National Broadband Plan

Interim Evaluation Report

3 May 2024

Building a better working world

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Glossary

Table 0.1: Glossary of terms

Category	Term/Acronym	Definition
Strategies and initiatives	NBP	The National Broadband Plan (NBP) is the government's initiative to deliver high-speed broadband services to all premises in in the IA.
	Harnessing Digital	Comprehensive Irish digital strategy pursuing several objectives including increasing digital skills, providing SMEs with high-speed broadband, having all households covered by Gigabit broadband by 2028, and 5G in all populated areas by 2030.
	Project Ireland 2040	Overarching strategy for Irish development, pursuing economy-wide goals including developing infrastructure, job growth, new homes, enhanced connectivity and improved sustainability.
	Irish Climate Action Plan	Plans for implementing carbon budgets, emissions ceilings and other measures in order to achieve targets such as halving Irish emissions by 2030 and reaching net zero by 2050.
	National Remote Work Strategy	Aims to ensure remote working becomes a permanent feature in the Irish workplace in a way that maximises economic, social and environmental benefits.
	Rural Development Policy	Strategy to increase opportunities in rural towns and villages across Ireland, through objectives including high-speed broadband, better career opportunities, enhancing public services, and sustainable development.
	European Commission's Digital Decade Strategy	Initiative for all EU member states to pursue digital transformation through encouraging projects to increase the digitisation of business and public services, and improve digital skills for all
	ComReg's Electronic Communications Strategy	Irish communications regulator's strategy to pursue widespread secure and affordable access to communications services across Ireland, by encouraging objectives such as competition and investment, consumer protection, connectivity, coverage and network resilience, and compliance.
	DCS	Digital Connectivity Strategy
Organisations involved in delivery and evaluation	DECC	Department of the Environment, Climate and Communications, formerly the Department of Communications, Climate Action and Environment (DCCAE)
	DRCD	Department of Rural and Community Development
	NBI (NBII/NBID)	National Broadband Ireland (National Broadband Ireland Infrastructure DAC/National Broadband Ireland Deployment)
	ComReg	Commission for Communications Regulation
	EY	EY was tasked with carrying out an independent Interim Evaluation Review of the NBP
	Ipsos B&A	Behaviour & Attitudes
	EC	European Commission
	IA	Intervention Area

Category	Term/Acronym	Definition
National Broadband Plan terminology	DA	Deployment Area
	Bid targets	Bid targets represent the original milestones and benchmarks in the Project the Financial Model, Project Revenue Model, and Project Cost Model. These targets reflect the intended outputs and timeframes for the NBP at the Bid and subsequent contract award.
	FRP/remedial	The Final Remedial Plan encompasses revised targets outlined in the Financial Model submitted to DECC in December 2022, including targets agreed between NBII and DECC to the end of the programme. The FRP financial model includes adjusted targets for NBP deployment, including revised premises passed figures and take-up rates. Where the term 'remedial' is mentioned in this report, it refers explicitly to the FRP.
	June 2023 reforecast	NBII's July 2023 Financial Forecast submission in accordance with Schedule 6.5 – Reports and Records.
	December 2023 reforecast	NBII's December 2023 Financial Forecast submission in accordance with Schedule 6.5 – Reports and Records.
	Premises	This term, unless otherwise specified, encompasses residential, mixed-use, and business premises.
	SCP	Strategic Community Points are public locations which have been selected to receive high-speed connectivity as part of the National Broadband Plan. The locations of the SCPs have been selected by local authorities and include public areas such as schools, community halls, garda stations, libraries, sports facilities, enterprise hubs, tourist locations, and other public spaces.
	Mixed	Refers to premises used for both residential and commercial purposes, where broadband serves both the living quarters as well as the business operations conducted from the same location.
	Residential	Premises used solely for living accommodation, where broadband is utilised for personal or household purposes.
	Commercial	Premises used solely for business or commercial activities, where broadband is critical for operational functions, communication, and commercial transactions.
Broadband terminology	NGA	Next Generation Access: New/upgraded access networks that will offer significant improvements in broadband speeds and quality of service compared to today's services.
	High-speed broadband	Broadband speeds above 500 Mbps, the minimum download speed offered in the IA. Originally, the procurement sought broadband speeds in excess of 30 Mbps. However, the entry offering at contract award was a minimum speed of 150 Mbps and has since been upgraded to a standard offering of 500 Mbps.
	FTTP	Fibre to the Premises: Access network structures in which the optical fibre runs directly to the end-user's living/office space.
	FTTC	Fibre to the Cabinet: Access network structure in which the optical fibre runs to the street cabinet.
	FTTH	Fibre to the Home: Access network structure in which the optical fibre is installed directly from the main network to individual residences.
	Cable	A system of providing broadband through a coaxial or fibre-optic cable. In the context of broadband, the term usually refers to the physical

Category	Term/Acronym	Definition
		infrastructure laid underground or overground to transfer data between networks and devices.
	Wireless	A mode of broadband that allows data transmission without the use of wires or physical lines. In a wireless network, data is transmitted via radio waves, allowing devices to connect to the internet remotely and allow mobility.
	Gigabit technology	Broadband technology with internet speeds up to 1 gigabit per second. It is a high-speed broadband standard, enabling faster download and upload speeds and can support multiple devices connecting and operating at high speeds concurrently. This level of broadband service is facilitated through fibre-optic cabling.
	Premises passed	A premises that is passed has been provided with the infrastructure necessary to make an order to receive high-speed broadband services and is capable of being connected to the network within a reasonable timeframe.
	Coverage	The percentage of premises that have been passed.
	Premises connected	A premises connected to the network, that is availing of highspeed broadband services.
	Penetration/Take-up rate	The percentage of premises that have not only been passed by the broadband network but have actually subscribed to and are using the service. It indicates the level of adoption of the broadband service among potential customers in the coverage area.
Types of network provider	WSP	Wholesale Service Provider
	RSP	Retail Service Provider
	Programme beneficiary	NBII is the programme beneficiary, and is a WSP
Financial and economic terminology	fIRR	Financial Internal rate of return: This refers to the discount rate that makes the net present value (NPV) of all cash flows (both inflow and outflow) from a particular project equal to zero. It is used to measure and compare the profitability of investments.
	eIRR	Economic Internal Rate of Return: A measure used to assess the overall desirability of an investment or project. Unlike the fIRR, the eIRR considers both the financial profitability and the broader socioeconomic benefits of an investment.
	GVA	Gross value added is the measure of the value of goods and services produced in an area, industry, or sector of an economy.
	eBCR	Economic Benefit-Cost Ratio: This is a ratio that attempts to identify the relationship between the costs and benefits of a project, which is calculated by dividing the present value of socioeconomic benefits by the present value of the project costs.
	CBA	Cost Benefit Analysis: A quantitative approach to modelling the strengths and weaknesses an investment, project, or programme from the perspective of society.
Evaluation terminology	ToC	Theory of Change: A comprehensive illustration of how and why a desired change is expected to happen in a particular context. It outlines the expected pathway from initial steps to the ultimate impact, detailing the

Category	Term/Acronym	Definition
		conditions, actions and processes presumed necessary to bring about this change. This tool can be used to guide the evaluation of a programme.

1 Executive summary

1.1 Introduction and context

High quality broadband access is an accelerator and enabler of socioeconomic development, capable of unlocking a wide range of benefits that can transform the lives and working practices of those with access to it. Officially announced in 2015, the National Broadband Plan (NBP) initiative aims to provide high-speed broadband coverage to every premises across the Irish State, thereby removing the digital divide between urban and rural areas.

Following the announcement, the Irish State undertook a procurement process to select a company to design, build, operate, and maintain a high-speed broadband network within an Intervention Area (IA) containing circa 560,000 premises.[1] In 2019, the Department of the Environment, Climate and Communications (DECC) signed a 25-year contract with National Broadband Ireland Infrastructure DAC (NBII) with a maximum level of State aid amounting to €2.7bn[2] to deliver the NBP, a decision which received approval from the European Commission (EC) in 2019.

The network will bring high-speed broadband to 23% of Ireland's population and covers 96% of Ireland's landmass. Premises are deemed to be passed by the network when the end-user can make an order to receive a service and the premises is capable of being connected within agreed timeframes. The network deployment is considered complete once 100% of the premises within the IA are deemed to be passed.

NBII commenced rollout of the NBP in January 2020 and deployment of the network is contracted to conclude by October 2027. Despite the challenges presented by Covid-19 during the first few years of the contract, NBII has made notable progress to date, with high-speed fibre network live and operational in all counties. DECC worked closely with NBII during the Covid-19 period to put in place a series of remedial plans culminating in the Final Remedial Plan (FRP), which included agreeing remedial targets to take account of the knock-on effects of the pandemic and other delays to the Programme. The focus of this plan is to maintain momentum in the build programme, catching up on the delays experienced.

NBII is a wholesale service provider, offering wholesale products to Retail Service Providers (RSPs) in the IA, who then provide broadband services to end users. Many RSPs have already been through the onboarding process with NBII and are certified to sell services as connections become available, meaning that end-users can choose from a wide variety of RSPs from the day their premises is passed. NBII works with RSPs to provide connections directly to customers and a list of all providers is available on NBI's website. The actual take-up of the high-speed broadband service by end-users will be one of the key drivers for realising benefits of the State's investment. NBII and RSPs will continue to undertake demand stimulation activities to support higher take-up rates.

1.2 Purpose of this report

Under the EC State aid approval decision,[3] the NBP will be subject to robust evaluation reporting requirements, exploring the impacts of the programme, as well as the effectiveness and efficiency of delivery and management, to provide insight and observations for future state investment. The Irish State has committed to commissioning three independently conducted evaluations, with the associated reports submitted to the EC at various stages of the programme. This Interim Evaluation Report represents the first of these evaluations.

[1] Circa 537,000 premises at contract award and 560,436 premises at the time of writing. This number is expected to increase to over 600,000 premises due to new premises being built over the lifetime of the project.
[2] It should be noted that since Contract award, Revenue confirmed to DECC that VAT Revenue Commissioner that Subsidy Payments in respect of deployment activities are outside of the scope of VAT, and this reduced the initial estimate of €2.9bn to €2.7bn. €2.1bn of subsidy amount is fixed based and based upon the achievement of pre-determined milestone, €0.5bn is contingent and dependent upon the outcome of certain risk share mechanisms and €0.1bn relates to VAT.
[3] State aid SA.54472 (2019/N) – Ireland National Broadband Plan

EY has been commissioned by DECC to undertake an Interim Evaluation Report of the NBP State Intervention.

1.3 Approach

This report presents an interim evaluation of the programme to date. The aims and objectives of the evaluation were set out in the Supplementary Request for Tender (SRFT), as evidenced in Appendix D SRFT Aims, Objectives and Required Methods. The SRFT focuses on 19 evaluation questions, agreed between DECC and the EC, and provided by DECC at the outset of the interim evaluation process. These questions are outlined in Table 2.1 of chapter 2. They can be grouped into four key evaluation areas:

1. What are the direct effects of the intervention, to both the direct beneficiary (NBII) and to reliable high-speed broadband access in the Intervention Area (IA)?
2. What are the indirect effects of the scheme on households and businesses (including specifically to tourism and broadband businesses) in the IA, and on government services delivered nationally or locally within the IA?
3. What impact has the intervention had on competition in the broadband services markets in the IA?
4. Was the intervention proportional and appropriate?

The evaluation utilises a mixed-methods approach, employing both quantitative and qualitative analysis. The research methods employed for each chapter are discussed in chapter 2. The key findings from this evaluation are summarised below.

1.4 Summary conclusion

This Interim Evaluation Report has found that the NBP rollout to date represents a significant step in Ireland's journey towards bridging the digital divide by providing location-agnostic, ubiquitous access to high-speed broadband. The evaluation found that much progress has been made in delivering the scheme, and that it has resulted in numerous direct and indirect benefits in the IA, such as improved RSP competition, increased employment and enterprise productivity, and resulting in higher quality of life for IA households. The evaluation answers 19 pre-determined questions, grouped into four overarching categories: direct effects, indirect effects, effects on competition, and proportionality and appropriateness. The summary findings from each of these areas is provided further below:

1.4.1 Direct effects

The State aid has had identifiable impacts at the level of the direct beneficiary. It has enabled NBII to provide fast and reliable broadband to premises within the IA, connecting those that would have been financially unviable without State aid. Notable direct effects include:

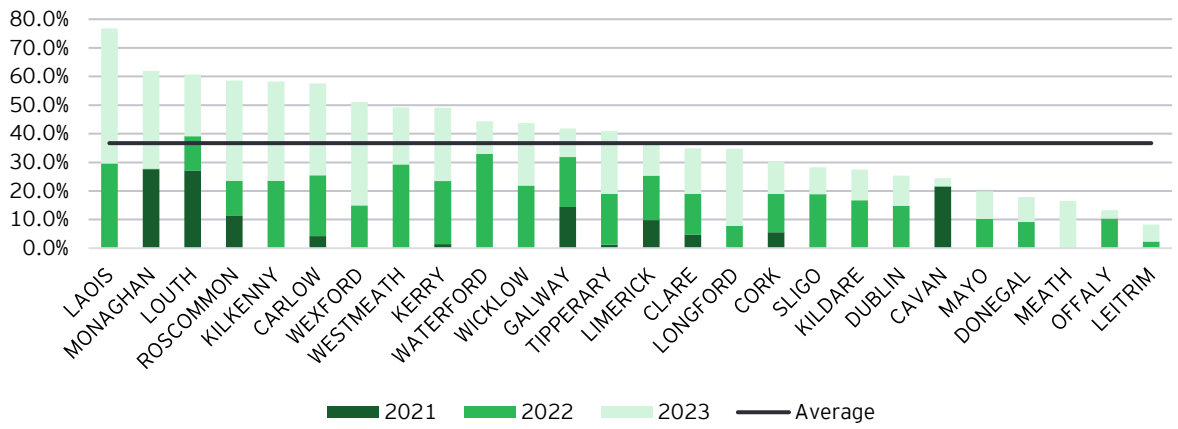
- 205,638[4] premises have been passed (i.e., made available to order) in the IA by the end of 2023, enabling access to high-speed broadband services which otherwise would not have been available. While this figure—representing 36.7% of current premises in the IA—is lower than the 2023 target originally agreed of 52.2%,[5] it is ahead of NBII's remedial targets for 2023 of 33.0%.[6] NBII is on course to achieve its total coverage goal by the end of October 2027.
- As of December 31st 2023, 65,121[7] premises have been connected to high-speed broadband—a penetration rate of 31.7% of premises passed. NBII has achieved significant growth in

[4] NBII State Aid Evaluation Report 2023; Data on premises passed and connected, provided by DECC, 31 December 2023
[5] NBII Bid model
[6] NBII public targets, 22 February 2023
[7] Data on premises passed and connected, provided by DECC, 31 December 2023

connections to date, exceeding both its Bid targets (cumulative to 53,852[8]) and its remedial targets (cumulative 49,897[9]) to the end of 2023.[10] The robust take-up is in part due to the demand stimulation activities undertaken by NBII. Focusing on specific premise types, farms are exhibiting strong take-up compared to other businesses and residences, with a penetration rate of 38.5%.[11]

- 955[12] Strategic Community Points (SCPs) had been delivered by NBII before the end of 2023, achieving plans set out at the outset of the NBP. SCPs, which comprise schools, community halls, garda stations, libraries, and other public spaces, are aimed at providing public, free-to-access buildings, with high-speed broadband to encourage remote working, cultural events, digital learning, and more. These locations are expected to deliver benefits to local communities, including improved education, healthcare, and access to Government services.
- NBII has achieved high levels of service quality for connected premises, delivering broadband speed and reliability in the IA that is equivalent to, and often surpassing, the levels experienced in commercial areas. Moreover, the minimum contractual speed increased from 100 to 500Mbps early in the rollout. Download speeds have achieved 100.1% of anticipated levels based on sold packages, averaging 681.9 Mbps, while upload speeds have reached 104.7% at 71.4 Mbps.[13]
- The State aid has enabled NBII to become the third largest WSP in Ireland, as measured by total subscribers. This position would not have been possible without the State aid provided through the NBP. The total average joint cost of both passing and connecting a premises in the IA (€2,156[14]) compared to the cost in commercial areas (ranging from €597 to €1,053[15]), indicates that these investments would not have been financially viable without State aid.
- While NBII has coverage across all counties, the proportion of premises passed per county varies, from 77% of premises in Laois to 8% in Leitrim. This is due to the fact that there are 227 different deployment areas in the IA, which do not naturally align with county boundaries. The deployment plan expects a regional balance of coverage by the end of the deployment period."

Figure 1.1: Coverage per county as a proportion of total premises per county in the IA, per year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

[8] NBII bid model
[9] NBII FRP, December 2022
[10] The actual number of premises connected is a net figure, whereas the connection targets are gross figures each year, which have been summed to calculate the cumulative connection target.
[11] NBII internal data, supplied by DECC
[12] Parliamentary Questions: Broadband Infrastructure Debate – Minister of State at the Department of the Environment, Climate and Communications, 20th March 2024
[13] Data on premises passed and connected, provided by DECC, 31 December 2023 and NBII State Aid Evaluation Report, 2023. These figures have been calculated by measuring the download and upload speed that purchased packages in the IA should be providing based on advertised speeds, and comparing this to the average download and upload speeds exhibited by premises in the IA.
[14] Based on NBII's management accounts, 31 December 2023, which excludes infrastructure rental and active costs
[15] Based on publicly available investment announcements by WSPs

1.4.2 Indirect effects

The State aid has resulted in a number of positive indirect effects. This has included providing benefits to households and businesses in the IA that have availed of the high-speed broadband upgrade, improving the effectiveness and reach of at least seven key government policies, and increasing the RSP offerings in the IA. This analysis was underpinned by a survey of businesses and households, undertaken for EY by Ipsos B&A (from 16 February to 6 March 2024), which examined the impact of the NBP on businesses and households in the IA. Notable indirect effects include:

- There is evidence that the NBP has led to notable improvements to the lives of IA residents, with 49% of survey respondents noting that the upgrade had improved their quality of life.[16] The survey also found that the upgrade enabled IA residents to communicate more with friends and family, improved access to education and employment opportunities, and increased the entertainment options available to residents.
- There is evidence that the NBP has improved the attractiveness of premises within the IA as places to live, with 38% of the respondents who moved to the IA following the rollout stating that the availability of high-speed broadband influenced their decision to move to the area.[17]
- The NBP has provided benefits to enterprises in the form of increased productivity levels, improved communication, and lowered costs. There is evidence to suggest that the availability of high-speed broadband has led to increased employment in IA businesses, with 23 businesses surveyed (15% of the sample) noting that they had increased employee headcount as a result of the upgraded connection, by an average of 4 employees.[18]
- The NBP has had a positive impact on businesses in the tourism and hospitality sector, with 58% reporting an increase in business activity as a direct result of upgrading to high-speed broadband.[19] This suggests that the presence of more robust internet connectivity has the potential to act as an incentive, attracting additional tourism business by enhancing online presence and engagement. One-third (33%) reported an increase in customer service scores or guest ratings post-upgrade.
- The NBP has facilitated the delivery of national government policy, having been leveraged by at least seven key government policies, improving their reach or effectiveness. The policies considered are: the Digital Strategy for Schools, the Remote Working Strategy, the Digital Connectivity Strategy, the Climate Action Plan, the National Development Plan, the Rural Development Policy, and the National Islands Policy. These policies would have been less effective without the infrastructure made possible by the NBP. For example, the Remote Working Strategy has been progressed by the ability of IA residents to avail of the opportunity to work from home.

Table 1.1: Benefits resulting directly from high-speed broadband

Save time on work/ schoolwork	Able to access services previously unavailable	More entertainment options	Able to socialise more via internet calls and social media	Save time through online grocery or other shopping	Increased ability to work from home
41%	37%	59%	49%	32%	69%

Source: Ipsos B&A Household Survey, March 2024

1.4.3 Effects on competition

Six interviews and focus groups were conducted with key stakeholders, including a focus group with representatives from DECC, a focus group with representatives from NBII, and four interviews with broadband RSPs. The interviews informed the context around the NBP and were used to assess

[16] Ipsos B&A Household Survey, March 2024
[17] Ipsos B&A Household Survey, March 2024
[18] Ipsos B&A Business Survey, March 2024
[19] Ipsos B&A Business Survey, March 2024

successes and challenges in delivery. While all areas of the analysis benefitted from these interviews, they were especially useful in assessing the impacts of the State aid on competition. This evaluation found that the NBP has improved the level of competition in the RSP market in the IA and lowered broadband prices for IA residents. Notable effects on competition include:

- The total number of RSPs providing services in the IA has increased since the rollout began, from 30 in 2021, to 59 in 2023,[20] demonstrating that the NBP has had a positive impact on provider diversity and end-user choice. This increased competition is reflected in the fact that approximately 51% of IA businesses switched RSP post-upgrade.[21]
- High-speed broadband prices in the IA are consistent with commercial area prices, with connected IA households being offered the same broadband deals as households in Dublin.[22]
- Connected IA households can now avail of cost savings from communications bundling. IA households that have not yet been passed have limited or no access to communications bundling, requiring them to purchase TV and broadband separately, the savings associated with gaining access to bundling are estimated to be worth €5 per month, or €60 per year.[23]

1.4.4 Proportionality and appropriateness of the NBP

The evaluation also considered the proportionality and appropriateness of the NBP, examining the size and appropriateness of the subsidies received, the use of physical infrastructure, and assessing whether the NBP has led to any further increases in commercial investment in the IA. The key insights include:

- The latest available financial forecasts provided by NBII support that the Subsidy amount agreed remains appropriate to finance the capital related investment costs and NBII establishment costs on a commercial basis. The subsidies received by NBII equates to €2,632 per premises passed and €994[24] per premises connected.
- NBII is renting a greater proportion of its physical infrastructure than planned, renting 97% of the poles it uses (compared to a planned 90%) and renting 29% more duct than planned, while building 52% less duct.[25] This decision aligns with the recommendation on page 16 of the State aid decision[26] that NBII reuse suitable existing infrastructure in order to avoid unnecessary and wasteful duplication of resources.
- Based on a review of the previous NBP CBA, and accounting for the Ipsos B&A survey findings as well as demographic and macroeconomic factors, the Benefit to Cost Ratio (BCR) of the NBP is likely to have increased from its original figure of 1.43.[27] However, further analysis would be required to quantify this, including analysis of how key macroeconomic, technical, and demographic parameters have evolved since the previous CBA was undertaken.

1.5 Further observations

This evaluation has identified several observations for NBII, DECC, and other Government departments to consider going forward, to enable the continued success of the NBP rollout.

Observation 1: NBII should remain focussed on the continued deployment of the network to ensure ubiquitous high-speed broadband coverage for all premises within the IA by the target date of

[20] NBII RSP Onboarding Updates 2021-2023
[21] Ipsos B&A Business Survey, March 2024
[22] Switcher.ie
[23] Analysis based on prices quoted for passed and non-passed premises on Switcher.ie: https://switcher.ie/?gad_source=1&gclid=EAIaIQobChMIqPrNsPe0hQMVPZmDBx2UlAusEAAYASAAEgJLYPD_BwE
[24] Premises passed and connected subsidy figures are drawn from EY analysis of NBII financial information
[25] Physical infrastructure figures drawn from NBII's Management Accounts, 31 December 2023
[26] State aid SA.54472 (2019/N) – Ireland National Broadband Plan
[27] November 2019 Cost Benefit Analysis model, PwC

October 2027. NBII should continue to mitigate risks and manage issues which impact the pace of the network deployment, supported by DECC where appropriate.

Observation 2: NBII should seek to ramp-up their capacity to meet the demand for new connections in anticipation of continued strong take-up.

Observation 3: NBII, alongside DECC, Fáilte Ireland, Tourism Ireland, and local tourism boards, should seek to promote the benefits of high-speed broadband to the tourism sector, particularly to micro businesses and SMEs. Tourism stakeholders should promote the potential of innovative online tourism offerings, including the development of websites, social media presence, and online booking systems.

Observation 4: NBII should continue efforts to mitigate and manage costs, in particular costs associated with contractual risk share mechanisms which would result in contingent Subsidy amounts being required. DECC should continue to ensure that robust governance is in place across risk share mechanisms where there is less commercial incentive for NBII to ensure cost efficiency.

