and will be achieved. Additionally, there is a danger that hopes and expectations are being set that will inevitably lead to widespread disappointment.

This paper assesses the political and business realities of delivering the NBP in Ireland and offers insight as to what will be achieved and, given the view of the author, what can be done by the Irish business community NOW to ensure that it has the broadband services it needs in order to be competitive.

It is worth noting that this paper places heavy emphasis on the needs of the business community in contrast to NBP stakeholders will be focused upon residential services.

### Ireland – Population Density



A night flight across Ireland reveals that the population is scattered across the country, with few dark areas indicating wilderness. A Department of Communications analysis found that there is no other country with a population distribution to match that of Ireland.

Moreover, ribbon development has led to an unusually high-level of one off houses with large garden areas, which at the time of building incurred high connectivity charges for utilities such as telephones and electricity. For many, the concept of piped gas and even sewers is a long way off if never.

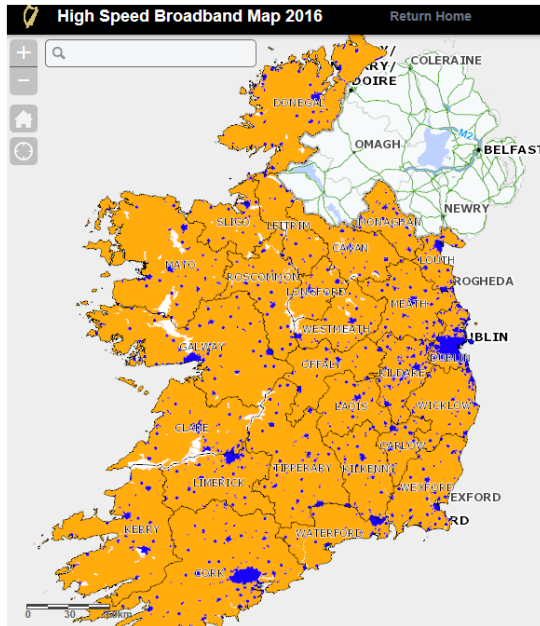
When building a house, individual owners will absorb the relatively high costs of utilities much as consumers often unknowingly absorb the costs of expensive mobile phones within their network plans.

Consumers will not cover the upfront costs of the NBP, so it rightly falls upon the



Government to stimulate interest from Telecommunications Operators to deliver on the NBP.

## NBP Objectives



Put simply, Next Generation Access (NGA) Broadband is defined at present to deliver 30Mbps download speeds and 6Mbps upload speeds for all. For many, such performance would be considered relative utopia. We will examine this target in respect to business later in the paper – for now we will focus upon the NGA agenda.

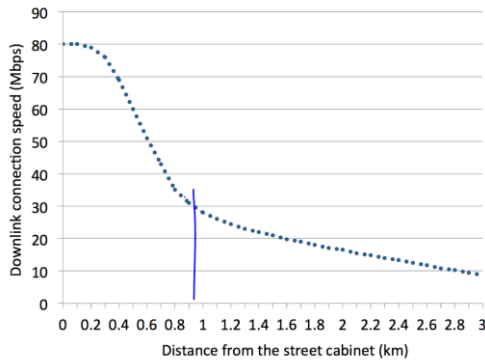
It was predicted that delivery of NGA Broadband plan would be as depicted here, with blue indicating existing areas of coverage in 2016 and amber areas that would require State intervention. As only 38% of the population reside in the blue areas and 30% of the 757,000 addresses are located in 96% of the land area of Ireland a strategy is necessary to bridge the digital divide.

To understand the enormity of the challenge it is necessary to examine the various options

for Internet delivery.

## Legacy fixed line copper telephone lines – ADSL/VDSL.

Construction of Ireland's telephone network started in 1880 with a service for five subscribers



being delivered from a commercial building in Dame Court, Dublin. Today there are close to 1150 exchanges throughout Ireland and for many, the distance from the exchange to the premises (digital signals fade over distance) is too far to support viable broadband data rates over the old copper phone lines often laid over 50 years ago. Broadband over these copper phone lines is called DSL (Digital Subscriber Line or ADSL (Asymmetric Digital Subscriber Line).

As can be seen from the diagram the distance over which the objectives of the

NBP can be achieved is fractionally over 900m, which makes telephone line based delivery of NBP compliant broadband impractical.

Enter Fibre To The Cabinet (FTTC)

## FTTC

Often incorrectly marketed as "Fibre to the Home", FTTC services are as the name suggests based upon fibre to a street based cabinet from which onward services are provided over traditional copper based telephone lines.

Whilst this brings fibre closer to premises, it does not offer the massive advantages over copper that a direct fibre connection would. Whilst significantly improving the situation for many, the encumbrances of copper remain; there is increasing anecdotal evidence where so called *fibre services* are failing to meet users expectations as set by marketing hyperbole.

Nevertheless domestic broadband users in urban areas are seeing a significant uplift in broadband services, but the majority in rural communities are unlikely to benefit in the medium term from the roll out of FTTC. Business users in all environs need to be wary of the promises made from these services as will be outlined later in this paper.