Observation 5: There is an observed shortfall in the availability of comprehensive data regarding the national coverage of high-speed broadband. This gap underscores a need for enhanced strategic planning and systematic documentation to track progress and ensure that Ireland remains on course to fulfil the Digital Decade's target within the stipulated time frame. DECC, working together with other stakeholders such as ComReg, can play an important role in this process.

Observation 6: Harness the insights gained from the survey process by conducting an equivalent exercise in future evaluations. This will enable the survey outputs from this interim evaluation to form a 'baseline', against which future results can be tracked and compared. To achieve this, the same control-treatment design should be employed, with similar question topics and design to enable comparability. This will enable statistical analysis techniques such as Difference in Differences —which rely on time series data points from the two cohorts — to be conducted, helping to isolate causality.

2 Evaluation approach

2.1 Overview of NBP

The NBP aims to provide high-speed broadband to every premises within the IA. The programme is managed by DECC's Digital Connectivity Office. DECC, through an open procurement process, selected NBII as the WSP and sole beneficiary of the State aid, to design, deploy, operate, maintain, and own the broadband network for an IA currently encompassing over 560,000 premises.[28] Rollout of the NBP began in 2020 following the signing of this contract, with an original target date for providing high-speed broadband to all IA premises at the end of 2026. This was later updated to October 2027 as part of the FRP.

The NBP operates as a key mechanism within the Irish Government's Digital Connectivity Strategy, which includes the objective of having all households covered by Gigabit broadband by 2028. The NBP also has wider socioeconomic aims, including encouraging economic recovery after the Covid-19 pandemic, facilitating remote working, boosting productivity and investment in the IA, improving digital education, and reducing travel requirements.

The NBP is funded through a capped public investment of €2.7 bn from the Irish State. It operates as an EU State aid scheme and is therefore regulated by State aid rules. This includes being subject to a robust independent evaluation. This interim evaluation assesses the progress of NBP to date, analysing the success of processes involved in rollout, the achievement of key outcomes and impacts, and the value for money of the intervention.

2.2 Evaluation aims and objectives

The Interim Evaluation Review of the NBP assesses the progress of the plan to the end of 2023, measuring the effectiveness of the programme rollout, the advancement of key programme indicators towards targets, and the value for money of the programme. The evaluation aims to respond to the State aid evaluation questions. The questions are divided into four distinct categories: A) Direct effects; B) Indirect effects; C) Effects on competition; and D) Proportionality and appropriateness.

A. **Direct effects:** This assesses the outcomes emerging directly from the intervention, including the progress on coverage, take-up, and the quality of service. It also examines the direct impact of the State aid on NBII, and the viability of high-speed broadband investments in the IA compared to other WSPs in commercial areas.

B. **Indirect effects:** This considers the wider impacts of the NBP and includes an analysis of the impact on household and business end-users, the provision of government services, and an overview of the wider effects on broadband service providers.

C. **Effects on competition:** This evaluates the impact on the broadband market both in the IA and nationally, assessing market shares and competition between RSPs, the effect on prices for end-users, and the impact on basic broadband provision.

D. **Proportionality and appropriateness:** This assesses the proportionality and appropriateness of the NBP, examining the size and appropriateness of the subsidies received, the use of physical infrastructure, and assessing whether the NBP has led to any further increases in commercial investment in the IA.

DECC has agreed the evaluation questions as shown in the below table with the EC.

[28] Circa 537,000 at time contract signing.

Table 2.1: Evaluation questions

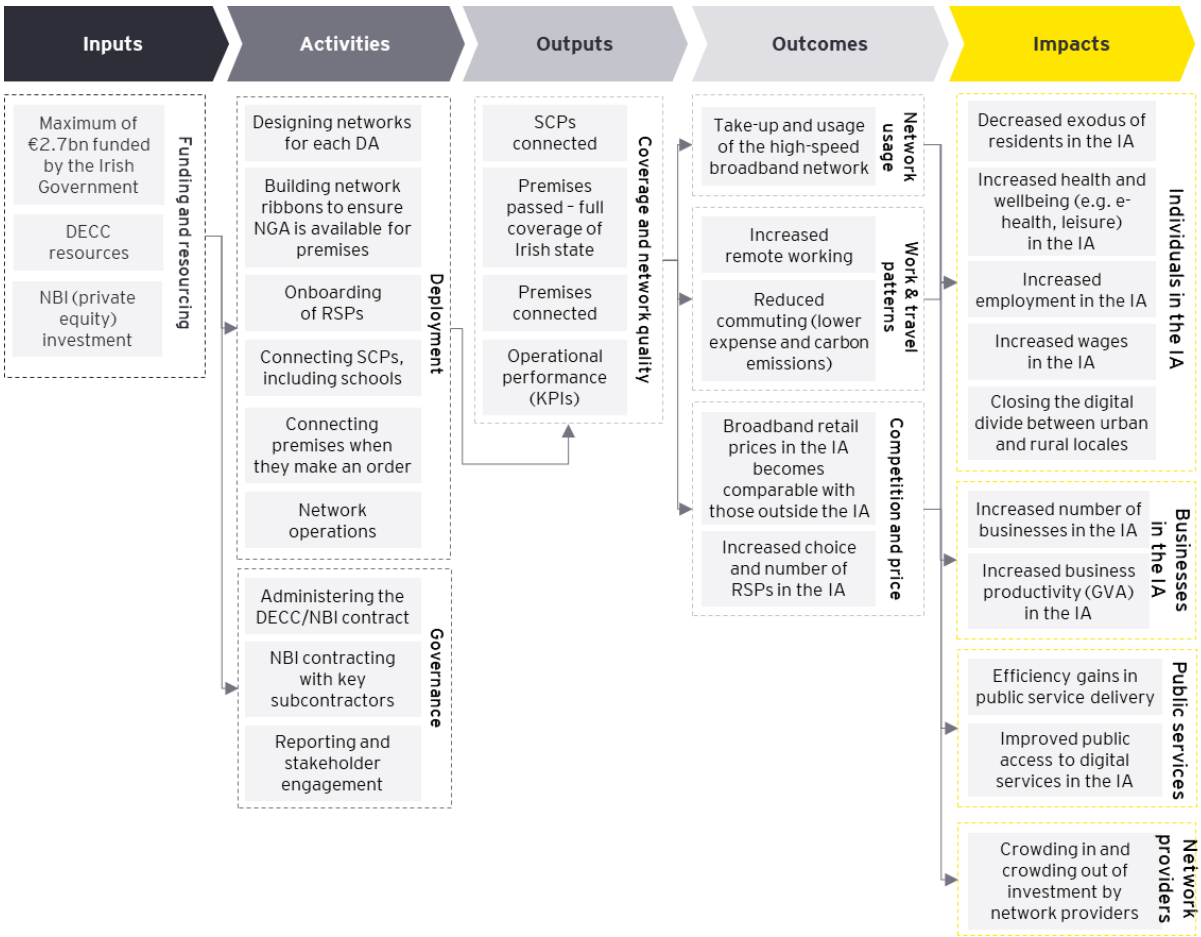
Evaluation chapter	Evaluation number	Evaluation Question
Direct effects	1.1.1	Has the aid resulted in ubiquitous Next Generation Access (NGA) coverage for all premises in the IA by the end of the Rollout Period?
	1.1.2	How quickly has the rollout occurred (number of premises passed p.a.)?
	1.2.1	To what extent is the NGA network in the IA being used by residential, business and other end-users? a. What is the take-up in terms of total subscriber numbers? b. What is the take-up by subscriber type? c. Has the beneficiary successfully used demand stimulation activities to drive take-up in line with its targets? d. What volume of data is being used?
	1.3.1	Has the aid resulted in the delivery of high quality and reliable services in the IA, which are in line with commercial areas? a. Average download and upload speeds (of least expensive NBII product) b. Fault repair times
	1.4.1	Has the aid had a material effect on the wholesale market position of the direct beneficiary?
	1.4.2	Has the granting of aid affected the viability of investments in the IA compared to investments in the commercial areas?
Indirect effects	2.1.1	Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements to the everyday lives of IA end-users? b. Affected choice of location to live?
	2.2.1	Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements in day-to-day activities (e.g., productivity levels and transaction costs) of IA business users? b. Affected choice of business location?
	2.3.1	Has the granting of aid delivered NGA services in the IA which have led to changes in the tourism sector in the IA?
	2.4.1	Has the granting of aid delivered NGA services in the IA which have resulted in a change in the provision of government services delivered nationally or locally within the IA?
	2.5.1	Has the granting of aid changed the way the Wholesale Service Providers (WSPs)/Retail Service Providers (RSPs) provide services in the IA (e.g., geographic reach)?
	2.5.2	Has the aid affected the business of basic broadband providers in the IA?
Effects on Competition	2.6.1	Does the granting of aid result in retail prices for NGA broadband in the IA that are in line with commercial areas?
	2.7.1	Does the granting of aid result in end-users of NGA broadband in the IA having a choice of provider?
	2.8.1	Does the granting of aid for the IA have an impact on competition in the national fixed broadband market?
	2.9.1	How does the granting of aid for the IA impact on basic broadband providers and the provision of basic broadband services?
Proportionality and appropriateness	2.10.1	How much subsidy is required per premises passed and per premises connected?
	2.11.1	How much existing infrastructure is NBII using as a percentage of total poles/duct being used by NBII?
	2.11.2	Has the granting of aid affected commercial investment in the IA (in NGA or in general) beyond that envisaged by the NBP project?

2.2.1 Theory of Change

The Theory of Change informs the evaluation by providing a structured framework that links the investment and actions taken by the NBP to the desired socioeconomic outcomes and impacts, establishing a clear pathway for assessing the effectiveness and success of the programme. An initial Theory of Change, prepared by DECC, was refined to clarify and expand on the inputs, activities, outputs, outcomes, and impacts involved in the NBP, and to understand the underlying assumptions and causal mechanisms between them. The finalised Theory of Change, agreed by DECC, is outlined in Figure 2.1.

The Theory of Change outlines a progression from government and private investments as inputs, through to the establishment and operation of a nationwide high-speed broadband network serving premises within the IA. The resulting outputs, such as premises connected and the performance of the network, lead to outcomes like enhanced remote working and reduced commuting. Ultimately, the expected impacts include economic growth, improved public service delivery, and bridging the digital divide, fostering social and economic benefits across both urban and rural Ireland. The Theory of Change provides a foundational reference for future evaluations, ensuring a consistent approach to assessing whether the programme's strategic objectives are being met and guiding the measurement of long-term impacts on society and the economy.

Figure 2.1 Revised Theory of Change for the National Broadband Plan



Source: EY analysis, Theory of Change for the National Broadband Plan

2.3 Evaluation approach and methodology

The evaluation approach and methodology are grounded in the EC's guidance on State aid evaluations.[29] This guidance states the importance of a systematic evaluation of the impacts of State aid schemes on markets, competition, and trade between Member States. It is essential for ensuring that State aid, which is aimed at achieving a variety of policy objectives, such as reducing regional disparities and promoting innovation, is implemented effectively and with minimal distortion to the market.

A mixed-methods approach, integrating both quantitative and qualitative methodologies, was deemed most suitable for this interim evaluation of the NBP, aiming to provide a nuanced understanding of its delivery, impact, and value for money. This approach allows for the examination of both the measurable data and the qualitative insights that underlie the programme's effects. Quantitative methods facilitate the measurement of effects (answering the 'what' questions), while qualitative methods offer depth, exploring the experiences and perceptions of stakeholders involved in or affected by the NBP (answering the 'why' and 'how' questions). This approach is particularly favourable given the singular setup of the State aid case, where NBII was established specifically for this intervention and serves as the only direct beneficiary. This context suggests that conventional experimental or quasi-experimental methods, which often rely on comparison groups or control conditions, might not accurately capture the effects of the intervention. Instead, a mixed-methods approach, grounded in a Theory of Change, provides the flexibility and breadth needed to understand the complex dynamics involved.

Quantitative analysis involved assessing the results of the Household and Business Surveys for direct insights, descriptive statistics for data summarisation, trend analysis to identify changes over time, and statistical comparisons of outcomes within the IA against control groups. This allowed for the quantification of outcomes such as enhancements in broadband access, user engagement, and market effects. Qualitative methods, through interviews and focus groups, added depth to these findings by exploring stakeholder experiences and perceptions, thereby uncovering the intricacies of the NBP's delivery and effects. The data sources used to fulfil these methods, and to respond to each evaluation question, are outlined in Appendix C Data sources. Table 2.2 below summarises the key evaluation research methods:

Table 2.2 Summary of evaluation research methods

Research methods	
Document analysis	Reviewed project-related documents, including contracts, progress reports, and communications from the government to track NBP delivery activities and compare them against the objectives set out at the outset of the project.
Descriptive statistics	Analysed quantitative results from the Ipsos B&A Household and Business Surveys to gauge perceived impacts and end-user reactions to the increased number of RSPs offering high-speed broadband.
Thematic analysis	Conducted six interviews and focus groups with key stakeholders. This included a focus group with representatives from DECC, a focus group with representatives from NBII, and four interviews with broadband RSPs. This informed the context around the NBP, assessed the successes and challenges in delivery, and informed key lessons learned.
Trend analysis	Analysed patterns and changes over time to assess the trajectory of the programme's influence across the IA, as well as trends in broadband package prices and market shares.
Convergence analysis	Compared national data to the IA to identify attributable impacts such as in data usage, broadband market competition, indirect impacts, and wider impacts between areas of the IA.
Desk-based research	Reviewed national and IA-specific data on broadband market shares and retail prices, using data from switcher.ie to calculate the retail prices of broadband packages for randomly selected Eircodes inside and outside the IA.

[29] Ex-post evaluation (europa.eu)

Research methods	
Cost-benefit analysis	Considered the rationale underpinning the eBCR of the NBP for Irish society, in light of the primary survey findings, technical parameters, macroeconomic and demographic trend updates. Commentary is provided on the likely implications of these updates on the eBCR.
Cost-effectiveness analysis	Calculated the public expenditure per premises passed, which assisted in analysing whether the NBP was an effective intervention and helped to compare to alternative intervention approaches for the future. The cost effectiveness of NBII's physical infrastructure development to date was also examined. Consideration was also given to the IRR forecast reported by NBII compared with the Bid metric.

2.3.1 Primary Data Collection Method

The primary data collection techniques were interviews and focus groups (A), a Household Survey (B) and Business Survey (C). The approaches for conducting each of these data collection methods are detailed below.

A. **Interviews and focus groups:** The evaluation employed a purposive sampling strategy for stakeholder interviews and focus groups to gain insights into the NBP's implementation. A total of six sessions were conducted, including focus groups with representatives from DECC and NBII, as well as interviews with representatives from four RSPs. This selection was designed to capture a range of perspectives on the NBP, from policy and infrastructure development to market impact and service delivery. The discussions, held virtually on Microsoft Teams, were guided by semi-structured topic guides. Thematic analysis of the data aimed to uncover the contextual nuances of NBP delivery, integrating these qualitative insights with quantitative data.

B. **Household Survey:** The Household Survey was conducted by Ipsos B&A, targeting 250 households within the IA that had accessed high-speed broadband due to the NBP, alongside a control group of 250 households in Dublin, where high-speed broadband was previously available. The survey aimed to assess changes in user satisfaction, broadband usage patterns, and the perceived effects of high-speed broadband access. The random selection within these specific groups was chosen to capture the latest trends in broadband adoption and to understand the outcomes of the NBP from a residential perspective. Conducted from 16th February to 6th March 2024, the survey examined experiences of connected households in the IA and in Dublin, highlighting differences in broadband's impact across varied settings. The analysis focussed on comparisons of 'before and after' high-speed broadband experiences without applying demographic weightings, using descriptive statistics to elucidate the survey findings.

C. **Business Survey:** The Business Survey, conducted by Ipsos B&A, targeted 150 businesses in the IA to assess the impact of the high-speed broadband enabled by the NBP. The initial Business Survey sample was designed to reflect the varied distribution of businesses across Ireland, with random selection within this subset to ensure diversity in business sectors and sizes. This approach facilitated a comprehensive evaluation of how high-speed broadband influences both operational improvements and strategic business decisions. Computer-assisted telephone interviews were conducted, with a screening question to ensure participants had access to high-speed broadband, ensuring the relevance of the feedback. Conducted from 16th February to 6th March 2024 in tandem with the Household Survey, the analysis focussed on the 'before and after' effects of broadband enhancement on businesses. Weights were not applied as the business leads matched the profile of businesses in the IAs. Data was analysed across different business characteristics, using descriptive statistics to detail the findings.

2.4 Limitations of the Evaluation Approach

There are several limitations to this evaluation which are set out in the table below.

Table 2.3: Limitations of Evaluation Report

Limitation	Mitigation
Quantitative data reliability: Relying heavily on numerous project documents and reports for quantitative analysis risks encountering inconsistencies or inaccuracies in reported data. This could impact the evaluation's ability to accurately measure progress against objectives.	The research team cross-verified data points across multiple sources, including desk research of independent reports, data requests to DECC, and frequent stakeholder meetings and communications to clarify discrepancies.
Survey response and selection bias: Both Household and Business Surveys faced the challenge of response bias, where participants might not accurately represent their true experiences due to social desirability or perceived expectations.	Response bias was addressed by emphasising that survey data was for evaluation purposes only, without any potential for retribution or promotional activities. Selection bias was mitigated by ensuring a diverse and random selection within targeted subsets and by complementing survey insights with interviews, focus groups, and existing data analyses.
Limited depth of responses and low response rates in surveys: Close-ended questions in both Household and Business Surveys may restrict the expression of detailed experiences regarding the NBP, while household and business respondents may be time-poor.	Additional qualitative methods such as interviews and focus groups were employed to complement the survey data and mitigate against limited depth of responses. To encourage a higher response rate, the significance of the survey in influencing government interventions was also emphasised to participants.
Short time frame for impact evaluation: The evaluation's scope covering the first 4 years of the NBP may not fully capture long-term impacts or delayed effects of the NBP on certain demographic groups or sectors.	The Interim Evaluation Review is one of several evaluations within the reporting plan, paving the way for follow-up studies and ongoing monitoring efforts. This would allow for the assessment of longer-term impacts and the ability to adapt strategies based on evolving findings.
Data availability: The evaluation relies on accessing data from several organisations including DECC, ComReg, NBII, and comparators such as SIRO and OpenEir, which presents difficulties in obtaining timely access to all information. Moreover, not all data sources provide the detail necessary for assessing granular changes over time or for making direct comparisons with the Control Area. This limitation is due to this being the first (interim) evaluation of the NBP, which means there is no available time series data to compare survey results against.	Proxy data sources were gathered to enable the best possible assessment of available data, and primary research through interviews and surveys have been used to support areas where data gaps were identified. In instances of limited data accuracy, this has been noted and findings have been caveated accordingly. A more detailed assessment of the impact of limited data availability and the alternative data sources used is evidenced in Appendix C Data sources. A key limitation is the lack of time series data with which to compare current survey results. Future evaluations will benefit from the baseline established by this interim evaluation, thereby enabling statistical analysis techniques such as Difference in Difference analysis. A mitigation employed in the survey was to ask IA respondents to compare responses 'before' and 'after' the upgrade to high-speed broadband, thereby seeking to establish additionality.
Theory of Change: The effectiveness of an evaluation that utilises a Theory of Change is contingent upon the validity of the Theory of Change itself. If the assumptions underpinning the Theory of Change are inaccurate or if the Theory of Change does not fully capture the programme's intricacies, then the evaluation risks misrepresenting the programme's impact. This could lead to misunderstandings about how and why certain	The Theory of Change refinement was supported through regular meetings and clarifications with DECC. This iterative process helped ensure the Theory of Change remained aligned with the programme's complexities and the context it operates within.

Limitation	Mitigation
outcomes were achieved, resulting in potentially flawed conclusions and action points.	
Efficiency and cost effectiveness analysis: A key element of establishing the evidence base and rationale for public investments such as the NBP is to consider the value for money it represents. This requires both a financial lens and socioeconomic one. Both these approaches are considered in this report. A limitation of this includes the reliance on NBII's self-reported financial information and IRR reforecast. A further limitation is the lack of an expansive cost-benefit analysis.	The proportionality and appropriateness section is caveated appropriately to frame the reader's interpretation. The Evaluator has focussed on providing rationale behind the outputs of these sections and linking them to the findings of the preceding evaluation questions. Regarding the CBA, rationale has been provided, particularly with reference to the primary survey findings in the IA and published technical parameters, as to why the eBCR is likely to have increased. Nonetheless, it is not possible to quantify all associated benefits of the NBP; as such, qualitative rationale is provided throughout the evaluation regarding indirect benefits on IA residents and businesses.

2.5 Structure of the report

The remaining chapters of this report are structured as follows:

Chapter 3: Direct effects

An overview of the progress of NBP rollout by the end of year 4 of deployment (2023) against indicators such as premises passed, premises connected, data usage, network speeds, and reliability. This includes further detail around the types of premises passed and connected, and demand stimulation activities. The impact of the State aid on NBII is considered, alongside the comparative viability of investments in the IA.

Chapter 4: Indirect effects

An evaluation of the wider impacts of high-speed broadband rollout under the NBP programme, delving into the impact on end-users and businesses, with an additional focus on the tourism sector in the IA. It then examines the impact on the provision of government services, before tackling impacts on how WSPs and RSPs provide services in the IA.

Chapter 5: Effects on competition

An assessment of the effects of NBP on competition, both in the IA and nationally. This includes an analysis of retail prices, the evolution of market shares, a comparative assessment of competition between RSPs and the impact on basic broadband providers.

Chapter 6: Proportionality and appropriateness

A value for money assessment, considering the subsidy per premises passed and connected, and whether new or existing infrastructure was used in the rollout. It also examines whether commercial investment in the IA has changed beyond that envisaged. The chapter then considers the likely impact of evolving macroeconomic trends, technical parameters and the Ipsos B&A survey findings on the project's socioeconomic value for money.

Chapter 7: Conclusions and recommendations

3 Direct effects

3.1 Overview

This chapter seeks to address the following evaluation questions as set out in the State aid evaluation plan:

1.1.1 Has the aid resulted in ubiquitous Next Generation Access (NGA) coverage for all premises in the IA by the end of the Rollout Period?

1.1.2 How quickly has the rollout occurred (number of premises passed p.a.)?

1.2.1 To what extent is the NGA network in the IA being used by residential, business and other end-users?

a. What is the take-up in terms of total subscriber numbers?
b. What is the take-up by subscriber type?
c. Has the beneficiary successfully used demand stimulation activities to drive take-up in line with its targets?[1]
d. What volume of data is being used?

1.3.1 Has the aid resulted in the delivery of high quality and reliable services in the IA, which are in line with commercial areas?

a. Average download and upload speeds (of least expensive NBII product)
b. Fault repair times

1.4.1 Has the aid had a material effect on the wholesale market position of the direct beneficiary?

1.4.2 Has the granting of aid affected the viability of investments in the IA compared to investments in the commercial areas?

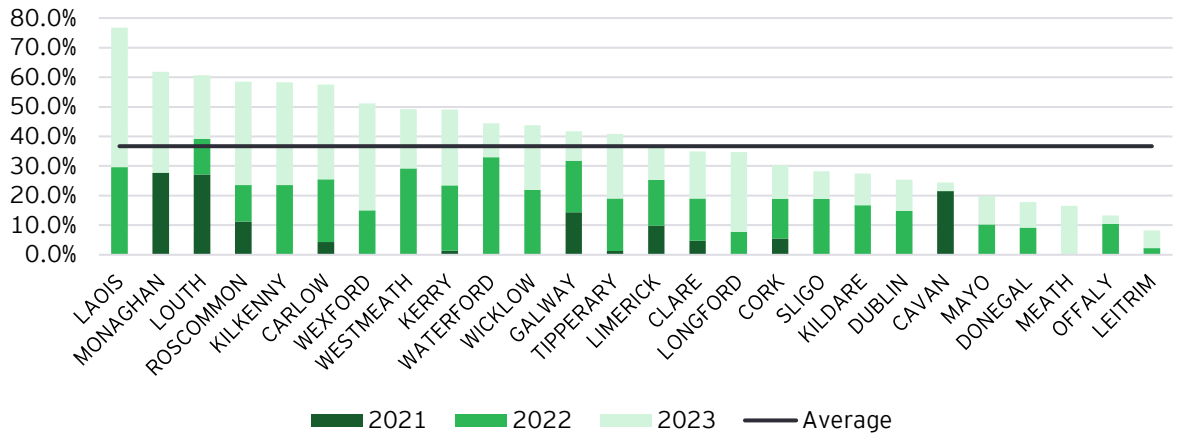
This chapter analyses the direct effects of the State aid provided through the NBP on high-speed broadband coverage levels, broadband service quality, and on the direct beneficiary (NBII). The analysis underpinning this chapter primarily uses descriptive analysis, trend analysis, and desk-based research. Specifically, the analysis examined NBII's progress towards achieving its agreed passed and connection targets. This includes reviewing the speed of delivery thus far, the profile of premises passed and connected, and the geographic distribution of the rollout. It also involves assessing the speed and reliability of the connections delivered. The analysis merges insights from both Household and Business Surveys with data on specific promotional strategies employed by NBII to illustrate the multifaceted approach to driving broadband adoption. For example, the Household and Business Surveys asked respondents if they were aware of any promotional activity by NBII, which specific promotional activities they recalled, and whether they perceived these activities to be influential in their decision to subscribe to high-speed broadband. This chapter also summarises the impact of the State aid on NBII's market position, and on the viability of its investments. The following table provides a high-level overview of the outcomes resulting from this analysis. Further detail in regard to each evaluation question is provided in the remainder of this chapter.

Table 3.1: Key direct effects from the NBP

Outcome	Description
1.1.1 Has the aid resulted in ubiquitous Next Generation Access (NGA) coverage for all premises in the IA by the end of the Rollout Period?	
36.7% of premises in the IA as of the end of 2023 have been passed.	The NBP has passed over a third of all premises (205,638) in the IA to the end of 2023, making progress towards achieving the remedial target of ubiquitous high-speed broadband coverage in the IA (i.e., to achieve 560,436 premises passed) by October 2027.

Outcome	Description
The proportion of premises passed varies significantly by county.	NBII has coverage across all counties, however the proportion of premises passed per county varies, from 77% of premises in Laois to 8% in Leitrim. The network build plan aims to ensure a regional balance of coverage by the end of the deployment period.

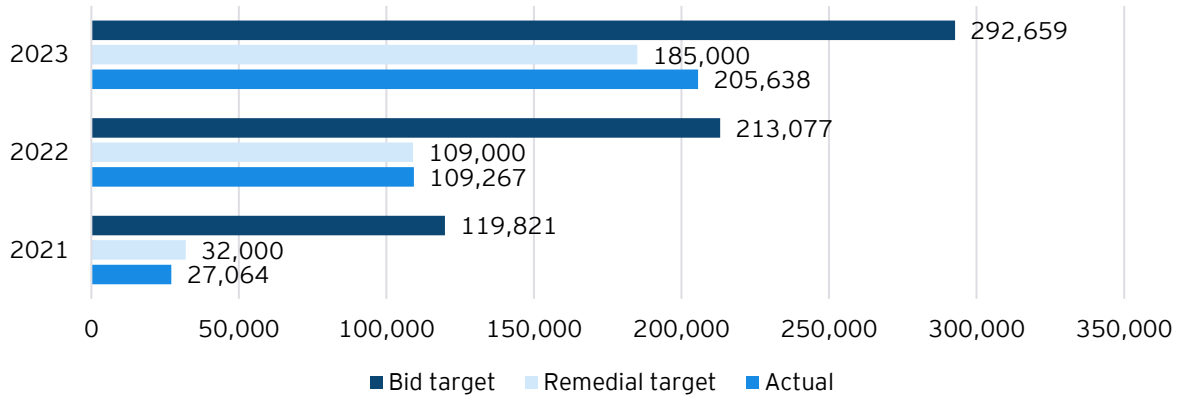
Figure 3.1: Coverage per county as a proportion of total premises per county in the IA, per year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

1.1.2 How quickly has the rollout occurred (number of premises passed p.a.)?	
NBP fell behind Bid targets but has outperformed remedial targets to the end of 2023.	NBII fell behind Bid targets of 292,659 (52.2%) by the end of 2023, primarily due to unavoidable Covid-19 related disruption. However, performance against remedial targets shows that NBII is above target performance to the end of 2023, with 205,638 (36.7%) passed compared to the remedial target of 185,000 (33.0%). The NBP is currently on track to conclude deployment by October 2027 (original target being end of 2026).
SCP rollout is complete, having exceeded targets.	The NBP target for 955 SCPs to be passed and connected by the end of 2023 has been achieved. The 955 SCPs comprises 672 schools and 283 public sites.

Figure 3.2: NBP performance against Bid and remedial premises passed targets, by year

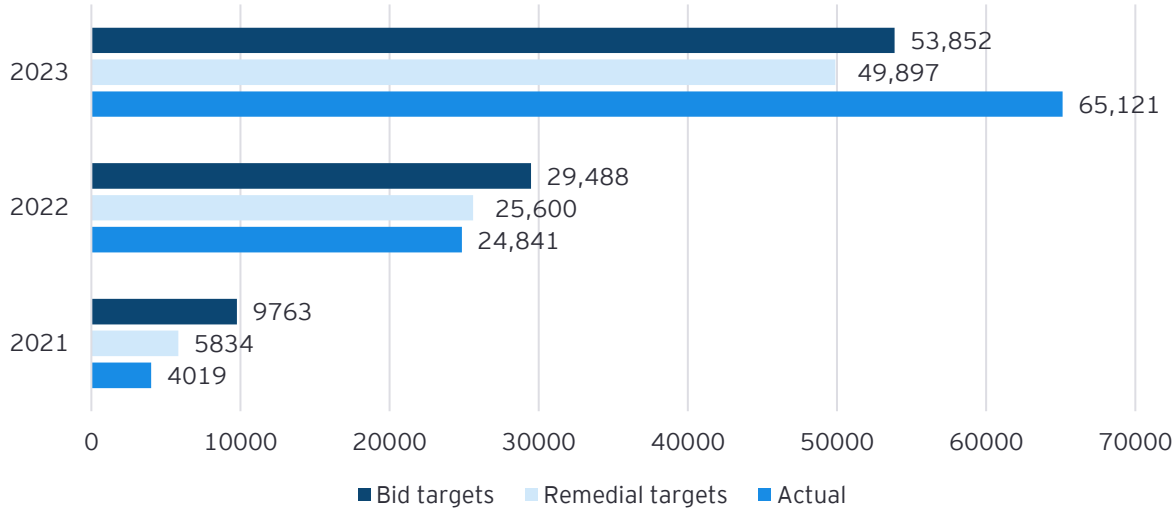


Source: Data on premises passed and connected, provided by DECC, 31 December 2023; NBII Bid model and NBII public targets, 22 February 2023

1.2.1 To what extent is the NGA network in the IA being used by residential, business and other end-users?

Outcome	Description
a. What is the take-up in terms of total subscriber numbers? b. What is the take-up by subscriber type? C Has the beneficiary successfully used demand stimulation activities to drive take-up in line with its targets? d. What volume of data is being used?	
The NBP is outperforming Bid and remedial connection targets to the end of 2023.	The NBP has connected 65,121 premises by the end of 2023, exceeding the cumulative Bid target of 53,852, and the cumulative remedial target of 49,897.
The penetration rate is higher for residential premises compared to those with a commercial use.	83.7% of premises connected in the IA are solely residential use. The penetration rate for residential premises is 37.9%, whereas it is just 14.9% for commercial premises, and 17.9% for premises with both a residential and commercial use. The penetration rate for commercial premises is far below the business remedial target of 77.3%.
Data suggests that NBII demand stimulation activities have been a contributing factor to the take-up of high-speed broadband services.	NBII's demand stimulation activities contributed to the take-up of high-speed broadband, with 45% of IA households and 57% of IA businesses aware of these promotional efforts and supported by data indicating the effectiveness of traditional media and word-of-mouth in decision-making processes.
Data usage in the IA has grown steadily, from 0.34 Terabyte per connected premises in 2021 to 0.46 Terabytes in 2023.	Comparing NBII's State aid Evaluation reports to ComReg's Quarterly Key Data Reports, this analysis found that data usage in the IA has grown steadily, from 0.34 Terabyte per connected premises in 2021 to 0.46 Terabytes in 2023, suggesting that high-speed broadband is being readily utilised, which should ensure the potential benefits provided by the NBP are being captured. Average usage per premises connected has been close to the national average.

Figure 3.3: NBP performance against Bid and remedial connection targets, by year

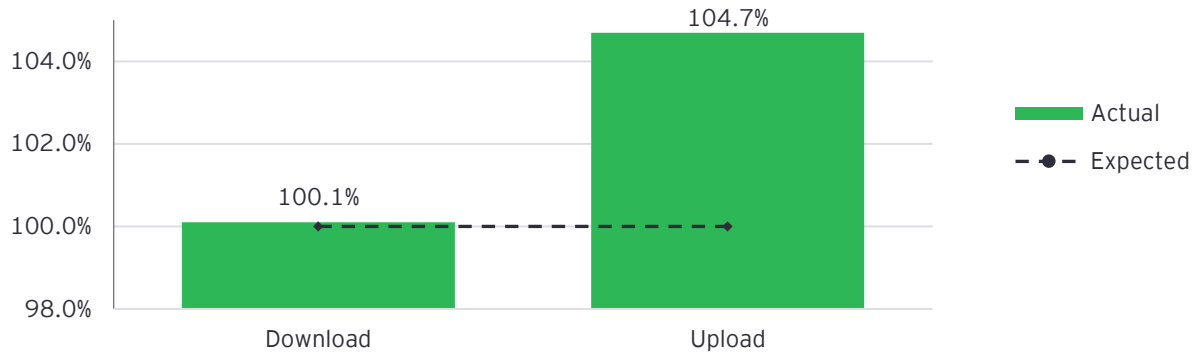


Source: Data on premises passed and connected, provided by DECC, 31 December 2023; NBP Bid values and NBII FRP, December 2022

1.3.1 Has the aid resulted in the delivery of high quality and reliable services in the IA, which are in line with commercial areas? a. Average download and upload speeds (of least expensive NBII product) b. Fault repair times	
Download speeds achieved are 100.1% of target.	Based on the NBII State Aid Evaluation Report 2023, this evaluation has determined that the NBP has delivered broadband speed and reliability in the IA that is equivalent to, and often surpassing, the standards experienced in commercial areas. Download speeds have achieved 100.1%

Outcome	Description
	of anticipated levels at 681.9 Mbps, while upload speeds have reached 104.7% at 71.4 Mbps.
IA fault repair time is 20.9% quicker than commercial areas, with faults typically addressed within 1.9 days.	The IA enjoys a 20.9% faster repair rate than the national average, with faults typically addressed within 1.9 days (compared to 2.4 days nationally). The Ipsos B&A Household Survey also demonstrates that the upgrade to high-speed broadband has also led to fewer service interruptions, enhancing overall service reliability. Only 22% of IA households reported service disruptions within the last six months of 2023. This is in contrast to the 37% report rate in the control area.

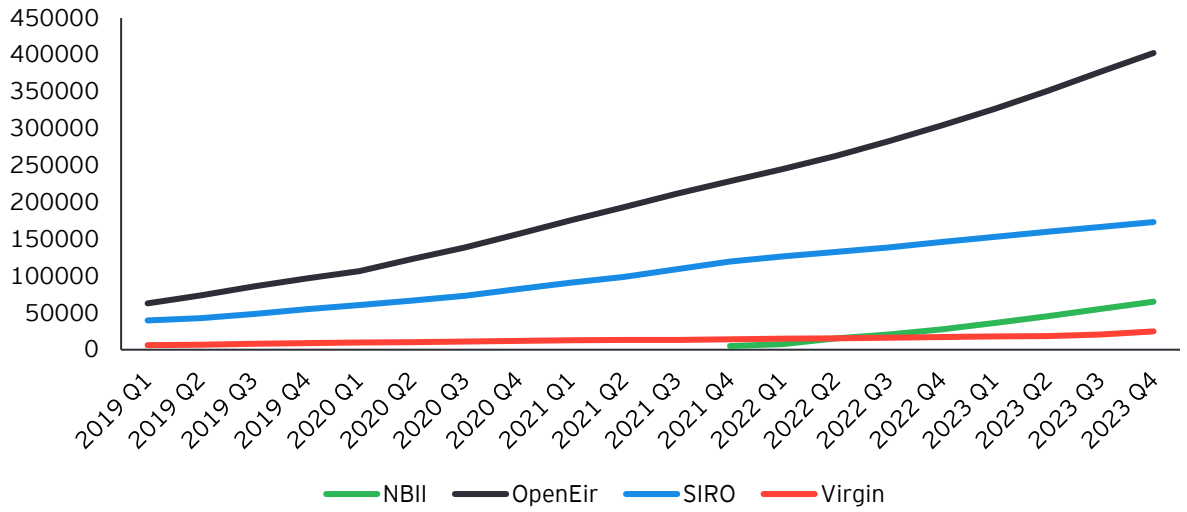
Figure 3.4: Actual download and upload speeds compared to expected download and upload speeds for IA premises in 2023



Source: Data on premises passed and connected, provided by DECC, 31 December 2023 and NBII State Aid Evaluation Report 2023

1.4.1 Has the aid had a material effect on the wholesale market position of the direct beneficiary?	
NBII is the third largest WSP, as measured by connections.	At the end of 2023, NBII was the third largest WSP in Ireland, as measured by total subscribers. This position would not have been possible without the State aid provided through the NBP.

Figure 3.5: High-speed broadband subscribers by WSP provider 2019 Q1 – 2023 Q4



Source: ComReg QKDR, Q4 2023

1.4.2 Has the granting of aid affected the viability of investments in the IA compared to investments in the commercial areas?

Outcome	Description
NBII's investment in passing and connecting premises would be unviable without State aid.	NBII's market position was achieved through investment in passing and connecting premises in the IA. NBII management accounts show that the average joint cost of both passing and connecting a premises in the IA (€2,156) is significantly higher than the comparable cost in commercial areas (which ranges from €597 to €1,053). This disproportionately high upfront cost supports the rationale for State subsidisation of capital costs.

Table 3.2: Average cost of both passing and connecting a premises for selected WSPs

Company	Average cost per connection (€)
OpenEir	1,053
SIRO	871
Virgin Media	597
NBII	2,156

Source: EY analysis, NBII figures are an average of costs from 2021 to 2023

3.2 Coverage and rollout

This section examines NBP coverage and rollout. It answers the following Evaluation Questions:

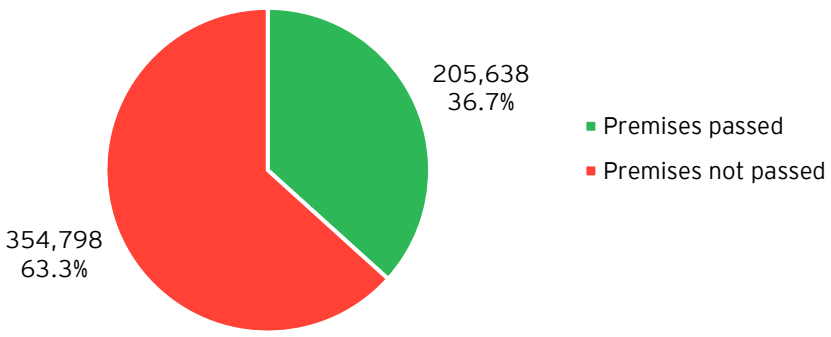
1.1.1 Has the aid resulted in ubiquitous Next Generation Access (NGA) coverage for all premises in the IA by the end of the Rollout Period?

1.1.2 How quickly has the rollout occurred (number of premises passed p.a.)?

The NBP has passed over a third of all premises in the IA in four years.

As of the end of 2023, NBP had passed 205,638 premises with high-speed broadband,[30] with 354,798 premises in the IA remaining to be passed.[31] For the purposes of this evaluation, the term 'premises,' unless otherwise specified, encompasses residential, mixed-use, and business premises. Of a total of 560,436 premises in the IA by the end of 2023, this represents coverage of 36.7%, across the four years to date.

Figure 3.6: 2023 coverage level in the IA



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

[30] Data on premises passed and connected, provided by DECC, 31 December 2023

[31] Note that at the outset of the NBP programme, there were circa 537,000 premises in the IA. As of the end of 2023, there were 560,436. This figure will likely increase in the future. Nevertheless, in this evaluation, to the end of 2023, where proportions are calculated, the 560,436 figure has been used.

The NBP is behind its Bid premises passed targets by 87,021 (29.7%) but has outperformed remedial targets by 20,638 (11.2%) by the end of 2023.

- The Bid rollout targets, as stipulated by NBII, DECC, and the European Commission, aimed for complete coverage i.e., 100% of premises in the IA passed by the conclusion of year 7 (2026).[32] Additionally, the contract set forth detailed coverage targets by quarter, leading to the final 100% target. Figure 3.7 below outlines performance against the year-end targets to the end of 2023.
- Whilst NBII is behind Bid premises passed targets, it is exceeding remedial targets. Remedial targets were set to realign the NBP rollout schedule, following initial delays primarily caused by the impact of Covid-19, challenges faced by NBII as a startup company, and the standards required of subcontractors beyond industry norms. Specifically, as outlined in State Aid Reporting – Second Year Update,[33] the delays include:
  - "Mobilisation of key contractors with restrictions on operations
  - Contractors' ability to meet the extensive design requirements has been impeded due to Covid-19 restrictions
  - One of NBII's specialist contractors from the UK has postponed establishing its Irish operations indefinitely
  - Supply chain and logistic delays – nationally and internationally from the many suppliers which NBII depends upon
  - Delay in the development of IT system processes and software design
  - The recruitment of key personnel as NBII and its contractors scale up – including challenges associated with on-boarding and training of people
  - Travel restrictions and availability of accommodation for contractors across Ireland
  - Access to islands and some buildings such as schools and GAA clubs, which form part of NBII's delivery of Broadband Connection Points"[34]
- The FRP set revised milestone targets of 32,000 premises passed by the end of 2021, 109,000 by the end of 2022, and 185,000 by the end of 2023.[35]
- As of the end of 2023, NBII is exceeding these remedial targets, having initially lagged behind. For example, by the end of 2021 only 27,064 premises in the IA had been passed (4.8% of the total). However, this number rose to 109,267 premises (19.5%)[36] by the end of 2022, and to 205,638 premises (36.7%) by the end of 2023. This uptick since the end of 2021 illustrates the catch-up that has occurred.

[32] NBII Bid model

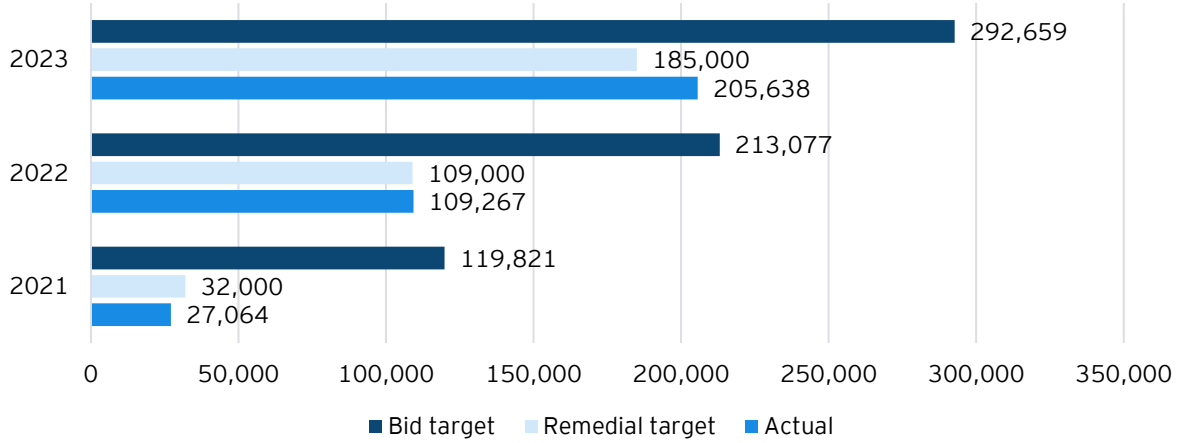
[33] State Aid Reporting – Second Year Update: 941ab7d7-2ba5-4582-8cb4-f59a91c7849f.pdf (www.gov.ie)

[34] The term Broadband Connection Point is referring to Strategic Community Points. This report uses the term Strategic Community Point as defined in the contract between DECC and NBII.

[35] https://nbi.ie/news/events/2023/02/22/nbi-agrees-targets-for-current-project-year/

[36] The number of premises passed here is given by the NBII State Aid Evaluation Report 2022. This figure differs from the number in the Data on premises passed and connected, provided by DECC by 433 (108,834). The top-line figure is given using the NBII State Aid Evaluation Report and subsequent analysis for overall numbers such as penetration level is made using this figure. However, for more granular analysis including calculating premises passed and connection by property type, the Data on premises passed and connected, provided by DECC figure is used as the most detailed data.

Figure 3.7: NBP performance against Bid and remedial premises passed targets, by year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023; NBII State Aid Evaluation Reports 2021-2023; NBII Bid model and NBII public targets, 22 February 2023

Performance data on the remedial targets reveals that the rollout was below target in 2021 but has since exceeded the 2023 target.

- The success in delivery since 2021 suggests that as the impact of Covid-19 has eased and NBII operations developed and matured, rollout became quicker and more stable.
- NBP's Bid final target was for 100% coverage by the end of 2026, while the remedial target is for 100% coverage by October 2027.
- Between 2021 and 2022, there was a 303.7% rise in the number of premises passed, and from 2022 to 2023, an 88.2% rise.[37] This momentum indicates that NBII is on track to achieve its overall remedial targets, and to catch up with the initial Bid targets from the low base of year one of deployment.
- However, it is too early to determine with certainty that this success will continue as various factors could affect this rate. Factors that may impact this rate of rollout include economies of scale. For example, deployment may accelerate as the project advances and as efficiencies are gained; conversely, the pace could decrease over time due to factors such as resource constraints, infrastructure challenges, and market factors.[38] Consequently, future evaluations will benefit from more data to make a better assessment and forecast of rollout to the target end date of October 2027.

The NBP is also contributing towards Ireland meeting the European Commission's 'Digital Decade' target, which aims for all European premises to be covered by a Gigabit network, by 2030.

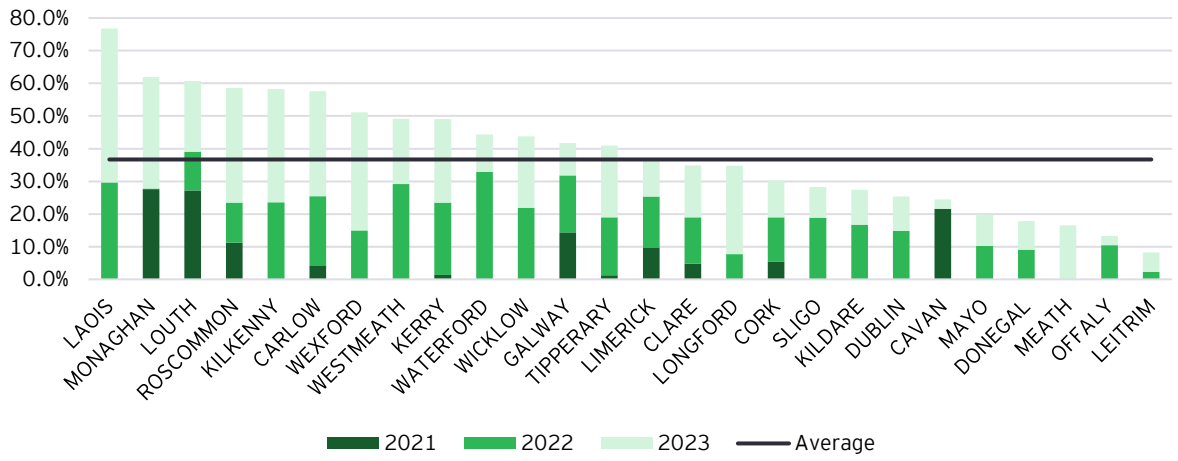
- Nationally, as of Q3 2023, 75% of all premises in Ireland have been covered by fibre to the premises (FTTP) or Cable broadband.[39] Given that 36.7% of premises in the IA are currently covered by high-speed broadband, the NBP is contributing to the Digital Decade's objectives of all premises in Ireland being passed by gigabit network by 2030.
- Nonetheless, there is an observed shortfall in the availability of comprehensive data regarding the national coverage of high-speed broadband. This gap underscores a need for enhanced and systematic documentation to track progress and ensure that Ireland remains on course to fulfil the Digital Decade's target within the stipulated time frame.