## Microwave & Wireless Technologies

Wireless is oft perceived as the poor relation to fibre largely as a result of poor implementations in the past.

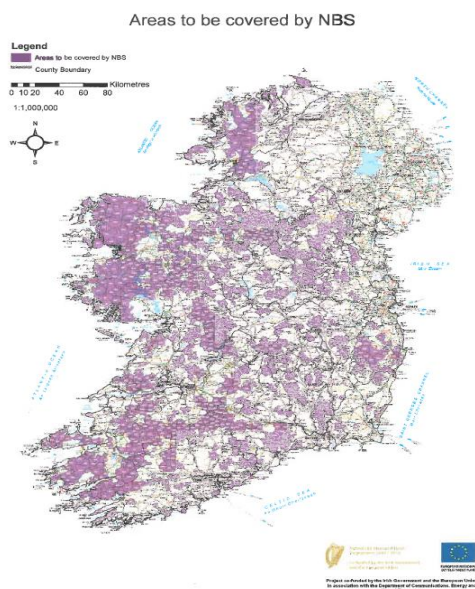
Ireland has numerous wireless Internet Service Providers that deliver broadband to communities in rural areas the majority of whom need to drive costs of delivery down in order to match the price of services in urban areas.

As a result, cheap radio solutions are employed, which are simply not capable of supporting carrier grade communications services – hence the bad press.

This in contrast to carrier grade networks that are dependent upon wireless and microwave technologies – notably the mobile telephone networks which are universally dependent upon wireless back haul to support telephony and data applications. 4G today and 5G in the future will continue to depend upon wireless backhaul solutions that are fit for purpose.

Whilst there are numerous powerful wireless national communications networks, the case for wireless has not been helped by virtue of its use in the National Broadband Scheme 2008.

### National Broadband Scheme 2008



Having invested in building a national 3G network, Three Ireland was awarded a contract to deliver broadband services in Ireland using its technology, which achieved 2.3Mbps download speeds with a 1.4Mbps upload capability.

Whilst leaving a great deal to be desired in a modern context, the service did reach 234,000 residential and commercial premises.

But as with any mobile data service, limitations for businesses exists with data caps (40Gb per month 2008) and contention ratios (contention is the number of users that can share the service at the same time) that impact service capability based upon the number of concurrent users operating in any given cell.

Subsequent roll out of 4G services marked a significant improvement in performance but retained the inhibiting factor of contention ratios:

users could not and still cannot be assured of consistent performance in a shared network environment.

As a result, the Department of Communications felt that 'radio' failed to deliver on the aspirations for next generation broadband services – a point for debate later in this paper.

Notwithstanding, Government proposals focus upon fibre being the answer.

### Fibre?

Fibre to all premises (FTTH – Fibre To The Home / FTTP – Fibre To The Premises) would be utopian. In reality the costs of digging in fibre to all premises is a tall order and would require a level of investment that is unlikely to be commercially justifiable; akin if you will to rolling out a new national telephone network which lest we forget took the best part of a century to deliver. We can't wait that long!

Estimates suggest that 100,000Km of fibre would have to be dug into the ground or run on poles to achieve universal delivery to all premises. Estimated costs for this run between €18 and €75 per metre - €1.8 to €7.5 billion resulting in fibre passing all premises: a further €135 per connection to the premises would add another €100 million, but hey what's a €100 mil in the context of this project!

The Government has earmarked €275 million to support the NBP, which whilst a significant sum is unlikely in and of itself to motivate delivery of the plan. This said, the Minister for

Communications, Energy and Resources in 2012, Pat Rabbite TD, is on record as stating that Government will intervene – but only where it is evident that the market will not deliver.

In making a judgement call as to how successful the NBP will be in delivering to its objective in an acceptable timeline (already subject to slippage) it makes sense to understand the *business case* that would motivate the market to deliver.

The Comreg Quarterly Data Report Q3/16 stated that there were 1.181 million residential broadband subscriptions. Assuming *superfast broadband* were available to all at an annual average revenue per unit of €600, this would give rise to an annual market of c€708 million.

The same report states that 66% of Residential premises already enjoy the speeds targeted by the NBP. This being so and assuming the additional revenues stimulated by the NBP will amount to 34% of premises migrating from incumbent local WISPs and legacy xDSL (phone line) services, the investment in a national fibre network may yield additional annual revenues c€120 million. That is of course assuming that the bid-winner is not the incumbent supplier of xDSL services.

It is not unreasonable to ask if Eir would be financially motivated to accelerate roll out of the NBP if all it were doing was migrating existing revenues from one network generation to another?

So, with a budget requirement of between €1.8 and €7.5 billion the business case needs to be examined in order to try and predict the requirement for increased in Government funding, which in turn may water down the appetite for delivery.

Let's try to assess the market and its likely requirement for a return on investment. We will also be generous and assume that the successful bidder will realise additional revenues of €120 million per annum and not simply switch existing revenues to the new network.

Given a €300 million Government investment and an assumed 8% Return on Investment over 25 years the figures add up provided the 'market' only has to cough up €1.5Bn. But this of course is at the low end of expectations outlined earlier and as we all know national capital investments schemes rarely come in at the low end of estimates.