[37] NBII State Aid Evaluation Report 2021-2023
[38] Such as the OpenEir Make Ready Programme
[39] ComReg QKDR All Data Q4 2023

There is wide variation in the number of premises passed between counties, but the deployment plan expects to address this.

- There is currently a disparity in broadband rollout across counties, with Cork reaching a high of 24,705 premises passed, while Leitrim has only 962. Even when adjusting for the number of IA premises per county, variance is still notable, with Cork at 30.2% of premises passed and Leitrim 8.2%.[40] The county with the largest proportion of premises passed is Laois with 76.8% of premises passed to the end of 2023.
- Observing the trend over time, 2021 saw coverage in only 12 counties, with one county having as few as two premises passed. Other counties witnessed a surge initially, followed by a plateau. A case in point is Monaghan, where after passing 4,382 premises in 2021, the momentum slowed to add just 23 premises in 2022. However, there was an uptick in 2023, with 5,413 new premises passed. This involved a deferral of premises, that meant the necessary works were delayed slightly.
- However, it is important to note that rollout occurs across deployment areas, rather than in counties as a whole. There are a total of 227 deployment areas, and many of these cross-county borders. Therefore, as certain deployment areas will necessarily need to be rolled out before others, this can somewhat explain the variance within counties.
- Nevertheless, these figures highlight a varied pace in the rollout among counties, despite the overarching trajectory indicating a steady advance in premises passed. Figure 3.8 below encapsulates this, showing the progress of coverage per county as a proportion of total premises per county.
- The deployment plan expects a regional balance of coverage by providing delivery of high-speed broadband across all regions by the end of the deployment period.

Figure 3.8: Coverage per county as a proportion of total premises per county in the IA, per year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

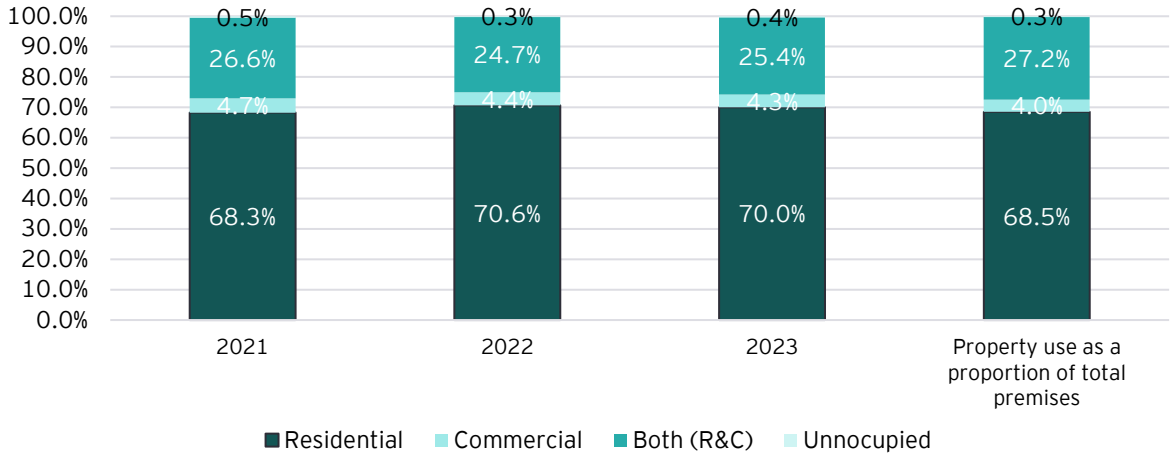
The NBP has delivered high-speed broadband to a range of premises, making consistent progress in rolling out to different end-users.

- Premises can be disaggregated into different property types to further understand progress for different end-users. The relative proportion of each property type for all premises in the IA is shown in Figure 3.9, showing 68.5% residential, 4% commercial, and 27.2% with both a residential and commercial use.[41] The high mixed-use percentage is likely explained by the high proportion of farm buildings and rural shops or businesses in the IA that share buildings with residential premises.

[40] Data on premises passed and connected, provided by DECC, 31 December 2023
[41] Data on premises passed and connected, provided by DECC, 31 December 2023

- Assessing property use of premises passed illustrates that the relative proportion of each property type has remained relatively consistent since rollout began and has stayed in line with the proportions of the overall property types, suggesting that areas have been wholly and systematically covered when NBP rollout has passed through.

Figure 3.9: Property use of premises passed cumulatively each year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

The number of SCPs delivered has reached its planned targets, passing and connecting 955[42] SCPs before the end of 2023.

- 955 SCPs have been passed as part of the NBP, exceeding plans set out at the outset of the NBP. These are public premises providing free-to-access high-speed broadband for end-users, which enable remote working, educational benefits, improve digital skills, and other advantages such as improved social inclusion and environmental benefits. SCPs were prioritised to be rolled out ahead of covering other premises and include schools, libraries, marts, garda stations, and other public spaces. School SCPs provide connectivity for pupils and teachers, enabling additional methods of education and the opportunity to learn digital skills. SCPs are also used for other activities including e-health, study hubs, remote work, arts and culture, and educational courses, with the aim of creating sustainable digital communities.
- The location of each SCP was determined via strategic proposals, which were assessed by a panel that contained members from the DRCD, DECC, and local authorities. DECC managed the external implementation, while DRCD assisted the internal setup, cooperating to ensure these hubs could be passed and connected swiftly. Similarly, school SCP sites were managed by DECC and the Department for Education, with the Digital Technology Advisors Team from the Professional Development Service for Teachers supporting digital learning. DRCD works with local Broadband Officers and RSPs to manage equipment setup, support, billing, and other activities.
- The scope of SCP rollout contained targets to pass and connect 955 SCPs by the end of 2023, which have been achieved. Of these SCPs, 672 are schools delivered as part of the SCP Schools Programme, and the remaining 283 are other SCP types, providing public broadband points in premises such as libraries and garda stations.
- The rollout progress for SCPs was rapid, with 276 schools and 275 public sites being passed by the end of March 2022, and just one year later, 609 schools and 283 public sites had been installed. This progress, culminating in 955 SCPs passed and connected, demonstrates the emphasis placed on SCP sites to capture the benefits from having schools and community sites with access to enhanced reliability and speed.

[42] Parliamentary Questions: Broadband Infrastructure Debate – Minister of State at the Department of the Environment, Climate and Communications, 20th March 2024

3.3 Take-up

This section examines the nature of take-up in the IA. It answers the following Evaluation Question:

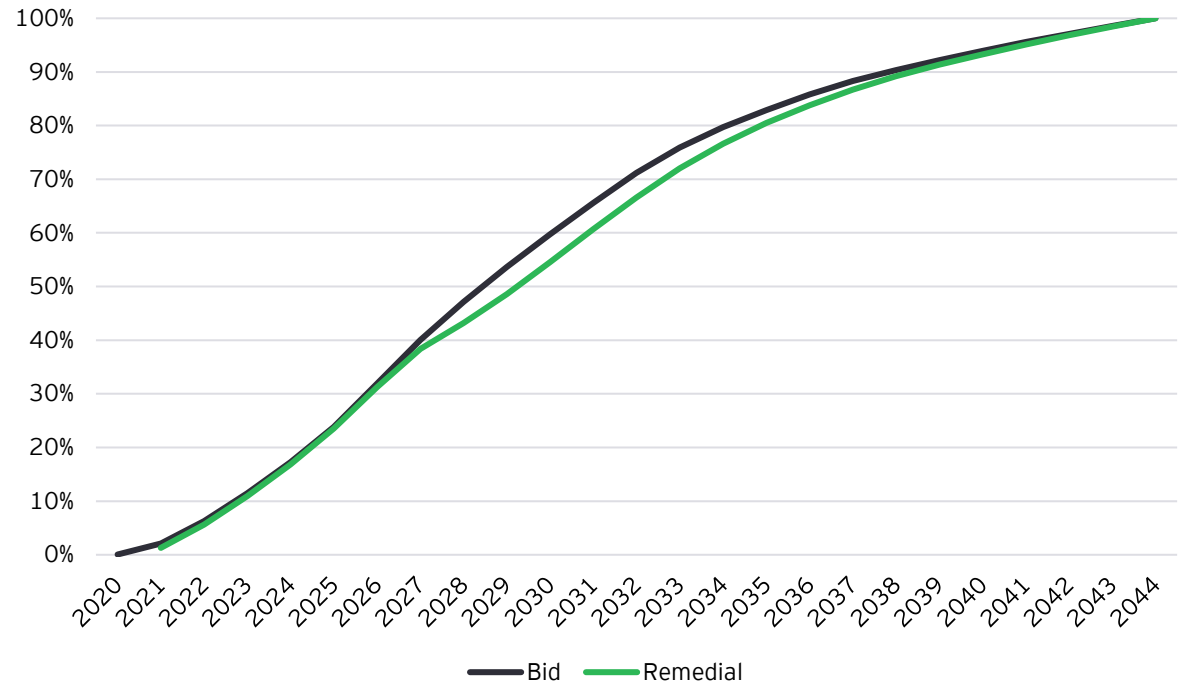
1.2.1 To what extent is the NGA network in the IA being used by residential, business and other end-users?

a. What is the take-up in terms of total subscriber numbers?
b. What is the take-up by subscriber type?
c. Has the beneficiary successfully used demand stimulation activities to drive take-up in line with its targets?
d. What volume of data is being used?

3.3.1 Progress of IA connections

The adoption patterns of high-speed broadband in the IA may be best understood through the lens of a technology take-up curve. Resembling an 'S', a typical technology take-up curve models the gradual increase in product adoption as a function of time. Applied to high-speed broadband, this curve suggests a pattern of slow initial take-up that accelerates and gains momentum as coverage extends to additional areas, programme awareness grows through various demand stimulation activities, and as customers' pre-existing contracts expire. Eventually, the S-curve levels off as market saturation approaches and the majority of potential customers have transitioned to the new service. Figure 3.12 below shows the forecasted take-up curves for both the initial Bid model and remedial model with the cumulative targets of 469,152[43] and 456,047[44] respectively. The remedial (FRP) model anticipates a slower rate of adoption or smaller proportion of premises being connected, particularly in the years 2026 to 2041, reflecting the revisions based on early performance of the NBP. However, it still anticipates that premises have a high probability of eventually desiring to avail of the high-speed broadband connection.

Figure 3.10: Take-up curves for the remedial model and Bid model



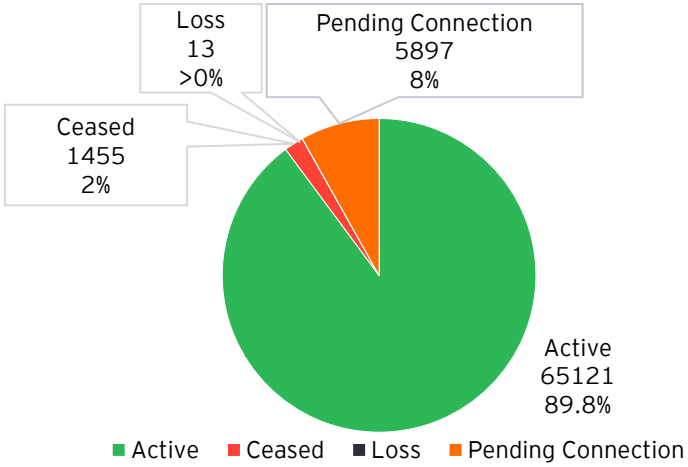
Source: NBP Bid values and NBP FRP, December 2022

[43] NBII Bid model
[44] NBII FRP, December 2022

Up to the end of 2023, 65,121 premises in the IA had an active connection with high-speed broadband, representing a penetration level of 31.7%.[45]

- A further 5,196 premises were 'pending connection', meaning they would acquire an active connection in the very near future; 1,455 premises had a connection 'ceased' and a further 13 have connection 'loss', both of these ultimately encapsulating premises in the IA that were previously connected with high-speed broadband, but no longer are.[46] The figure below shows the proportions of each.

Figure 3.11: Number of premises connected to the end of 2023



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

- With 65,121 premises connected, this represents a total of 11.6% of premises in the IA connected to high-speed broadband, demonstrating the increase to those opting into accessing broadband as a result of the NBP.

The NBP has surpassed its Bid and remedial connection targets to the end of 2023.

- NBII's performance relative to the initial Bid connections targets up to the end of 2023, as shown in Figure 3.12, reveals that it is exceeding initial targets, achieving 11,269 more premises connected than the 2023 target.[47] Moreover, when measured against the remedial connection targets, NBII is 15,224 premises ahead.[48] [49] This is particularly significant since, as mentioned previously, NBII is behind its Bid targets for premises passed by 87,021.

[45] Data on premises passed and connected, provided by DECC, 31 December 2023

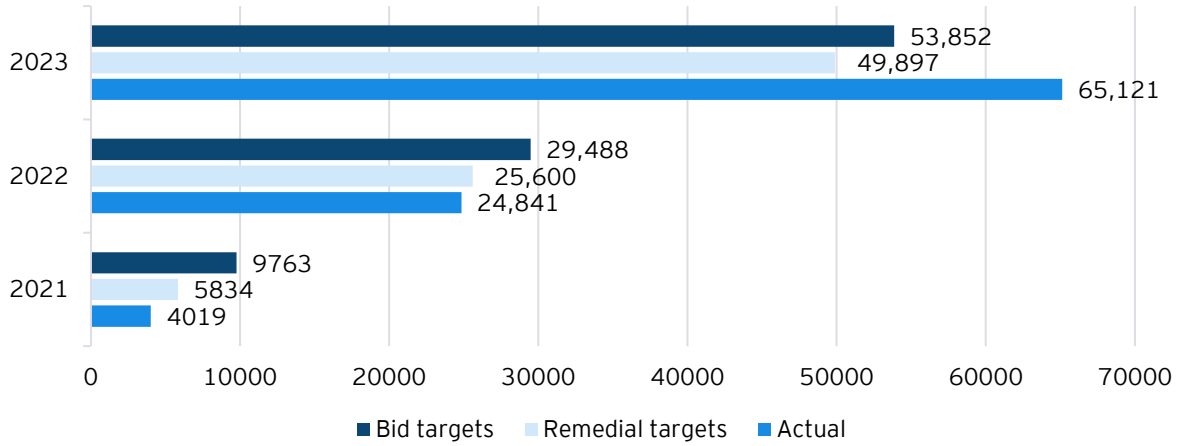
[46] 'Connection ceased' means that a broadband service that was previously active and provided to a customer has been terminated. This could occur for various reasons such as the customer choosing to end their contract, moving to a different service provider, or the service being discontinued by the provider. 'Connection loss' refers to a disruption or failure in the broadband service, leading to a temporary loss of internet connectivity. This could be due to technical issues, maintenance works, network overloads, or damages to the infrastructure, such as cables or network nodes. The connection statuses of 'active', 'ceased', and 'loss' in the Data on premises passed and connected, provided by DECC are mutually exclusive categories to avoid any double counting of premises in the data.

[47] NBII Bid model

[48] NBII FRP, December 2022

[49] The actual number of premises connected is a net figure, whereas the connection targets are gross figures each year, which have been summed to calculate the cumulative connection target.

Figure 3.12: NBP performance against Bid and remedial connection targets, by year

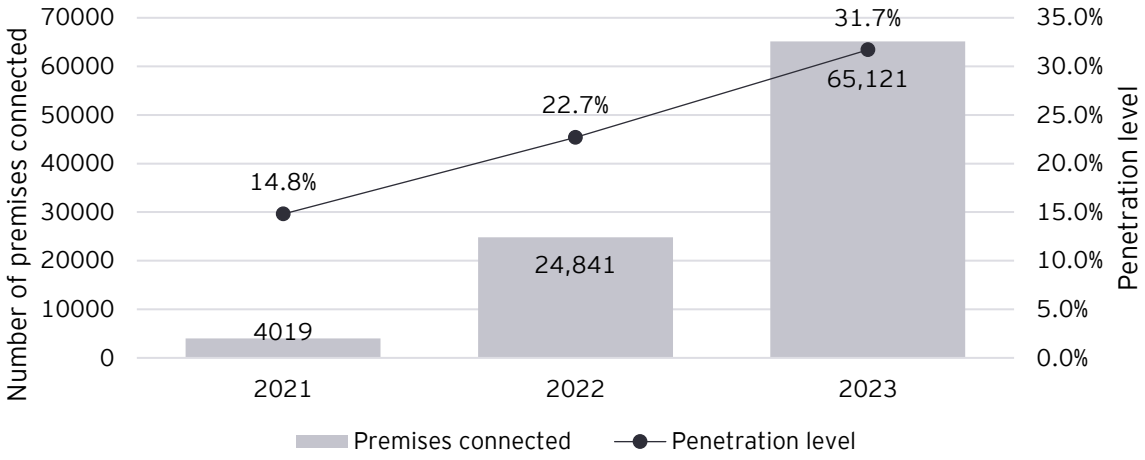


Source: Data on premises passed and connected, provided by DECC, 31 December 2023; NBP Bid values and NBII FRP, December 2022

The adoption of high-speed broadband in the IA is robust, as evidenced by the year-on-year growth in connections. However, the rate of increase is showing signs of deceleration as the market approaches wider coverage.

- The data in Figure 3.13 demonstrates a marked upward trajectory in the adoption of high-speed broadband within the IA. The increase in the number of connected premises and the penetration rate from 2021 to 2023 suggests an increasing customer awareness of the NBP and demand for high-speed services. Moreover, as more time elapses since the rollout of the NBP, pre-existing contracts with providers will expire, which is likely to spur customers to switch or upgrade their internet services, ultimately adding to high-speed broadband take-up.
- The substantial rise in the number of premises connected—from 4,019 in 2021 to 65,121 by the end of 2023 - indicates that the NBP's implementation is progressing through the accelerated phase of the S-shaped take-up curve, where initial slow growth gives way to rapid adoption, before eventually stabilising as the market nears saturation and the implementation period is completed (i.e., no new builds).
- It should be noted that the reported figures include only those premises with an active high-speed broadband connection at the end of 2023, where the most recent activation date is considered. This means that 3,959 of the premises counted are not new to high-speed broadband, rather they represent customers who have switched providers, underscoring the dynamic nature of the market and the shifting preferences of customers.

Figure 3.13: Premises connected and penetration rate, by year

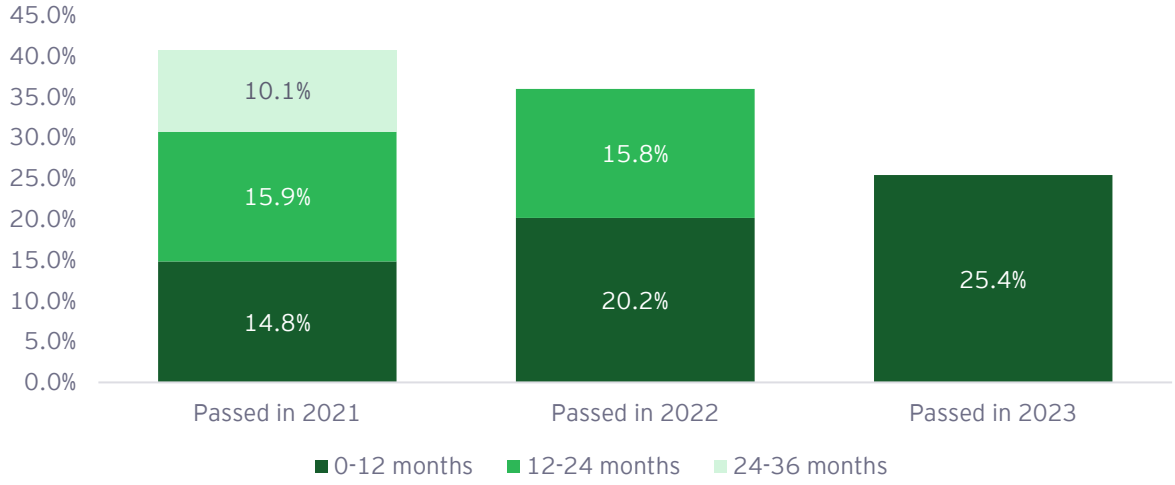


Source: Data on premises passed and connected, provided by DECC, 31 December 2023

Take-up progress is rapid in the years immediately following the passing of premises, although capturing a consistent trend is premature at this stage, given that network rollout has only begun in the last four years.

- Of the premises passed in 2021, 40.8% have been connected by the end of 2023,[50] as detailed in Figure 3.14 below. Most take-up occurs in the immediate two years after premises are passed, with the rate of take-up subsequently falling. However, given the early stage of the NBP, it is challenging to identify a consistent trend in the data. Nevertheless, this take-up rate appears strong, since as previously mentioned, NBII is outperforming its bid and remedial take-up targets by 11,269 and 15,224 premises respectively, despite the delay to progress in passing premises, being 87,021 behind the Bid target for number of premises passed.

Figure 3.14: Take-up rate relative to year the premises were passed

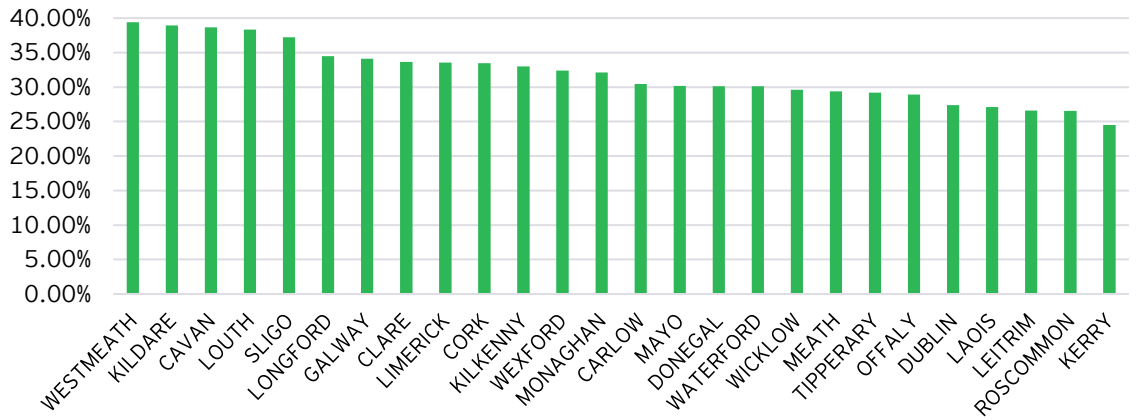


Source: Data on premises passed and connected, provided by DECC, 31 December 2023

The penetration level is relatively consistent across the Irish counties.

- As previously noted, average penetration level in the IA is 31.7%. Assessing each county reveals that the spread is 14.9%, with Kerry having the lowest penetration level at 24.5%, while Westmeath has the highest at 39.4%[51]. The level for each county is outlined in Figure 3.15 below.

Figure 3.15: Penetration level per county in the IA



[50] Data on premises passed and connected, provided by DECC, 31 December 2023
[51] Data on premises passed and connected, provided by DECC, 31 December 2023

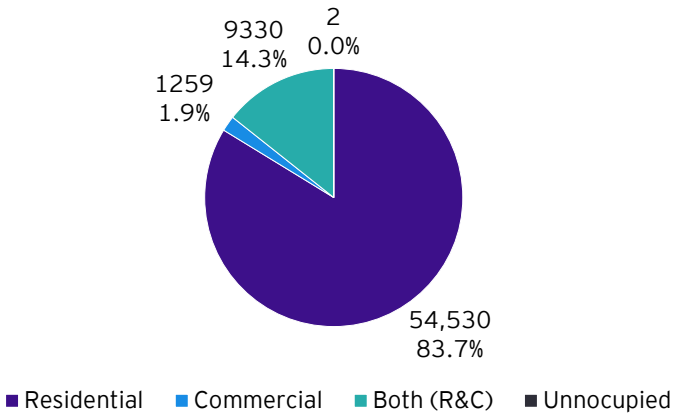
Source: Data on premises passed and connected, provided by DECC, 31 December 2023

- The mean penetration rate per county is 31.9%, while the standard deviation is 4.1%, suggesting variance is relatively low, and while premises passed is more volatile between counties, the penetration rate and efforts to encourage this, are fairly consistent.

The penetration rate is higher for residential premises compared to those with a commercial use.