If you take the investment to be mid-way between high/low forecasts, the subsidy from Government would need to be in excess of €3Bn – more than ten times the original commitment.

### **Will the NBP be delivered?**

We can but wait for outcome of the bidding process as to the likely requirement for Government subsidy, but clearly this may not be of much comfort to the Department of Finance. There may need to be a greater political appetite for the NBP than first perceived once scrutiny of the value of the NBP goes beyond political headlines and marketing hyperbole.

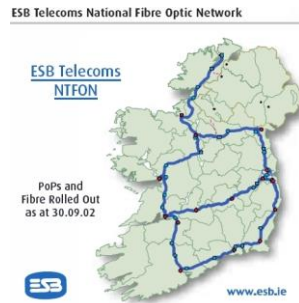
### **What about a NBP for businesses?**

Well, the first thing we need do is drop the 'NBP' strap line. Moves are afoot for the market to deliver better than NBP services today, without need for Government subsidy.

Let's first consider the existing fibre infrastructure in Ireland, which is not significant compared to most European countries. Various maps (see below available in the public domain from a variety of Telecommunications Operators provide testimony that the all-important backbone is in place.

The second thing we need to drop is a blinkered view on Fibre being the only resolution.

The third thing we need do is challenge the appetite of legacy Telcos to deliver FTTC type services to business parks and industrial estates.



FTTC services are based upon achieving a contention ratio typically up to 48:1. That is 48 users sharing the 300Mbps/200Mbps on offer. Where this achieved, revenues in excess of €2,400 per month are likely to be achieved per fibre. This makes great financial sense.

Compare housing density to industrial estates and business parks and the case is made for achieving maximum revenues in the shortest possible time in the domestic market place.

Sad fact is, if your business is not already on fibre you are going to be waiting for some time for these services. But would they be of any use to you anyway?

The NBP speaks volumes about 30Mbps/6Mbps asymmetrical services, but we are yet to learn of any contention ratios that may apply. FTTC 48:1 contention on a 300Mbps/30Mbps asymmetrical service could in theory result in download speeds of 6.25Mbps and upload speeds of 0.6Mbps. Whilst this may not happen frequently, it potentially can (as it does in domestic environs when the kids get home from school!) but as a business you have no control.

### So where do you go from here?

Ever-higher bandwidth speeds are bandied about. 100Mbps/1Gbps/10Gbps and beyond.

On average most businesses will utilise between 4% and 10% of the bandwidth delivered. In reality, most links are only ever maxed out when conducting speed tests.

Airfibre only services business/public sector customers. Fewer than 20% subscribe for 100Mbps+ services simply because they are not needed.

The true buying criteria for connectivity in this community should be:

- 1) Am I getting all the bandwidth I pay for; that is zero contention. If so service will be consistently high and not subject to variation.
- 2) Can I upload data just as fast as I download it? For residential users the requirement is geared towards download – NetFlix, YouTube, Video on Demand, etc. Businesses operating in The Cloud, supporting remote access to central servers, transferring large documents, etc. need to push data just as fast as they pull it down.
- 3) Will I achieve a 'fibre experience' as opposed to xDSL services. Is it fast enough to support VOIP and other latency sensitive applications such as Cloud based services, Citrix, etc?

4) Will the service be available all of the time?

Answering yes to these criteria should be the objective of business Internet users.

**How is this to be achieved without fibre?**

Good as they are, 4G and 5G networks will not address the criteria outlined above.

Carrier-grade wireless as deployed by mobile network vendors is the only viable short to medium term answer for an overwhelming number of businesses.

The author of this paper has pioneered use the use of reassuringly expensive carrier-grade wireless solutions to deliver against these criteria for more than twelve years, building extensive infrastructure in the UK, which is in the process of being replicated in Ireland. It is not rocket science it simply requires investment in appropriate equipment and skills and detailed quality management of the service after installation.

Wireless solutions that cost a minimum of seven times the amount of those employed by regional WISPs will accommodate business requirements as they have sufficient processing power to meet business demands and support a range of management facilities that are essential to delivering against a 99.95% Telco Service Level Agreement.

**What stops every business from adopting?**

The answer to this is simple. Money!

Businesses need to budget for €8 a day to secure the services they so badly need. €1 an hour for an eight-hour business day. Probably in line with the corporate spend on tea, coffee, milk and biscuits.

But when presented as €250 a month it becomes a bitter pill to swallow in light of the residential offers that are so widely publicised.

The crux of the matter is whilst businesses in Ireland all too often decry the broadband services on offer, there is arguably too many that need to upsell the value of Internet services to their operations?

**Summary**

Who knows what the NBP will deliver for businesses and when?

The associated issues are complex. The Government is to be applauded for placing the emphasis that it does on the Internet and data connectivity. It is right to do so.

But political and industry leaders might do well not to oversell what is available today and should be wary of making promises for the future that may not materialise. This will frustrate rural residential broadband users and businesses throughout the country. That is down the country, in urban areas and City centres alike.

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