- 68.5% of all premises in the IA are of residential use, with 4% of solely commercial use, and 27.2% both residential and commercial. Of the 65,121 premises connected by 2023, 83.7% of those are of solely residential use. A further 14.3% have both residential and commercial use, while just 1.9% are solely commercial. This demonstrates a clear weighting towards residential premises. The proportions of connected premises by property use are outlined in Figure 3.16 below.

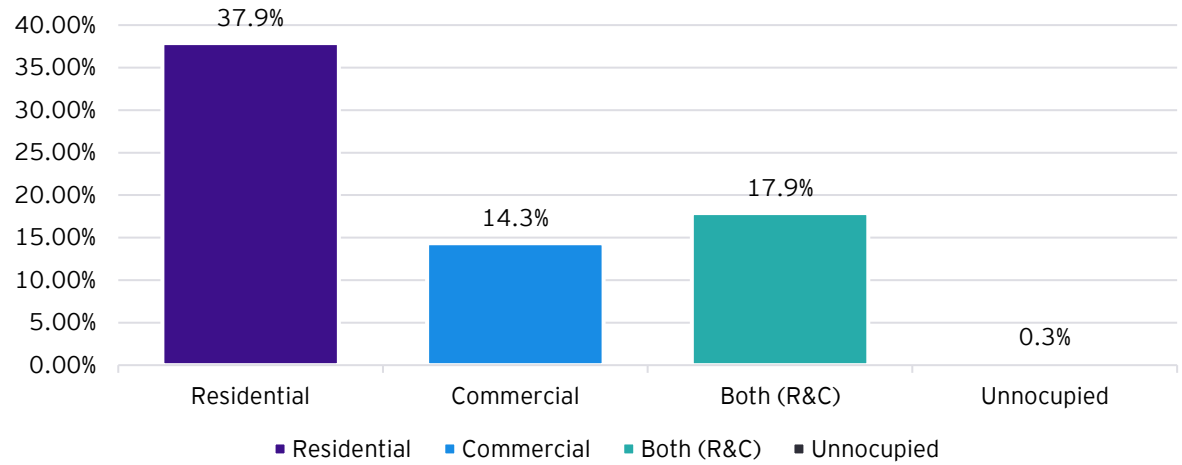
Figure 3.16: Property use of premises connected in the IA to 2023



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

- In comparing the take-up of each property use compared to the proportionate coverage rate, solely residential premises have a penetration rate of 37.9%, while just 14.3% of solely commercial premises are connected,[52] reinforcing the trend that residential users are more readily adopting high-speed broadband than businesses.

Figure 3.17: Penetration level in the IA by property type relative to the coverage level of each property type

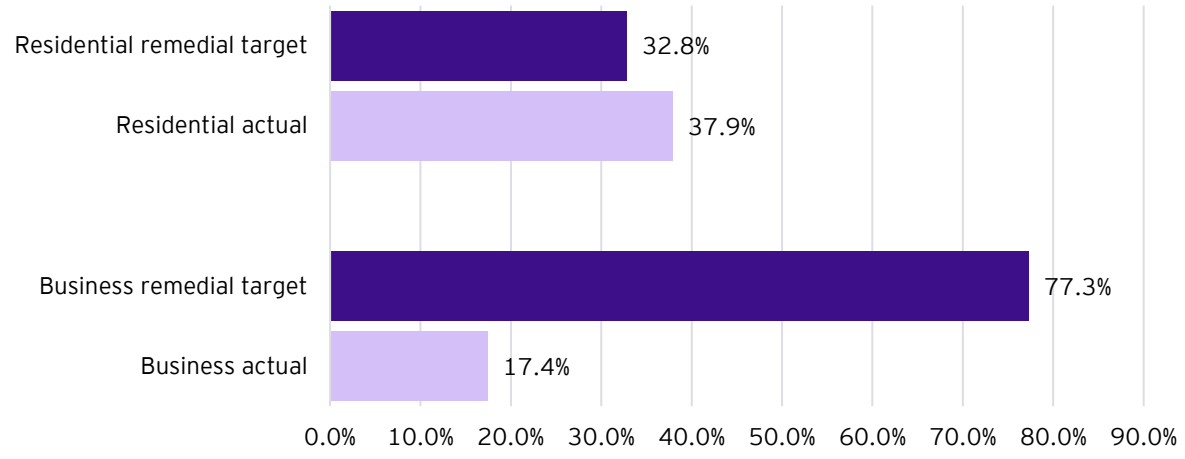


[52] Data on premises passed and connected, provided by DECC, 31 December 2023

Source: Data on premises passed and connected, provided by DECC, 31 December 2023

- Moreover, these proportions have remained consistent since 2021, suggesting that while the number of premises acquiring active connections is rising, the rate is much higher for residential premises.
- Comparing this to remedial target take-up by property type further highlights this sentiment. Residential premises have an overperformed penetration rate of 37.9% compared to the target of 32.8%[53]. Meanwhile, business take-up is below target. As above, the penetration rate is currently 14.3% for solely commercial premises, and even if combining commercial and premises of both residential and commercial usage into one, the rate only reaches 17.4%. Comparatively, the business penetration rate target by the end of 2023 is 77.3%. This is illustrated in Figure 3.18 below.
- Through discussions with DECC, the Evaluator has determined that the lower uptake among businesses could be partly attributed to the complexity and technical demands of the current business broadband products offered by RSPs. These products, which feature higher upload speeds and enhanced service levels, require each circuit to be manually configured on a unique virtual local area network (VLAN). Nevertheless, further research may still be required to identify other underlying causes for the low business uptake.

Figure 3.18: Penetration rates by property use in the IA compared to targets, 2023



Source: Data on premises passed and connected, provided by DECC, 31 December 2023 and NBII FRP, December 2022

Irish farms have strong connection rates relative to other businesses and residential premises.

- Overall, in the IA there are around 65,400 farm premises. Of these, 21,492 are passed, representing a coverage rate of 32.9%. Moreover, the number of farms connected to high-speed broadband totals 8,272, entailing a penetration rate of 38.5%.[54] Farms are classified as a mixed-use building, both residential and commercial; they often have two postal points, ready for connection, with connections most commonly taken up via the residential postal point. Although there is no target for farms specifically, this penetration level is strong compared to other business types and is also slightly above take-up for other residential premises in the IA.

The number of SCPs connected has grown, rapidly helping to provide end-users with free-to-access broadband in public premises.

[53] NBII FRP, December 2022
[54] NBII internal data, supplied by DECC

- The number of SCP premises both passed and connected has achieved the targets agreed at the outset of the NBP, with 955[55] SCPs connected to high-speed broadband by the end of 2023. Rapid progress was achieved in 2022 and 2023; 360 SCPs (101 schools and 259 public sites) were connected by the end of March 2022, rising to 650 (371 schools and 279 public sites) connected by March 2023, and all 955 delivered by the end of 2023. Unlike private premises, SCPs, comprising of schools, libraries, garda stations and other public premises, were selected by DECC, DRCD, the Department for Education, and local authorities. They were therefore approved for automatic connection to the high-speed broadband network upon being passed.
- The success in connecting high numbers of SCPs is important for realising the benefits of high-speed broadband, which include facilitating remote working, educational programmes, digital skills training, and hosting community and cultural events.

3.3.2 Demand Stimulation Activities

The strong take-up has been driven by various successful demand stimulation activities undertaken by NBII.

- NBII's demand stimulation activities have been a key factor contributing to the take-up of high-speed broadband services. This analysis indicates that a discrepancy exists between the intervention and control areas regarding households' awareness of NBII's promotional activities. 45% of respondents in the IA reported seeing or hearing promotional activity, compared to 10% in the commercial areas. This is to be expected, as the NBP is not being offered to commercial areas and highlights the targeted nature of NBII's resources and promotional efforts towards areas newly receiving high-speed broadband. Similarly, within the business sector in the IA, 57% reported awareness of these activities, underscoring the broad reach of NBII's marketing strategies within the business community. The survey results detailing respondents' awareness and perceived effectiveness of specific promotional activities can be found in Appendix E Awareness and perceived effectiveness of demand stimulation activities.
- Survey data suggests that traditional media play important roles in raising awareness about high-speed broadband's availability. Television and radio advertising emerged as predominant promotional channels recalled by both households and businesses, with TV ads recalled by 49% of households and 44% of businesses, while radio ads were recalled by 43% of households and an even higher 55% of businesses.
- However, word-of-mouth from friends and family was perceived as the most effective medium when it came to decision-making, with 79% of household respondents and 30% of business respondents considering it extremely influential in their decision to subscribe to high-speed broadband.

Expressions of interest (EOIs) and direct sales were enhanced through diverse tactics.

- The key tactics employed by NBII encompassed a range of strategies.[56] Additionally, NBII maintained communication with RSPs to inform them when areas had been passed, encouraging RSP awareness and marketing campaigns. Complementing these activities, research and engagement surveys were conducted regularly to assess end-user awareness of the programme and its benefits, thus evaluating the success of these demand stimulation activities.
- According to a 2022 analysis by Core Data and NBII, 43% of sales originated from expressions of interest (EOIs). Paid media, encompassing door drops, billboards, and digital communications accounted for nearly 40% of all EOIs. The remaining 60% were driven by PR, news, and on-the-ground activity, which included the presence of branded vans, PR activities following the connection of the first premises in an area, or community marketing events.

[55] Parliamentary Questions: Broadband Infrastructure Debate – Minister of State at the Department of the Environment, Climate and Communications, 20th March 2024

[56] These tactics include national PR highlighting milestone achievements and quarterly updates; alternating weekly radio advertising campaigns with reduced spending at strategic intervals; digital engagement via the NBII website and social media; targeted door drops in areas with low uptake; and events designed to educate and engage specific regions or stakeholder groups, such as national ploughing events aimed at farmers.

- Further analysis indicates that in 2022, paid media led to a 61.3% increase in the number of EOIs, while in 2023, it is estimated to have contributed to a 65.9% rise. This underscores the impact of NBII's demand stimulation activities and provides evidence that the growth in EOIs and sales can be attributed to these efforts.

NBII demand stimulation data shows that different approaches have varying contributions to EOI's or sales, but further research is required to assess which activities should be prioritised.

- 48% of NBII's marketing budget in 2023 was specifically targeted to demand stimulation activities, illustrating a clear commitment to driving awareness and take-up of the high-speed broadband.[57]
- The extent to which different demand stimulation activities' contribution to EOIs is outlined in Table 3.3 below, based on Core Data and NBII analysis. It shows that social media contributed to approximately 6% of EOIs.[58] Other drivers of EOIs include paid search, which includes both generic searches, in which businesses Bid on key words to display ads in search engine results, and brand specific search which involves online ads run specifically tied to a brand's name. Despite these contributions, the largest contributor to EOIs was the base and trend awareness, totalling 54% of EOIs, representing the EOIs that would likely have occurred regardless of specific demand stimulation activities in the current cycle of activities. Base and trend awareness is in part driven by activities undertaken in previous years, as well as the underlying sales behaviour influenced by market conditions and trends.

Table 3.3: Demand stimulation activities' contribution to EOIs

Channel	Absolute contribution	Percentage contribution
Base + Trend	52,656	54%
PR	16,385	17%
Field Work	10,046	10%
Paid Search (Generic)	5,954	6%
Social Media	5,741	6%
Paid Search (Brand)	2,757	3%
Out-of-Home (Pilot)	1,257	1%
Door Drops	1,989	2%
Display + VOD + Dig Audio (Pilot)	136	0%
Total	96,921	

Source: NBP Marketing Mix Model 2023, Core Data and NBII

- NBII and Core Data analysis also examined the contribution of demand stimulation activities into direct sales, this is outlined in Table 3.4 below. From this, again the base demand represented the largest contribution, with 42% of direct sales from this channel. Other activities include e-mail, which is estimated to have contributed 18%, while door drops (including leaflets) stand at 13%.
- Although this suggests the base demand is performing well, other demand stimulation activities are effective in driving additional EOI's and direct sales. However, further research is required to assess which activities should be pursued with the marketing budget, and in which locations.

[57] NBP CDB Implementation Plan 2023, NBII

[58] Marketing Mix Model 2023, NBII and Core Data

Table 3.4: Demand stimulation activities' contribution to direct sales

Channel	Absolute direct contributions	Percentage contribution
Base + Trend	21,771	42%
E-mails	9,561	18%
Door Drops (order leaflets)	6,808	13%
Social Media	4,440	8%
Search (Generic + Discovery)	2,964	6%
Search (Brand)	1,687	3%
Radio	2,550	5%
PR	2,516	5%
Total	52,297	

Source: NBP Marketing Mix Model 2023, Core Data and NBII

3.3.3 Data usage

Data usage in the IA has grown steadily, suggesting high-speed broadband is being readily utilised, which should ensure the potential benefits provided by the NBP are being captured.

- There is strong growth in data usage in the IA, year on year.
- Figure 3.19 below illustrates the growth in Terabytes of data used each year by IA premises.

Figure 3.19: Terabytes of data used by IA premises, by year

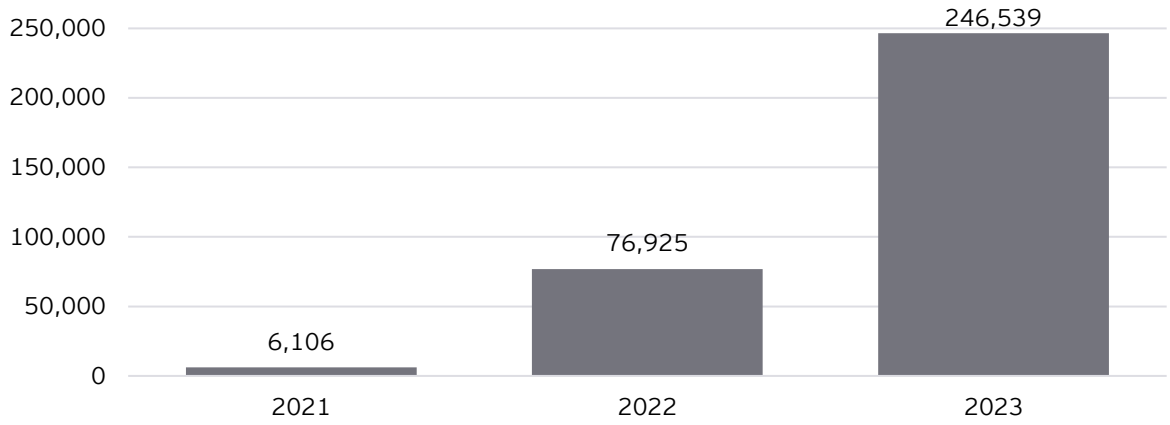
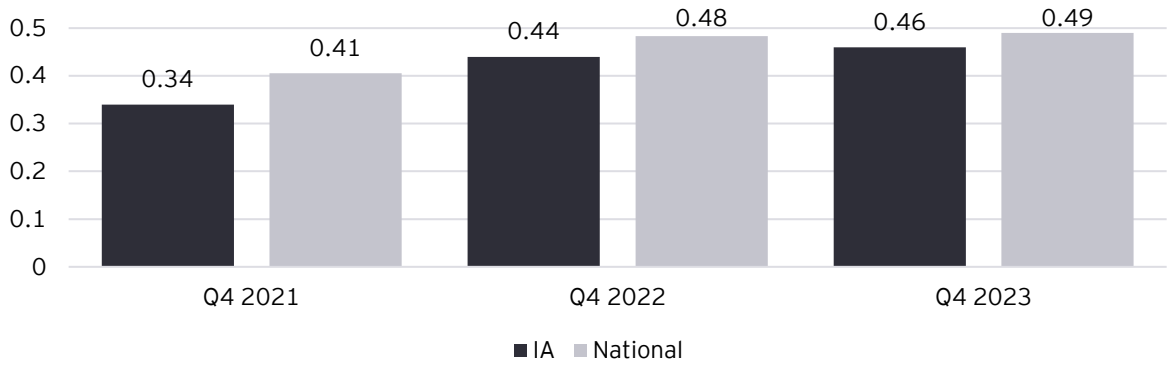


Figure 3.20: Terabytes of data usage per premise, compared to nationally



Source: NBII State Aid Evaluation Reports 2021-2023 and ComReg QKDR All Data Q4 2023

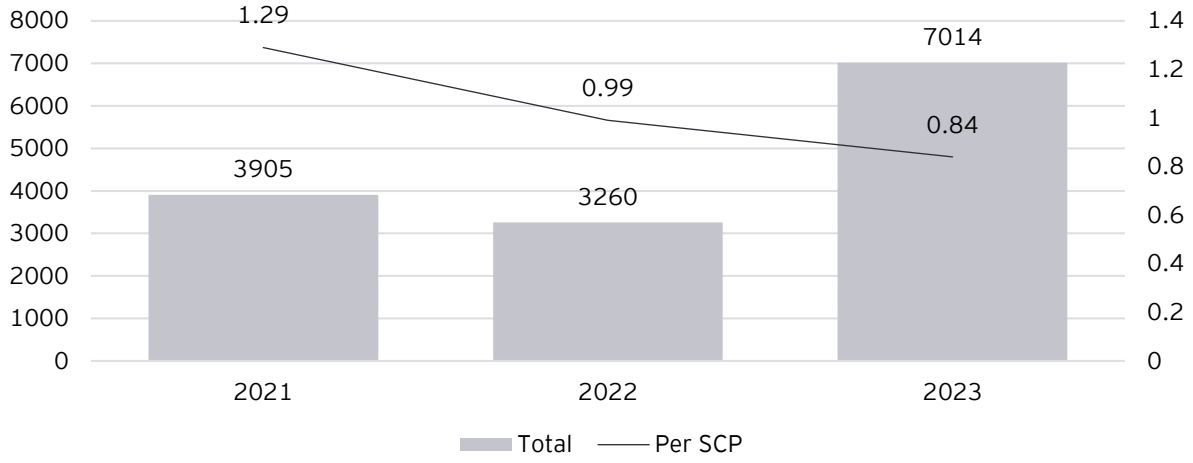
Note: The IA data represents fibre to the home (FTTH) connections. The national data represents FTTP connections. However, given the data represents data usage per subscriber line, the discrepancy is not material.

- The usage per site connected has remained consistent, and notably is at a very similar level to the national average. This is crucial in demonstrating that premises in the IA are able to readily use the high-speed broadband and are comfortable doing so to the same level as premises outside the IA that already had access to high-speed broadband.
- Figure 3.20 above demonstrates the terabytes of data usage per subscriber line per month in the IA and nationally.

SCP data usage has also risen significantly, with more users and more terabytes used, however terabytes of data usage per SCP has gradually fallen.

- In 2021, the total usage was 3905 TB, and the average usage per SCP was the highest of the three years at 1.29 TB[59] (see Figure 3.21). By 2022, while the total usage increased to 3260 TB, there was a decrease in usage per SCP to 0.99 TB. In 2023, a significant rise in total usage is observed with a total of 7014 TB being used. However, the usage per SCP continued to drop, reaching 0.84 TB.
- This trend of declining data usage per SCP, despite an overall increase in total usage, aligns with the expectation that, as more premises gain access to high-speed broadband, reliance on SCPs diminishes. It may also be that certain types of SCPs anticipated to be heavily used were connected initially, with later connections not utilised as intensively. Further examination may be required to explain this trend.
- Despite this, the number of end-users utilising the SCPs is significant. Since September 2020, an estimated 31,000 new users, and over 214,000 returning users made use of the SCP services.[60] Similarly, in 2023 alone, 12,032 new users and 91,012 returning users availed of the SCP locations. This entailed a 7% month on month growth to the number of end-users in 2023.

Figure 3.21: Terabytes of data usage by SCPs, total and per SCP



Source: State Aid Evaluation Reports 2021-2023

The shift to high-speed broadband in the IA has influenced households' frequency of internet usage and methods of communication.

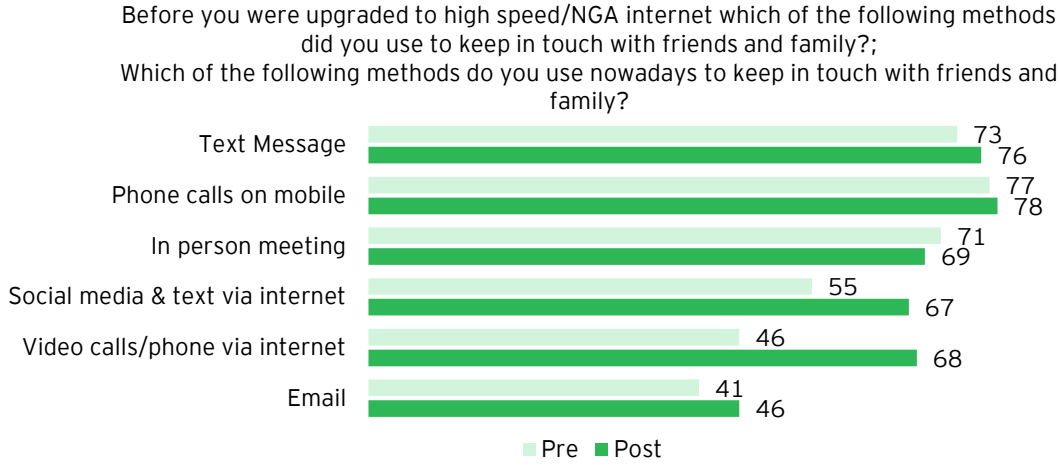
- In the IA, households report a high frequency of internet usage, with 61% of 251 Household Survey respondents indicating constant use. This level is on par with the control area,

[59] State Aid Evaluation Reports, 2020-2023
[60] SCP Information, DECC

demonstrating that the introduction of high-speed broadband has brought about an urban-equivalent level of internet accessibility to previously underserved regions.

- The shift to more interactive forms of communication, such as video calls and social media, has been evident in the IA. The adoption rate for video calls over internet platforms in the IA has increased from 46% before the upgrade to 68% afterwards. Similarly, the usage of social media and text messages via internet platforms has risen from 55% to 67%, illustrating a shift towards digital communication.

Figure 3.22: Change in application usage in the IA



Source: Ipsos B&A NBP Household Survey, March 2024

- Across both the IA and control area, the perception of the internet as an essential service is evident, with 86% in both areas deeming it indispensable. This sentiment reinforces the notion that reliable internet access is a cornerstone of modern living. The attitudes towards high-speed broadband have improved in the IA post-upgrade. The proportion of residents who strongly agree that broadband is essential for working from home rose from 66% to 75%. Similarly, the belief that their internet quality is worth the cost increased, with 61% of residents now in agreement, up from 45% prior to the upgrade. This growth in positive sentiment reflects a deeper recognition and appreciation for the value and impact of high-speed broadband services.

High-speed broadband plays a critical role in driving various facets of business operations.

- The Business Survey reveals a broad utilisation of high-speed broadband across various business functions, with communication via email and Voice over Internet Protocol (VoIP) being the most widely used service, as indicated by 97% of the 150 surveyed businesses. A majority also rely on broadband for fundamental business operations (92%), highlighting its importance in routine tasks and administrative duties. These data suggest that reliable internet is integral to maintaining everyday business interactions, further evidenced by 87% of businesses indicating that internet is 'definitely an essential service' that they cannot operate without.
- Sales and marketing strategies are heavily influenced by digital capabilities, with 73% of businesses engaging in these activities online. This encompasses a range of activities from content marketing to customer engagement and digital advertising, indicating the shift towards digitalisation in the sales and marketing domains. Furthermore, more than half of the businesses utilise broadband for remote working (53%) and online advertising (59%), indicating a trend towards flexible working arrangements and the utilisation of online platforms for brand visibility.
- Cloud computing services are also numerous (58%), which points towards a growing trust in and reliance on cloud technologies for storage, data processing, and application usage. The internet's role in facilitating transactions is clear, with almost half of the respondents using it for ecommerce and taking orders (47%), and a similar proportion utilising it for online bookings (44%). This reflects the shift towards online commerce as a primary channel for sales and customer service.

3.4 Quality of service and reliability

This section examines the quality and reliability of services in the IA, focusing on download and upload speeds as well as fault repair times. It answers the following Evaluation Questions:

1.3.1 Has the aid resulted in the delivery of high quality and reliable services in the IA, which are in line with commercial areas?

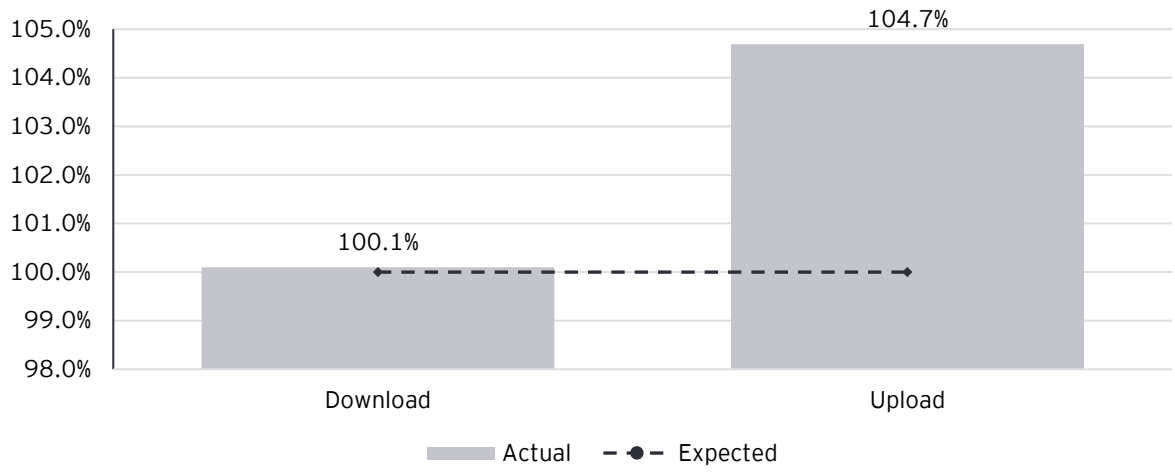
a. Average download and upload speeds (of least expensive NBII product)

b. Fault repair times

Download and upload speeds in the IA are marginally above the minimum requirements in the purchased broadband packages, demonstrating strong performance where premises are connected to high-speed broadband services.

- Given the broadband packages purchased by end-users, the IA connected premises should be receiving a mean download speed of 681.2 Mbps, and a mean upload speed of 68.2 Mbps. The actual mean download speed for FTTH in 2023 was 681.9 Mbps, while the mean upload speed was 71.4 Mbps. This represents a performance of 100.1% of expected download speeds, and 104.7% of expected upload speeds[61] [62].
- Broadband speeds exceeding 500 Mbps have been delivered in the IA, transitioning premises from slower speeds to high-speed broadband. This has had a positive impact on enterprises and residents in the IA alike, relating to both leisure and non-leisure activities, as explored in section 4.3.1.
- Originally, the procurement sought broadband speeds in excess of 30 Mbps. However, the entry offering at contract award was a minimum speed of 150 Mbps and has since been upgraded to a standard offering of 500 Mbps.

Figure 3.23: Actual download and upload speeds compared to expected download and upload speeds for IA premises in 2023



Source: Data on premises passed and connected, provided by DECC, 31 December 2023 and NBII State Aid Evaluation Report 2023

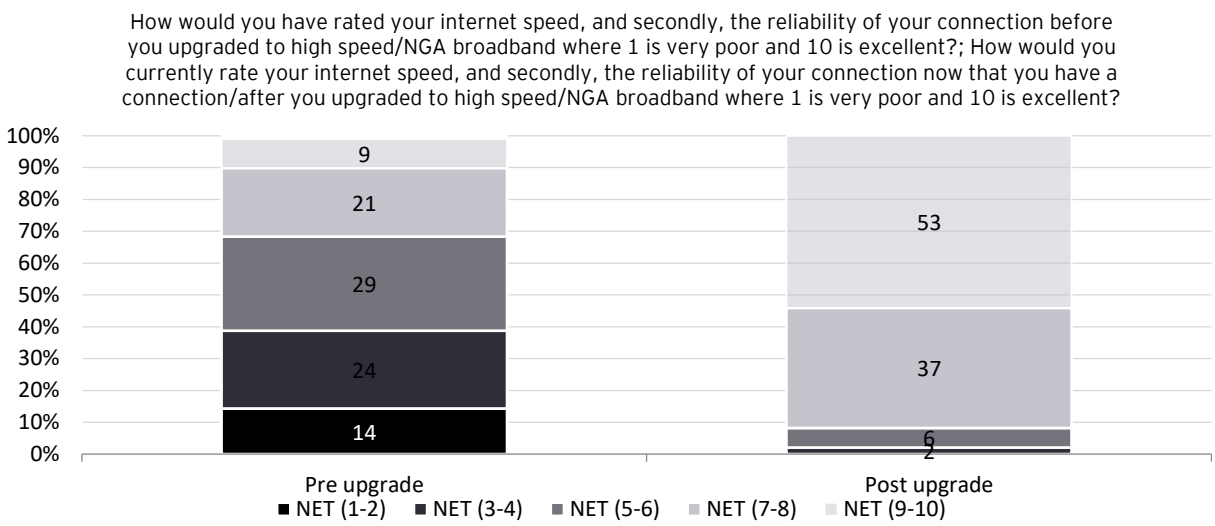
Household and Business Surveys show notable improvements in internet speed following the upgrade to high-speed broadband.

[61] Data on premises passed and connected, provided by DECC, 31 December 2023 and NBII State Aid Evaluation Report 2023

[62] These figures have been calculated by measuring the download and upload speed that purchased packages in the IA should be providing based on advertised speeds, and comparing this to the average download and upload speeds exhibited by premises in the IA.

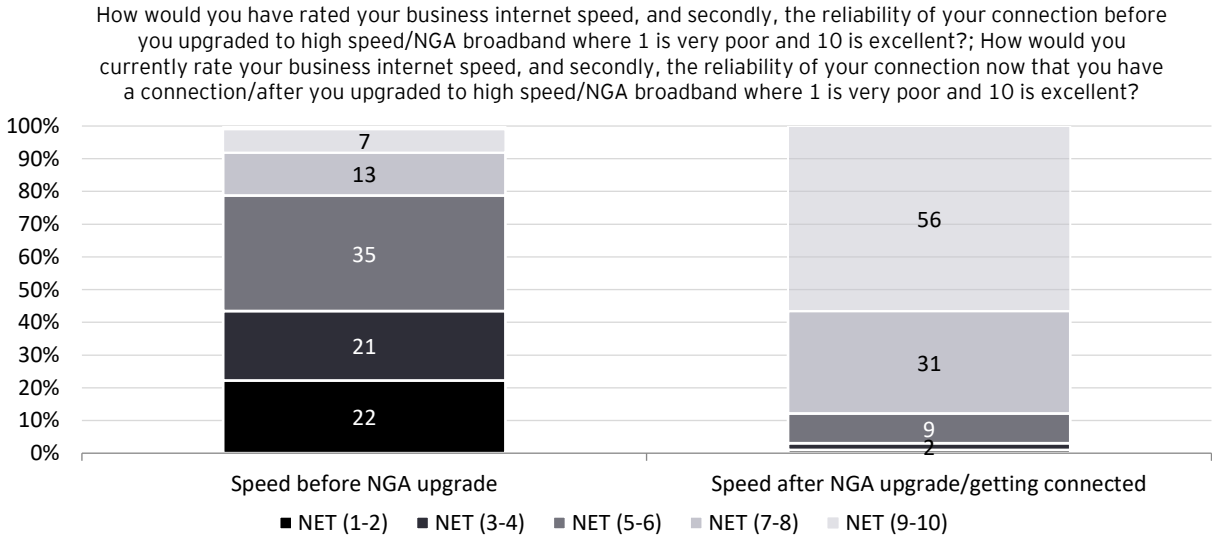
- In the IA, survey respondents' satisfaction with their internet speed post-upgrade averaged 8.5 out of 10 compared with 5.2 prior. This jump indicates a robust enhancement in perceived speed, transitioning from a mediocre to an excellent standard. Prior to the upgrade, the majority of ratings fell into the mid-range (NET 3-6),[63] showing that users were not entirely satisfied with their speeds. Post-upgrade, the distribution shifts dramatically, with 53% of households rating their speed in the top bracket (NET 9-10). This data suggests not only a successful technical upgrade but also a strong perception of improved service quality among households. This data is shown in Figure 3.24 and Figure 3.25.

Figure 3.24: Broadband speed rating in the IA pre and post upgrade (Households)



Source: Ipsos B&A NBP Household Survey, March 2024

Figure 3.25: Broadband speed rating in the IA pre and post upgrade (Businesses)



Source: Ipsos B&A Business Survey, March 2024

- Similar to households, businesses experienced a considerable increase in the perceived speed of their internet connection post-upgrade. The mean speed rating improved from 4.6 out of 10, to 8.4. Pre-upgrade, a significant portion of businesses rated their speed in the lower brackets (NET

[63] NET refers to the grouping of respondents who selected any of a set of adjacent ratings on a scale. NET 3-6 in this case combines all the respondents who gave a satisfaction rating of 3, 4, 5, or 6 into one category.

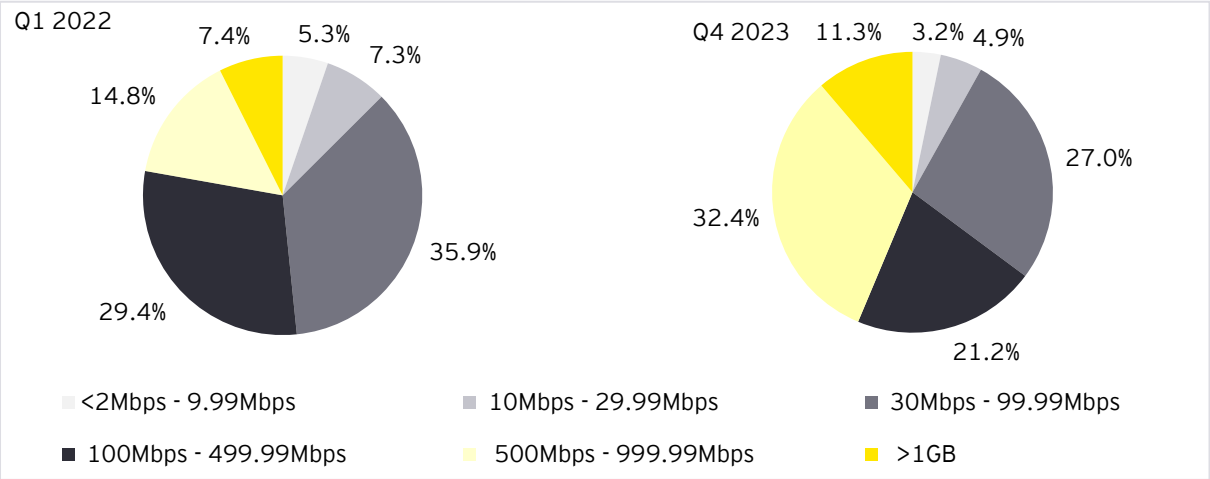
1-4), reflecting dissatisfaction with their internet service's performance. Post-upgrade, there is a notable shift, with 56% of businesses awarding their speed in the highest bracket (NET 9-10).

- Internet services provide a critical role in business efficacy, and businesses place a high value on their digital infrastructure. The survey shows that businesses regard internet speed as highly important for their operations, as indicated by mean importance ratings of 9.1 out of 10. The data suggests that the high-speed broadband upgrade has impacted on both the performance and perception of internet services, thereby affecting the digital capability and satisfaction levels in both household and business environments.

The NBP rollout is contributing to increased access to high-speed broadband nationally.

From the national data up to Q1 2022, just 22.2% of premises were connected to high-speed broadband of over 500 Mbps (Figure 3.26). However, as of Q4 2023, 43.7% of premises had download speeds of 500 Mbps or above,[64] as illustrated in Figure 3.26 below, demonstrating a rapid increase to national access to high-speed broadband.

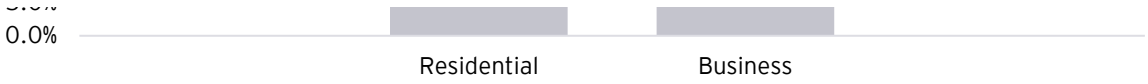
Figure 3.26: Proportion of premises nationally connected to high-speed broadband in Q1 2022 and Q4 2023



Source: ComReg QKDR All Data Q4 2023

Within the IA, 11.6% of premises avail of an active connection to high-speed broadband as at the end of 2023, compared to none before the NBP's rollout. This illustrates how the NBP is contributing to the nationwide increase, assisting the entirety of Ireland to access high-speed broadband and capture the related benefits. The NBP will deliver the ability to access high-speed broadband to around 23% of Ireland's population, covering 96% of land mass,[65] thereby underscoring its impact on a significant portion of the population.

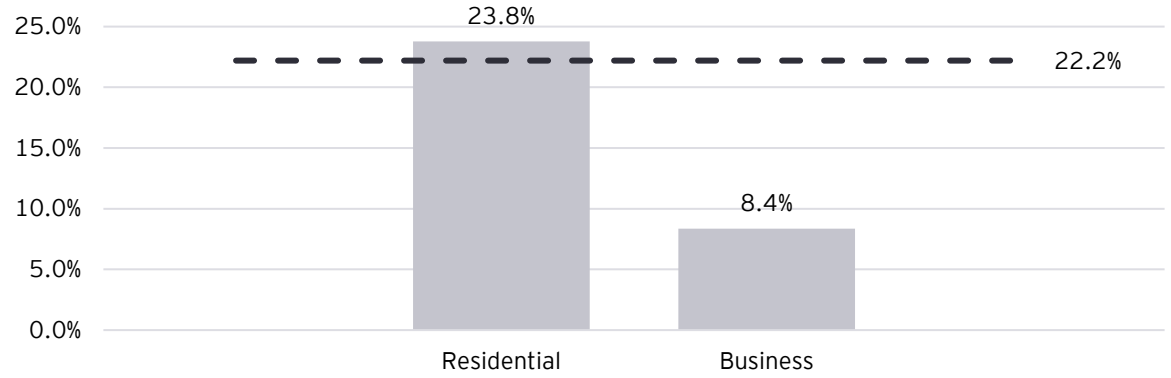
The majority of premises with high-speed broadband nationally are of residential use.



and Figure 3.28 the proportion of premises with download speeds of at least 500 Mbps is much higher for residential rather than business property use. While this high number of residential premises with high-speed broadband is a success, the lagging number of businesses connected requires further attention.

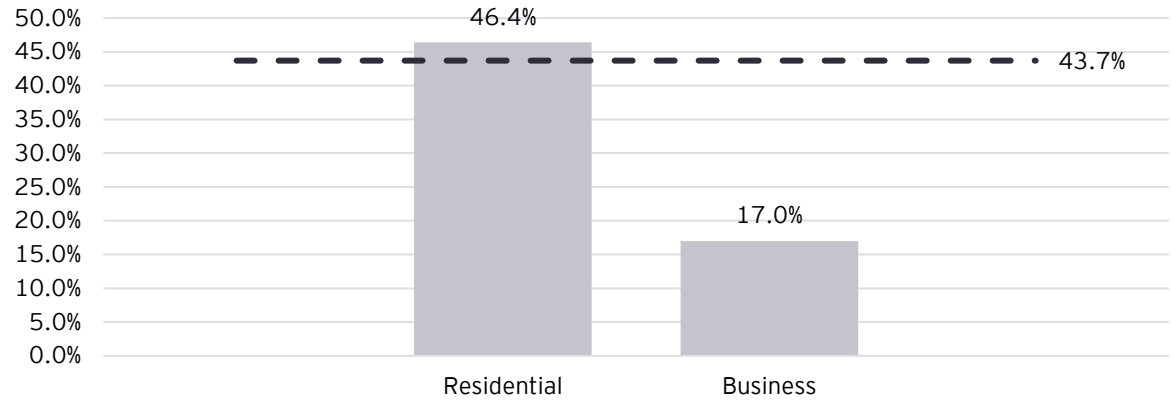
[64] ComReg QKDR All Data Q4 2023
[65] Welcome to National Broadband Ireland - NBI

Figure 3.27: Proportion of premises nationally connected to high-speed broadband in Q1 2022, split by residential and commercial property use



Source: ComReg QKDR All Data Q4 2023

Figure 3.28: Proportion of premises nationally connected to high-speed broadband in Q4 2023, split by residential and commercial property use

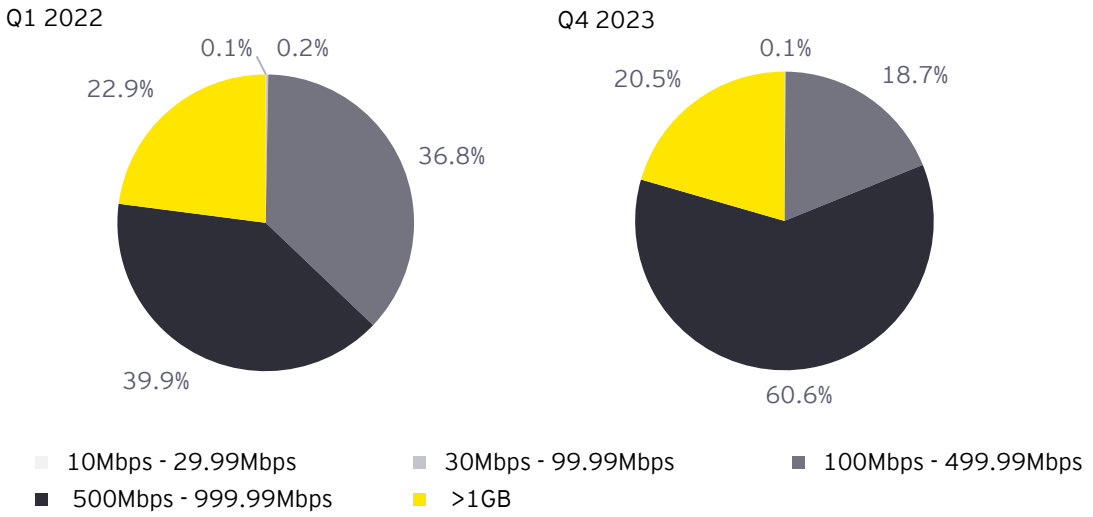


Source: ComReg QKDR All Data Q4 2023

FTTP also has increased high-speed broadband connection. In Q1 of 2022, 62.8% of premises with FTTP connections had high-speed broadband, while in Q4 of 2023, this had risen to 81.1% (Figure 3.29). [66]

[66] ComReg QKDR All Data Q4 2023

Figure 3.29: Proportion of premises nationally connected to FTTP high-speed broadband in Q1 2022 and Q4 2023

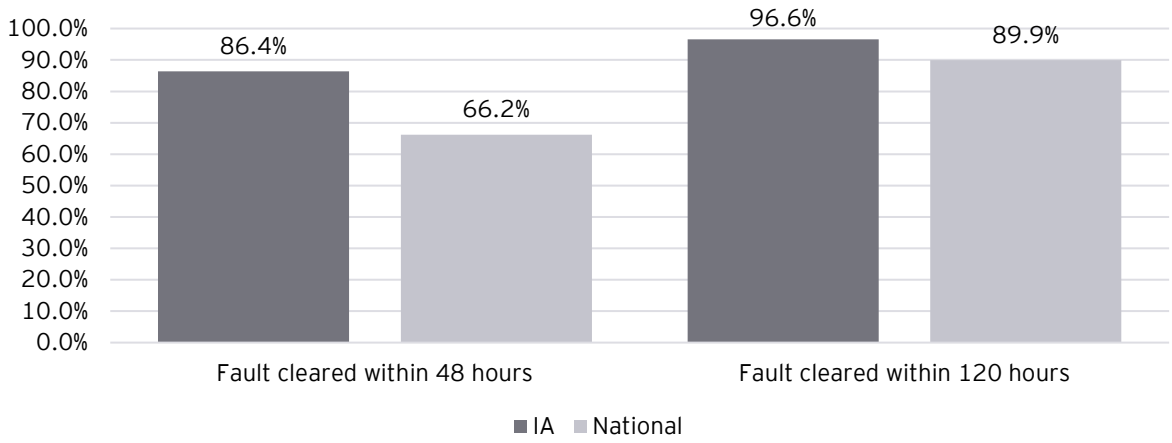


Source: ComReg QKDR All Data Q4 2023

The IA exhibits notably quicker fault repair times compared to the national average, though this is expected given the relatively small size of the existing network.

- In 2023, the mean days to repair a fault on a FTTH premises in the IA was 1.9 days,[67] while the national equivalent for OpenEir was 2.4 days.[68] This represents fault repair times 20.9% faster, demonstrating a clear focus on connecting the IA and rolling out the provision of reliable broadband to premises. This should be considered in the context of NBII's network spanning 65,121 premises, while OpenEir's FTTP network represents 402,570 premises, more than six times larger. Nevertheless, it still represents a commitment to providing reliable broadband across the network. Figure 3.30 shows that faults within the IA are repaired at a much quicker rate.

Figure 3.30: Comparison of fault repair times in the IA and nationally 2023



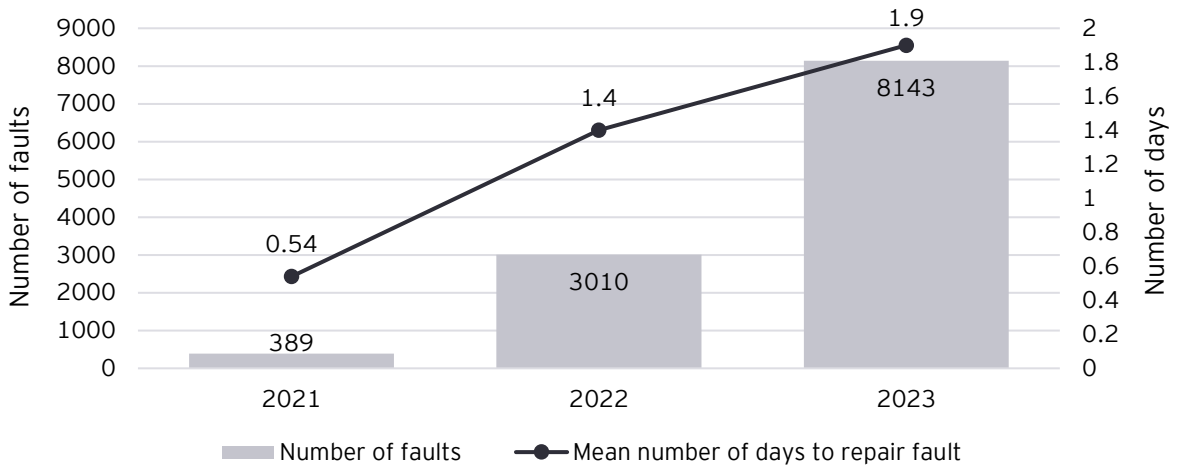
Source: NBII State Aid Evaluation Report 2023 and OpenEir KPI Report Q3 2023

Despite this, fault repair times in the IA have been slowing over time, likely driven by the increase to the total number of premises connected in the IA.

[67] NBII State Aid Evaluation Report 2023
[68] OpenEir KPI Report Q3 2023

- As shown in Figure 3.31, the mean number of days taken to repair a FTTH fault has increased over time from 0.54 to 1.9 days. Simultaneously, the absolute number of FTTH faults in the IA rose, from 207 in 2020 to 8,143 in 2023. Therefore, repair times slowed while the number of premises connected rose, suggesting that due to more premises being connected and more repairs having to be made, fault repairs have started to slow down.

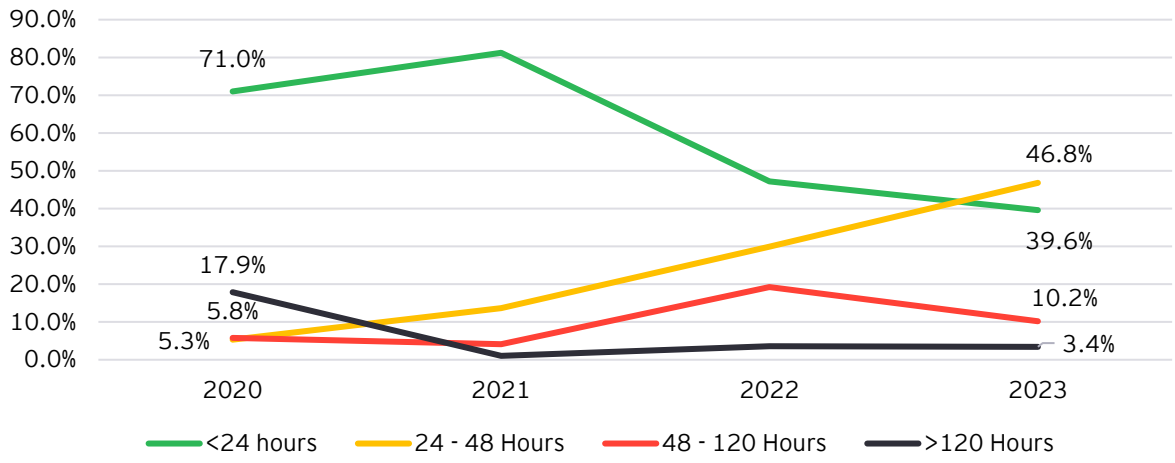
Figure 3.31: Number of faults and mean days taken to repair faults in the IA, by year



Source: State Aid Evaluation Reports 2021-2023

- This is reinforced in Figure 3.32, which shows how the proportion of faults repaired within 24 hours has fallen from 2020 to 2023, from 71.0% to 39.6%, representing a notable decrease. The majority of this fall is found in fault repairs between 24 and 48 hours, which has had a steady increase, particularly since 2021.
- Despite the slowing repair times, one success within this is that repairs taking longer than 120 hours have fallen from 2020, suggesting that although repairs are more frequent and taking longer, the number is not overwhelming, and repairs are still being made in a relatively timely fashion.

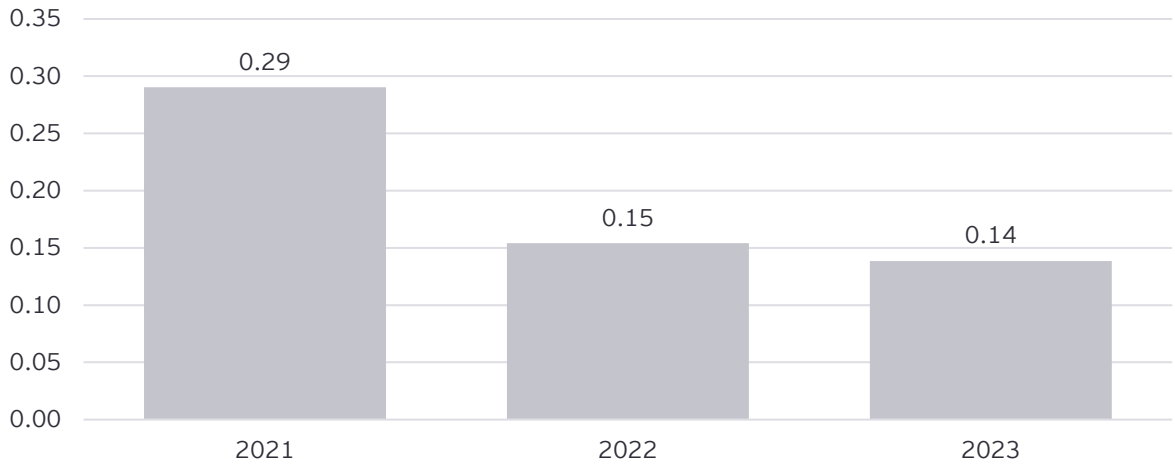
Figure 3.32: Time taken to repair all faults in the IA, by year



Source: State Aid Evaluation Reports 2020-2023

- Although as the above demonstrates, fault repair times are slowing, the number of faults per active connection is falling in the IA.
- Figure 3.33 below demonstrates how the total number of faults per active connection has fallen from 0.29 to 0.14, indicating that while repair times may be slowing as the absolute number of faults has risen, relative to the number of connections, the number of faults is falling.

Figure 3.33: Number of faults per active connection in the IA, 2021-2023

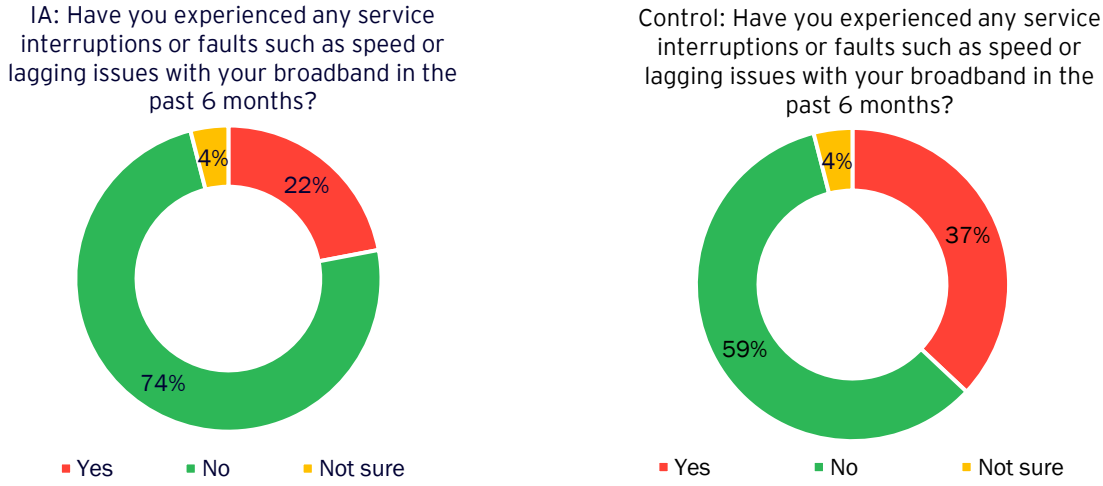


Source: State Aid Evaluation Reports 2020-2023

Survey results show improved service reliability and satisfaction post-upgrade for households and businesses.

- Households in the IA reported experiencing fewer service interruptions or faults compared to those in the control area, with 22% of surveyed IA households encountering such issues in the past 6 months, against 37% in the control.

Figure 3.34: Fault experience in the IA and control area, for households



Source: Ipsos B&A NBP Household Survey, March 2024

- Furthermore, satisfaction with the timeliness of repairs in the IA is higher; 74% of affected households expressed being very satisfied or somewhat satisfied, compared to 66% in the control area. When discussing the frequency of broadband issues impacting household activities, 41% of IA households reported never facing speed or reliability problems, a contrast to the 30% in the control area. This indicates robust service reliability post-upgrade for households within the IA.
- For businesses, 45% reported service interruptions or faults within the last six months, highlighting the prevalence of connectivity issues in the sector. However, the level of satisfaction regarding the speed of fault repairs was largely similar to households, with 64% stating they were very satisfied or somewhat satisfied with the repair times. Businesses also underscored the importance of internet reliability, with high importance ratings averaging 9.5 out of 10, emphasising the critical need for dependable broadband services. Post-upgrade, businesses experienced a notable rise in perceived internet speed and reliability, with mean scores

escalating from pre-upgrade levels of 5.2 out of 10 to 8.3 for both metrics, reflecting the transformative effect of high-speed broadband on business operations.

3.5 Direct impact on Beneficiary

This section examines the impact of state aid on NBII's WSP market position in Ireland. It answers the following Evaluation Question:

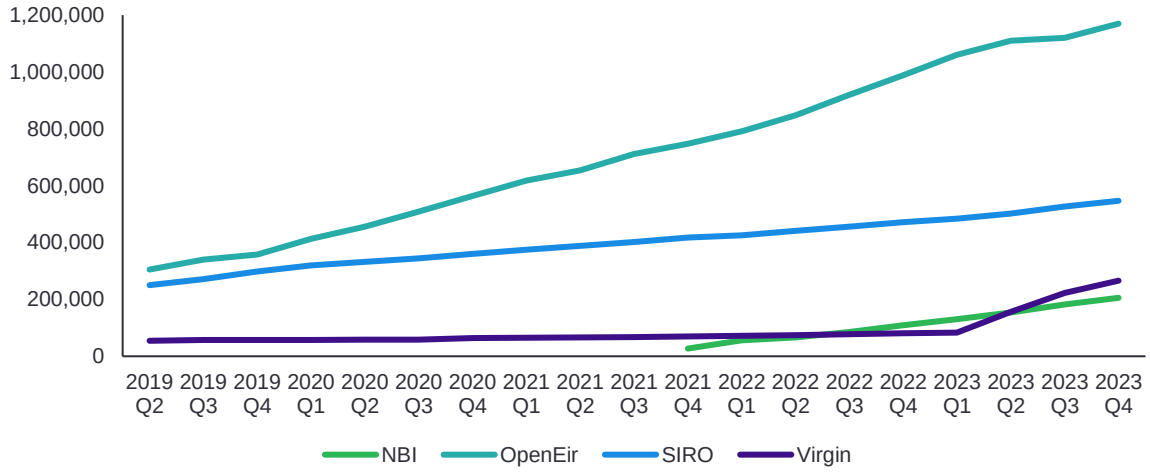
1.4.1 Has the aid had a material effect on the wholesale market position of the direct beneficiary?

Overview of Wholesale Service Provision

WSPs are companies that offer high-speed broadband services to RSPs who then resell these services to individual customers or business end users. They do this by leasing network infrastructure or bandwidth on their established networks to RSPs, enabling them to provide broadband services to their customers without having to build or maintain their own networks. WSPs play a crucial role in the telecommunications industry by promoting competition and accessibility, and by facilitating the availability of high-speed broadband services to a wider audience. There are currently multiple WSPs operating in Ireland, however, many of these have a limited network. This analysis will therefore focus on the four largest WSPs: OpenEir, SIRO, Virgin Media, and NBII. It is important to note that by virtue of NBII operating solely out of the IA, and with the remaining WSPs having limited presence within the IA, NBII is not competing directly with these WSPs. The analysis below instead offers a useful benchmark to compare NBII's growth in premises passed and connected against.

The number of premises passed by each of the four main WSPs is shown in Figure 3.35 below. OpenEir has achieved the largest high-speed rollout to date, having passed 865,000 premises since Q2 2019, achieving an annual average growth of 35.21%. SIRO's growth by comparison has been steadier, from a comparable number of houses passed in Q2 2019 (250,000 SIRO vs 305,000 OpenEir) it has since passed an additional 297,000 premises, an average annual growth of 16.34%. By the end of 2023, NBII had passed 205,638 premises, achieving an average growth rate of 91.12% per annum for 2022 and 2023.

Figure 3.35: Premises passed by each WSP 2019 Q2 – 2023 Q4

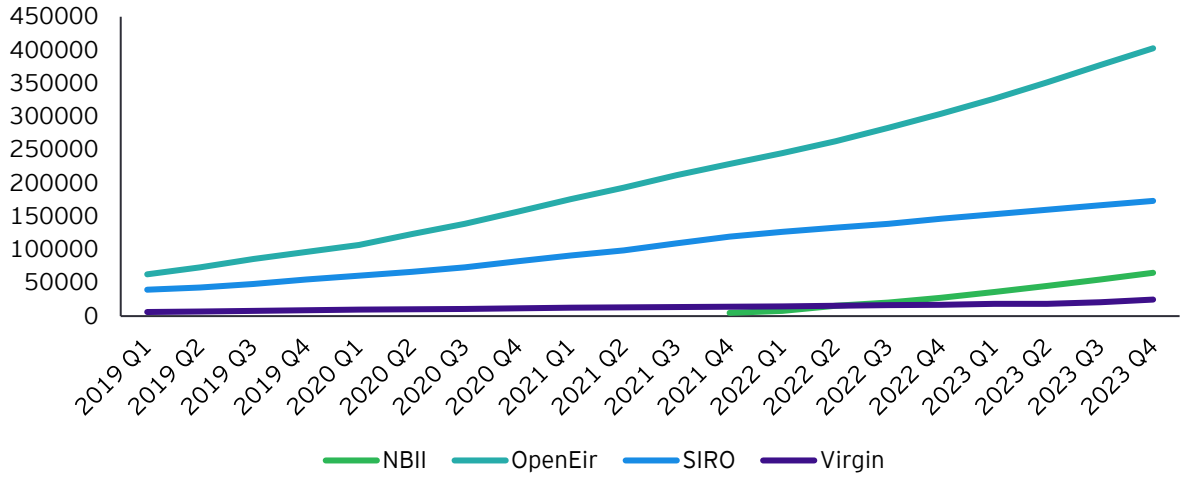


Source: ComReg QKDR All Data Q4 2023

High-speed broadband connection rates have also demonstrated robust growth across Ireland since 2019, as the number of premises passed by WSPs has increased, as shown in Figure 3.36 below. As of 2023 OpenEir holds the largest number of connections, having achieved notable growth to date, adding 340,000 connections since Q1 2019. SIRO has exhibited a similarly positive trajectory,

adding 133,000 connections in that time period. It is notable that growth in total connections for OpenEir and SIRO has been stronger than growth in premises passed, for example, OpenEir increased its connections levels by more than 500% since 2019 and its passed levels by 280%. While this growth rate can be largely attributed to the lower bases from which connection rates are growing compared to passed rates, it also suggests growing demand for high-speed broadband services where they are available. NBII has also experienced growth in recent years, following a slow start to the rollout (due primarily to Covid-19), increasing connection levels from c.5,000 at the end of 2021, to c.65,000 at the end of 2023. NBII is now the WSP with the third highest number of subscribers in Ireland, ahead of Virgin Media, though it still has considerably fewer than OpenEir and SIRO.

Figure 3.36: High-speed broadband subscribers by WSP provider 2019 Q1 – 2023 Q4



Source: ComReg QKDR All Data Q4 2023

The establishment of NBII has not impacted the growth rates of the three incumbent WSPs in the market, as Figure 3.35 and Figure 3.36 demonstrate. This is due to the fact that NBII is operating solely from the IA where it was confirmed that competitors would not be developing a network. OpenEir, SIRO and Virgin Media are primarily focussed on townlands. This is supported by the fact that, despite achieving a higher level of total passed premises than NBII in 2023, Virgin Media's total connections were less than 40% of NBII's, as Virgin Media faces competition from OpenEir and SIRO, while NBII does not.

Effect of the State aid in enabling NBII's market position

NBII was established as a company upon obtaining the NBP contract. The State aid has been critical in enabling NBII's market position, as there would have been no business case to form the company otherwise. This was demonstrated as being an open, transparent procurement competition for which there were no other bidders at the final tender stage.

3.6 Viability of high-speed broadband investments in the IA

This section examines the nature of investments in the IA. It answers the following Evaluation Question:

1.4.2 Has the granting of aid affected the viability of investments in the IA compared to investments in the commercial areas?

Fixed broadband services are now widely available in Ireland, due largely to the reuse of existing copper network and fixed voice services to provide broadband services. The copper broadband network has evolved over time, with speed and quality upgrades initially implemented at local exchanges (about 1,200) and later by introducing fibre to the street cabinets. The continuous

upgrade to this infrastructure means that approximately 93% of households can access Fibre-To-The-Cabinet (FTTC) broadband.[69]

Despite this high accessibility figure, the physical characteristics of copper connections (requiring a direct cable connection between street cabinet and home) mean that FTTC's speed and reliability degrades considerably with distance. To illustrate this, although FTTC technology can provide speeds exceeding 150 Mbit/s to those within 300m of a cabinet, these declines to c. 40 Mbit/s at 1km distances. Due to the longer average distances between homes and street cabinets in rural areas compared with urban and suburban locations, the current infrastructure delivers inferior service compared with these more densely populated areas. For these rural premises, the only option to improve access to high-speed broadband is through FTTP, which can provide significantly higher speeds than copper-based broadband, regardless of distance.

However, FTTP deployment in rural areas is difficult due to demographic factors such as low population density, and a high proportion of people residing in houses compared to apartments, coupled with factors like high labour costs and low availability of reusable infrastructure. These factors impact the marginal cost of deploying FTTP networks, which varies between IA and commercial areas. Dense urban areas usually have the lowest network rollout costs due to a high concentration of homes, which reduces civil works costs. Given the rural, often geographically isolated nature of the IA, capital costs are likely to be higher than in urban areas; this serves as a disincentive for private operators.

This divergence in investment viability between urban and rural areas (and subsequent market failure) is demonstrated by NBII's average cost of passing and connecting houses in the IA being higher than other WSPs. NBII's average annual cost, compared to the investment costs of other WSPs, is shown in Table 3.5 below. This disproportionately high upfront cost supports the rationale for state subsidisation of capital costs. It should also be noted that the costs in Table 3.5 below do not include the costs of infrastructure rental, nor do they include active, staff, and overhead cost. The average cost of both passing and connecting a premises would be considerably higher if these costs were included.

Table 3.5: NBII Actual average cost of both passing and connecting a premises for selected WSPs[70]

Company	Average cost per connection (€)
OpenEir	1,053
SIRO	871
Virgin Media	597
NBII	2,156

Source: NBII's annual management accounts, EY analysis of publicly available WSP investment information

Despite this initial market failure, once the capital costs are subsidised, the network in these areas then has the potential to become operationally viable, in line with urban counterparts. This is supported by NBII's internal forecasts which suggest that operating the network (once built) is profitable. There are currently no financial viability concerns with NBII's business; the State aid is enabling the viability of the investment.

[69] European Commission, Directorate-General for Communications Networks, Content and Technology, Broadband coverage in Europe 2020 : mapping progress towards the coverage objectives of the Digital Agenda : final report, 2022. https://data.europa.eu/doi/10.2759/27414

[70] Sources for OpenEir, SIRO, and Virgin Media information provided in Appendix A, references 25 to 32.

4 Indirect effects

4.1 Overview

This chapter seeks to address the following evaluation questions:

2.1.1 Has the granting of aid delivered NGA services in the IA which have:

a. Led to improvements to the everyday lives of IA end-users?

b. Affected choice of location to live?

2.2.1 Has the granting of aid delivered NGA services in the IA which have:

a. Led to improvements in day-to-day activities of IA business users

b. Affected choice of business location

2.3.1 Has the granting of aid delivered NGA services in the IA which have led to changes in the tourism sector in the IA?

2.4.1. Has the granting of aid delivered NGA services in the IA which have resulted in a change in the provision of government services delivered nationally or locally within the IA?

2.5.1. Has the granting of aid changed the way the Wholesale Service Providers (WSPs)/Retail Service Providers (RSPs) provide services in the IA (e.g., geographic reach)?

2.5.2. Has the aid affected the business of basic broadband providers in the IA?

This chapter analyses the indirect effects of the state-aid provided to NBII through the NBP on the everyday lives of the indirect beneficiaries of the NBP aid intervention, these being the residents and businesses predominantly located in the IA.

The provision of high-speed broadband provides many financial and economic benefits. For example, high-speed broadband boosts household and business communication, making it quick, reliable, and real-time, bridging geographical divides. It adds flexibility to work through making it possible to work from home, and facilitates the use of e-health services, potentially leading to cost and time savings for households. It also enables the rollout of key government policy. High-speed broadband can therefore play a significant role in improving quality of life and encouraging socioeconomic wellbeing and growth. The analysis in this section is supported by Household and Business Surveys carried out by Ipsos B&A. The following table provides a high-level overview of the outcomes resulting from this analysis. Further detail in regard to each evaluation question is provided in the remainder of this chapter.

Table 4.1: Key indirect effects from the NBP

Outcome	Description
2.1.1 Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements to the everyday lives of IA end-users? b. Affected choice of location to live?	
NBP is perceived to have led to quality-of-life improvements for end-users according to the Ipsos B&A Household Survey	49% of respondents noted the upgrade to high-speed broadband had improved their quality of life. Specific benefits include 41% of respondents reporting time saved on work, 59% claiming it has provided more entertainment options, and 69% report increased ability to work from home

Outcome	Description

Table 4.2: Benefits resulting directly from high-speed broadband

Save Time on Work/School Work	Able to access services previously unavailable	More Entertainment Options	Able to socialise more via internet calls and social media	Save Time through Online Grocery or Other Shopping	Increased ability to work from home
41%	37%	59%	49%	32%	69%

Source: Ipsos B&A Household Survey, March 2024

2.2.1 Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements in day-to-day activities (e.g., productivity levels and transaction costs) of IA business users? and b. Affected choice of business location?	
NBP is reported to have increased business productivity, improved communication, and lowered costs for businesses, amongst other benefits.	The Ipsos B&A Business Survey reports various benefits including 61% of businesses claiming an increase to productivity, 81% reporting improved external communication, and 28% report improved staff attraction.

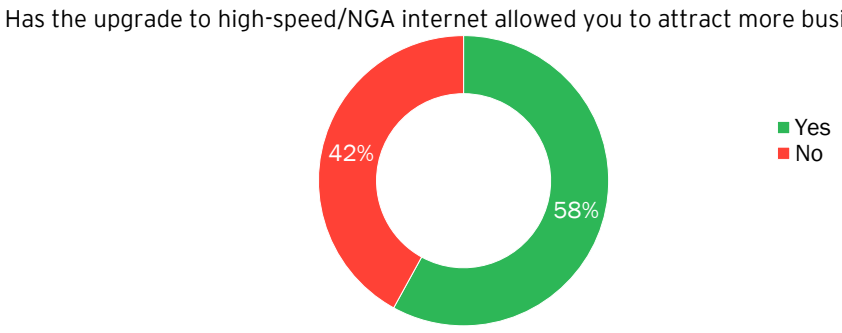
Table 4.3: Proportion of IA enterprises that have experienced selected benefits

Improved productivity	Improved internal communication	Improved external communication	New products/revenue streams	Improved staff attraction	An increase in the number of staff employed
61%	65%	84%	30%	28%	15%

Source: Ipsos B&A Business Survey, March 2024

2.3.1 Has the granting of aid delivered NGA services in the IA which have led to changes in the tourism sector in the IA?	
There has been a moderately positive impact of NBP on the tourism sector	58% of business surveyed report an increase in business activity as a direct result of high-speed broadband, while 34% of businesses in the tourism sector reported improvements to customer service ratings

Figure 4.1: Businesses reporting that high-speed broadband upgrades have attracted more sales

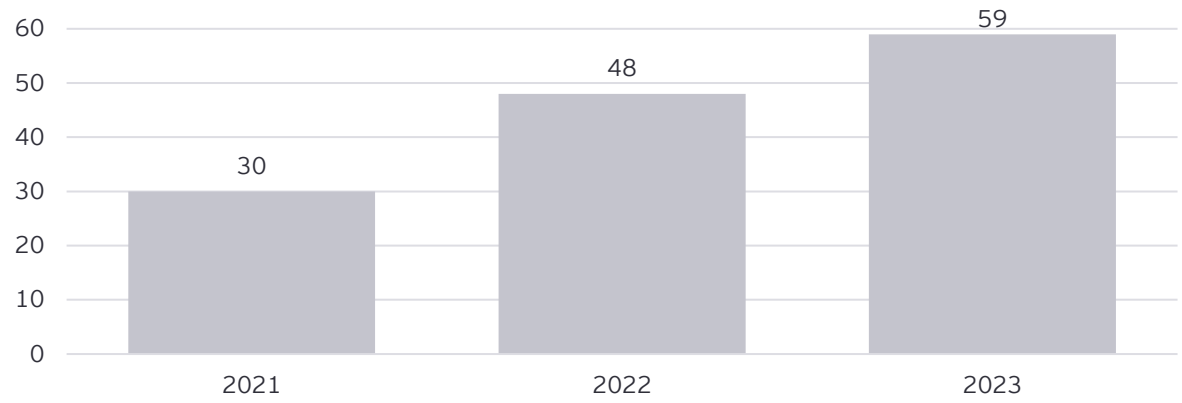


n = 12 business in the Tourism and Hospitality Sector
Source: Ipsos B&A NBP Business Survey, March 2024

2.4.1 Has the granting of aid delivered NGA services in the IA which have resulted in a change in the provision of government services delivered nationally or locally within the IA?	
At least seven government policies have been assisted by NBP rollout	The Digital Strategy for Schools to 2027, the Remote Working Strategy, the Digital Connectivity Strategy and other government

Outcome	Description
	policies have all been helped by NBP rollout, which will serve to ensure these complementary policies can be more effective
2.5.1. Has the granting of aid changed the way the Wholesale Service Providers (WSPs)/Retail Service Providers (RSPs) provide services in the IA (e.g., geographic reach)?	
The total number of RSPs ready to provide services in the IA has increased significantly since 2021.	The total number of RSPs ready to sell services in the IA has increased from 30 in 2021 to 59 in 2023. This figure does not include RSPs that have signed agreements to provide services at the end of 2023 but who were not ready to begin doing so, indicating that further growth is expected in 2024.

Figure 4.2: Number of RSPs ready to sell in the IA 2021-2023



Source: NBII RSP Onboarding update

4.2 Impacts of the State aid on households

This section examines the impact of the State aid on the quality of life of IA households. It answers the following Evaluation Questions:

2.1.1 Has the granting of aid delivered NGA services in the IA which have:

a. Led to improvements to the everyday lives of IA end-users?

b. Affected choice of location to live?

To understand the impact of the NBP on IA households, a face-to-face survey was undertaken in the IA, accompanied by a parallel process in a control area. This consisted of 250 IA households and 250 control ones. This survey was carried out by Ipsos B&A. The treatment-control design, with the control group focussed on Dublin, facilitated comparison between households having recently received high-speed broadband, and those who have had it for an extended period of time (the control).

This analysis follows two strands. Firstly, the key benefits experienced as a direct result of the upgrade to high-speed broadband are considered. Secondly, the Evaluator uses convergence analysis to compare IA households to households in the control group, to determine how close the IA residents are getting to the control group across a range of indicators. As this section will demonstrate, the NBP is delivering benefits to IA households, as self-reported by them.

IA households were asked to estimate the benefits they have experienced as a direct result of the high-speed broadband upgrade. The results are shown in Table 4.4 below. The benefits have been significant thus far, with 32% stating that they had saved time through increased online shopping, 41% noting that they had saved time at school or work and 69% stating that the upgrade had

allowed them to work from home more. The average time saved by these households was 2.5 hours per week.

Table 4.4: Benefits resulting directly from high-speed broadband

Save Time on Work/ School Work	Able to access services previously unavailable	More Entertainment Options	Able to socialise more via internet calls and social media	Save Time through Online Grocery or Other Shopping	Increased ability to work from home
41%	37%	59%	49%	32%	69%

Source: Ipsos B&A Household Survey, March 2024

Outside of time savings, households report that they have benefitted from having more entertainment options, more opportunities to socialise, and increased ability to access services. The increase in service availability is outlined below in Table 4.5 which asked IA households whether accessing certain services had become easier since the upgrade, thereby directly focusing on the additional impact of the NBP. The table shows the proportion of households that have found these services easier to access. While proportions vary by services, overall, a significant proportion (ranging from 38% to 56% depending on the service considered) of households find it easier to access key services since the upgrade to high-speed broadband.

Table 4.5: Household access to key services

Access to Medical Services	Access to Mental Health Services	Access to Local Services (e.g., The Library)	Access to Government Services (e.g., Revenue)
44%	38%	45%	56%

Source: Ipsos B&A Household Survey, March 2024

In addition to improved access to services, households were asked whether they had noticed any improvement in their ability to access work or education opportunities as a result of the upgrade to high-speed broadband, and whether the upgrade had led to an increase in their quality of life overall. Over one-third (35%) stated that employment or education opportunities had improved, whilst 49% had experienced quality of life improvements.

4.3 Convergence analysis

This section uses convergence analysis to compare IA households to households in the control group, to determine how close the IA residents are getting to the control group across a range of indicators. The indicators are divided into three categories, these being (i) social and leisure, (ii) economic and self-developmental, and (iii) access to services.

4.3.1 Social and leisure

Both households that received the high-speed broadband and households in the control group were asked which of the following methods were used to keep in touch with friends and family. Table 4.6 below shows the results of this question; overall, households are communicating considerably more using internet-based communication methods than they had been before the upgrade and are either approaching or have reached the control group levels in this respect. This indicates that access to high-speed broadband has enabled households to communicate more with friends and family.

Table 4.6: Communication methods used by IA households before and after upgrade, IA and control groups

	Phone Calls Using Your Mobile	Video Call/Phone Call using the Internet	Text Messages	Social Media & Text Messages via the Internet	Email
IA - Before	77.3 %	45.8 %	73.3 %	54.6 %	40.6 %
IA – After	78.5 %	68.1 %	75.7 %	66.5 %	45.8 %

Control - Dublin	90.9 %	71.1 %	82.6 %	68.8 %	45.8 %

Source: Ipsos B&A Household Survey, March 2024

Households were also asked to estimate the frequency with which they enjoyed certain leisure activities. The results are shown in Table 4.7 below. The results demonstrate a trend similar to that of communication methods, with both social media usage and video streaming increasing since the upgrade and approaching the control group levels. The exception here is with regards to real-time videogame usage, which was already higher in the IA than the control prior to the upgrade and has increased further since. This may be due to the higher proportion of children per household in the IA (0.7) compared to the control group (0.55). Overall, the analysis indicates that the use of these leisure activities is increasing because of the upgrade.

Table 4.7: Leisure activities performed by IA households before and after upgrade, compared to control

		At least once per day[71]	Less than once per day	Never
Social media and connecting with others	IA before intervention	71%	15%	14%
	IA after intervention	76%	13%	11%
	Control	81%	11%	8%
Video Streaming Services	IA before intervention	51%	23%	27%
	IA after intervention	61%	20%	19%
	Control	68%	19%	13%
Playing Online Realtime Video Games	IA before intervention	28%	15%	57%
	IA after intervention	34%	18%	48%
	Control	26%	16%	58%

Source: Ipsos B&A Household Survey, March 2024

4.3.2 Economic and self-development activities

Households were asked to estimate the frequency with which they enjoyed certain economic and self-development activities, as shown below in Table 4.8. While IA households have on average increased the levels of online training, job searching, and working from home after receiving the upgrade, these were already being performed at a higher rate in the IA prior to the upgrade than in the control group. Faster and more reliable broadband is therefore unlikely to be the motivating, or only, explanatory factor behind the increase observed. Instead, it may be facilitating pent up demand for these services in the IA that was already prevalent, or partly prevalent, prior to the upgrade.

Table 4.8: Economic and self-developmental activities performed by IA households before and after upgrade, compared with control respondents

		At least once per day	Less than once per day	Never
Online training and education	IA before intervention	24%	29%	47%
	IA after intervention	30%	26%	44%
	Control	19%	35%	46%
Job Searching	IA before intervention	20%	21%	59%
	IA after intervention	24%	22%	54%

[71] For Table 4.7, Table 4.8 and Table 4.9, the 'at least once per day' category includes the following frequencies: always using, several times per day, and daily. While the 'Less than once per day' category contains: 2-3 times per week, about once per week, and less than once per week. For "Working from home" in Table 4.8, 'at least once per day' category can be interpreted as more than once per week, while the 'Less than once per day' can be interpreted as once per week.

		At least once per day	Less than once per day	Never
	Control	14%	23%	63%
Working from home	IA before intervention	39%	23%	38%
	IA after intervention	45%	20%	35%
	Control	38%	18%	44%

Source: Ipsos B&A Household Survey, March 2024

4.3.3 Access to services

Households were asked to estimate the frequency with which they access certain services, as shown below in Table 4.9. As above, the below examples demonstrate that access to internet banking and government services, and the frequency of online purchases, have all increased since the upgrade, but from levels that were already comparable to or greater than the control group levels.

Table 4.9: Access to services by IA households before and after upgrade, compared to control

		At least once per day	Less than once per day	Never
Buying goods or services online	IA before intervention	22%	65%	13%
	IA after intervention	31%	61%	8%
	Control	18%	70%	12%
Internet banking	IA before intervention	34%	55%	11%
	IA after intervention	43%	49%	8%
	Control	38%	51%	11%
Using e-government services	IA before intervention	21%	61%	18%
	IA after intervention	24%	62%	14%
	Control	10%	75%	15%

Source: Ipsos B&A Household Survey, March 2024

4.3.4 Location choices

The Ipsos B&A Household Survey asked respondents whether the availability of high-speed broadband had influenced their choice of location to live, and whether it was influencing their likelihood of staying in the area. Of the 60 participants that have moved to the IA since the rollout began, 23 (38%) said that internet availability influenced their decision to move there. In addition, when asked whether access to high-speed broadband influenced their likelihood of staying in the area, 65 out of 250 (26%) stated that it did influence their decision. It is noteworthy that of the respondents who stated that internet had no impact on their decision to stay in the area, 82% had been in the area for more than five years. There is therefore some evidence that availability of high-speed broadband has increased the likelihood of people moving to or staying in the IA, particularly within the mobile cohorts who have actively made decisions to relocate or possibly move within the IA in recent years.

4.3.5 Findings in relation to household benefits

Overall, the upgrade to high-speed broadband has led to improvements to the everyday lives of IA residential end-users. The key benefits include time savings from less commuting due to being able to work from home, and from increased online shopping, more entertainment options, and more opportunities to socialise with friends and family. However, the key survey finding was that of additionality, with half (49%) of households attributing their quality-of-life improvements to the upgrade to high-speed broadband. There is some evidence that the availability of high-speed broadband has made the IA a more attractive place to move to, though this would require further investigation in future evaluations.

4.4 Business end-users

This section examines the impact of the State aid on IA businesses. It answers the following Evaluation Questions:

2.2.1 Has the granting of aid delivered NGA services in the IA which have:

a. Led to improvements in day-to-day activities of IA business users; and

b. Affected choice of business location

The provision of high-speed broadband to businesses in Ireland is expected to generate important benefits for business end-users. For example, high-speed broadband improves both internal and external communications, increases productivity and lowers operating costs. It also adds flexibility to work through being able to facilitate remote working, potentially leading to improved employee productivity, retention and morale. High-speed broadband can therefore play a role in improving a business's productivity and enabling economic growth and entrepreneurship.

To fully understand the impact of the NBP on IA businesses, the Evaluator commissioned a survey of 150 businesses in the IA, conducted via telephone. The results of this exercise demonstrated that the NBP is providing tangible benefits to these enterprises. Summarised below are the benefits reported by the businesses during this process.

Direct day-to-day improvements to businesses users in the IA

IA enterprises were asked to estimate the benefits they have experienced as a direct result of the high-speed broadband upgrade, the question asked whether the upgraded broadband had resulted in any of the benefits listed in Table 4.10 and Table 4.11 below. The tables show that the benefits have been significant thus far, with 61% reporting an improvement in productivity, 84% reporting improvement in external communication, and 15% increasing their employment as a direct result of the upgrade (by an average of 4 employees).

Table 4.10: Proportion of IA enterprises that have experienced selected benefits

Improved productivity	Improved internal communication	Improved external communication	New products/revenue streams	Improved staff attraction	An increase in the number of staff employed
61%	65%	84%	30%	28%	15%

Source: Ipsos B&A Business Survey, March 2024

In addition to these operational benefits, as a result of the upgrade 81% of enterprises have experienced time savings, transaction costs (by an average of 24%) and operating costs savings have been realised by 40% and 41%, respectively, and 36% have increased their bookings and sales (by an average of 20%).

Table 4.11: Proportion of enterprises that have experienced selected benefits

Time savings	Facilitated remote working	Lowered transaction costs for your business	More bookings & sales	Lower operating costs	Greater business visibility	Improved retention of staff	Increased innovation
81%	54%	40%	36%	41%	56%	29%	42%

Source: Ipsos B&A Business Survey, March 2024

Almost one third (31%) of the businesses surveyed also stated that the upgraded internet had influenced their investment decisions. Examples given include investment in new software that was not previously usable, new operating systems and software that has facilitated remote working, and a planned expansion to the size of a company's site. It is noteworthy that the businesses whose

investment decisions were influenced by the upgrade tended to be among the businesses experiencing the best all-round benefits of the upgrade. For example, 55% of these businesses had also experienced a reduction in costs associated with the upgrade compared to just 34% of businesses in the cohort whose investment decisions were not influenced. Similarly, 53% had expanded into new revenue streams or product offerings due to the upgrade, compared to just 19% in the non-influenced cohort.

4.4.1 Impact on location decisions

The survey asked businesses whether high-speed broadband availability had influenced their choice of location to set up their business, and whether it was influencing their likelihood of remaining in the area. Of the eight participants that had set up their business in the IA since the rollout began, only one said that internet availability had influenced their decision to move there. In addition, when asked whether access to high-speed broadband influenced their likelihood of staying in the area, 34 out of 150 (23%) stated that it did influence their decision. There is therefore little evidence that availability of high-speed broadband has increased the likelihood of businesses establishing in the IA, but some evidence that it is influenced business decisions to stay. However, given that the sample size of recently established businesses (8 of 150), this may not be reflective of all enterprises. This also does not account for Sole Traders who may be working from home full time based in the IA, who would have been captured in the remit of the Household Survey.[72]

4.4.2 Findings in relation to enterprise benefits

The survey results indicate that the upgrade to high-speed broadband through the NBP has led to tangible improvements in the day-to-day activities of IA enterprises across the range of criteria considered. The significance of the broadband upgrade to IA businesses is further supported by 37% of enterprises stating that if their business broadband was to revert to pre-upgrade levels, it would have a significant negative impact on their business. A further 49% noted that it would have a somewhat negative impact. In addition, 87% of enterprises consider the upgraded broadband to be an essential service and 11% consider it a somewhat essential service. There is therefore little evidence that availability of high-speed broadband has increased the likelihood of businesses establishing in the IA, but some evidence that it has influenced business decisions to stay.

4.5 Other end-users (tourism and hospitality)

This section examines the impact of the State aid on tourism in the IA. It answers the following Evaluation Questions:

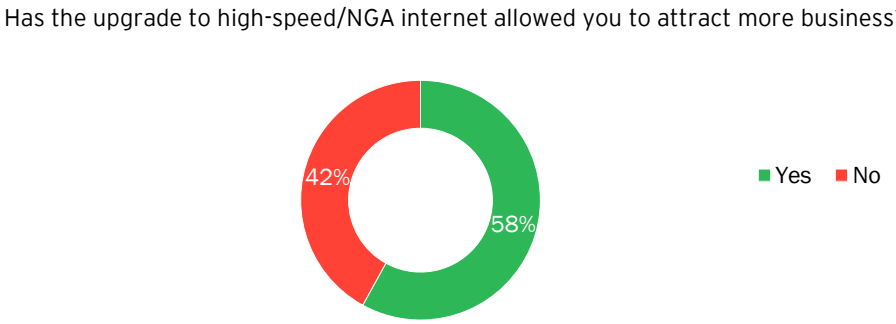
2.3.1 Has the granting of aid delivered NGA services in the IA which have led to changes in the tourism sector in the IA?

Business Survey results show a moderate impact of high-speed broadband on tourism in the IA.

In evaluating the impact of the NBP on the tourism sector within the IA, survey responses from businesses operating in tourism and hospitality provided insights into the changes experienced as a result of the upgrade to high-speed services. Two critical aspects were explored: the attraction of more business and improvements in customer service scores or guest ratings. These are outlined in Figure 4.3 and Figure 4.4 below.

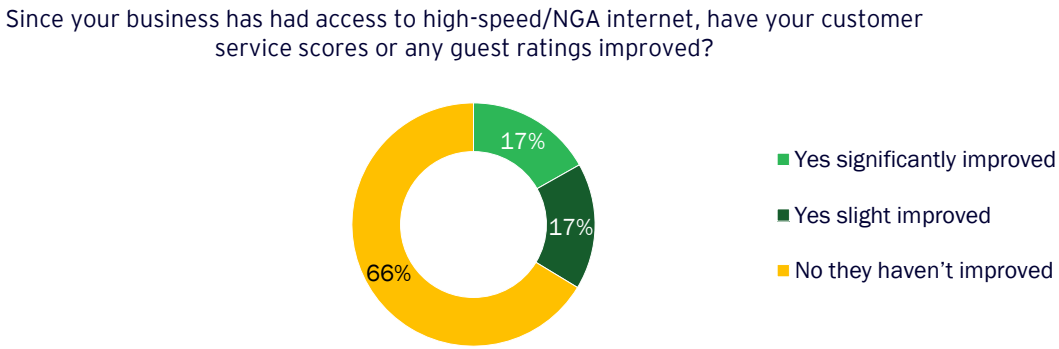
[72] Of the 164 household respondents to the 'How many days in a typical week do you work from home' question, 60 responded that they work from home 'all of the time'.

Figure 4.3: Businesses reporting that high-speed broadband upgrades have attracted more sales



Source: Ipsos B&A Business Survey, March 2024

Figure 4.4: Businesses reporting whether customer service scores have improved since NBP rollout



n = 12 business in the Tourism and Hospitality Sector
Source: Ipsos B&A Business Survey, March 2024

- According to the survey in Figure 4.3, 58% of businesses in the tourism and hospitality sector reported a slight increase in business due to the upgrade to high-speed broadband, with the average self-reported increase in business sales being 11.4%. Meanwhile, 42% observed no increase. Furthermore, as noted in Figure 4.4, 17% of these businesses noticed significant improvements in customer service scores or guest ratings, with another 17% reporting slight improvements. Conversely, a notable 67% of businesses did not observe any improvement in customer service scores or guest ratings.
- These findings suggest a nuanced impact of high-speed broadband on the tourism sector within the IA. The slight increase in activity for over half of the surveyed businesses indicates that high-speed broadband can serve as a catalyst for attracting more customers. This could be attributed to enhanced online visibility through improved websites, social media engagement, and online booking systems, which are increasingly important in the digital age for the tourism sector. Faster internet allows for more effective marketing strategies, showcasing the attractions and services offered to a broader audience.
- However, the significant portion of businesses that reported no increase in business or improvement in guest ratings implies that the mere availability of high-speed broadband might not be sufficient to drive substantial changes in the tourism sector. This could be due to several factors, including but not limited to, the level of digital literacy among business owners, the competitiveness of the market, or other external factors such as location attractiveness or available amenities.
- To further understand the impact of high-speed broadband on the tourism sector, longitudinal studies and continuous monitoring of the tourism sector's performance in the IA after the high-speed broadband upgrade would provide deeper insights into the long-term impacts, including potential increases in tourism revenue, job creation, and overall economic development. Collaborations between stakeholders, including government agencies, tourism boards, and

business associations, could foster initiatives that leverage high-speed broadband for innovative tourism offerings, further driving growth and competitiveness in the sector.

4.6 Access to Government Services

This section examines the impact of the NBP on government policies that have been progressed by the rollout of the NBP. It seeks to answer the Evaluation Question:

2.4.1 Has the granting of aid delivered NGA services in the IA which have resulted in a change in the provision of government services delivered nationally or locally within the IA?

The NBP's objective is to ensure that everyone in Ireland has access to high-speed and reliable internet.[73] This access has enabled advances in multiple areas of government policy, including digital accessibility, sustainable growth, and education. A selection of relevant policies is outlined below.

4.6.1 Digital Strategy for Schools to 2027

Overview of the policy

In April 2022, the Department of Education and Skills launched the Digital Strategy for Schools,[74] an ambitious plan designed to enhance learner experience through the effective use of digital technologies, crucial for navigating an increasingly digital world. The strategy was accompanied by €50 million in grant funding for digital technology infrastructure in all recognised primary and post-primary schools. The strategy comprises four key objectives: integrating digital technologies into teaching and learning, developing students' proficiency in using digital technology responsibly and effectively, enhancing teachers' competence in digital technology integration, and providing a well-maintained ICT infrastructure to access high-quality digital content and resources.

Impact of the NBP

The implementation and success of the Digital Strategy for Schools relies heavily on the NBP, as the provision of high-speed broadband is instrumental in enabling schools to integrate digital technologies into their curriculum, enabling the execution of the strategy. This was primarily achieved through the SCP initiative, which provided high-speed broadband to 672 primary and special schools in the IA that didn't previously have access to high-speed broadband as part of the NBP.

The SCP initiative not only facilitates access to high-quality digital resources but also enables regular and reliable communication between schools, students, and parents. The initiative bolsters the strategy's goal of enhancing teachers' digital competency by allowing teachers to access professional development programmes online, thereby equipping them with necessary skills to effectively incorporate digital technology into their teaching methods. It also helps bridge the digital divide, by ensuring more equitable access to digital resources among students, irrespective of their geographic location or socioeconomic background. The Ipsos B&A Business Survey engaged nine of these schools to discuss the benefits of the scheme, the impact of the initiative on school operations is in Table 4.12 below.

Table 4.12: Ipsos B&A Business Survey – school respondents

Survey question	% responding yes
Has the upgrade to NGA internet resulted in any increased staff productivity	78
Has the upgrade to NGA internet resulted in any improved internal communication?	89
Has the upgrade to NGA internet resulted in any increased innovation?	78
Has the upgrade to NGA internet resulted in any improved staff attraction?	56
Has the upgrade to NGA internet resulted in any improved retention of staff?	44

[73] https://nbi.ie/the-national-broadband-plan/
[74] https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/

Has the upgrade to NGA internet resulted in any time savings	89

Source: Ipsos B&A Business Survey, March 2024

Schools were also asked what impact reverting to pre-upgrade broadband levels would have on their productivity to ascertain a counterfactual. 56% of respondents noted that it would have a significant negative impact, 33% stated that it would have a somewhat negative impacted, whilst only 11% stated that it would have no negative impact.

While the number of primary schools surveyed is small, the results suggest that the upgrade to high-speed broadband is having a significant impact on primary school operations. The improvement of teacher productivity and internal communication as a result of the high-speed upgrade in particular suggest that there has been progression of the Digital Strategy for Schools' objective of enhancing teachers' digital competency.

4.6.2 Remote Working Strategy

Overview of the policy

The need for widespread high-quality internet access across Ireland has been highlighted in the wake of the Covid-19 pandemic, specifically for facilitating remote work, access to education and essential online services. To execute an effective transformation to a flexible work model post-pandemic, the Remote Working Strategy[75] has been devised. This strategy presents guidelines and initiatives to better enable remote working. Its key objectives are to promote work-life balance, minimise commuting time, cut back traffic congestion and achieve improved regional balance between urban and rural areas. It also foresees a network of remote working hubs across various regions, complemented by the enhancement of the workforce's digital skills.

Impact of the NBP

The NBP is a pillar of the Remote Working Strategy, given that reliable, high-speed broadband is crucial for successful remote work. The NBP's acceleration, particularly in rural or less serviced areas, facilitates remote work transitions by guaranteeing equal high-speed broadband access, thereby aligning with the strategy's goal for balanced regional development. Moreover, the NBP's commitment to digital infrastructure investment provides the necessary backbone for digital connectivity, vital for remote work infrastructure. This includes through the SCP initiative, which is intended to enable the creation of digitally enabled community hubs that can facilitate remote work, an objective of the Remote Working Strategy.

In addition, the NBP's promise of high-speed broadband to educational institutions indirectly supports the upskilling and reskilling purposes of the Remote Working Strategy. With adequate connectivity, individuals can access requisite training and resources for remote work efficiently. The NBP is therefore an important facilitator of the Remote Working Strategy, providing the required infrastructure, access, and investment for the widespread and effective transitioning to remote work.

The Ipsos B&A Household and Business Surveys provide evidence that the NBP is helping to facilitate this policy. It found that access to high-speed broadband had enabled 54% of surveyed businesses to provide remote working as an option to employees. It also found that households were working from home more as a result of the upgrade, with 41% of households below the age of 65 surveyed stating that the upgrade has enabled them to work from home more. The average additional days worked from home was 3.4. The NBP is therefore advancing the progress of the Remote Working Strategy.

[75] https://enterprise.gov.ie/en/publications/making-remote-work.html

4.6.3 Climate Action Plan

Overview of the plan

The Irish Government's Climate Action Plan (CAP) is a strategic initiative aimed at transitioning Ireland to a sustainable, low-carbon economy by 2050 through the significant reduction of greenhouse gas emissions, promotion of renewable energy, and enhancement of waste management and energy efficiency regulations.

Impact of the NBP

The National Broadband Plan is important to enabling the CAP as it facilitates a shift towards digital solutions, which reduces the need for physical transportation, thereby assisting in the journey towards decreasing greenhouse gas emissions. it also enables remote working, online education, and telemedicine, contributing to a sustainable, low-carbon economy.

4.6.4 Digital Connectivity Strategy

Overview of the strategy

The Digital Connectivity Strategy (DCS)[76] is Ireland's plan to leverage the power of digital connectivity to boost economic prosperity and social inclusion. The strategy's core objectives are to enhance digital skills among citizens, promote digital businesses, improve digital public services, and prioritise digital infrastructure. It aims to create a digitally inclusive society where everyone has the ability to fully participate in the digital economy by providing equal access to high-quality digital services.

Impact of the NBP

The NBP's commitment to delivering comprehensive high-speed broadband coverage across Ireland will play a key role in enabling the strategy. For example, the infrastructure developed as part of the NBP is providing the necessary groundwork for the widespread digital connectivity envisaged in the strategy. It also ensures that broadband access is provided to both urban and remote rural areas which aligns with the Digital Connectivity Strategy's goal of creating a digitally inclusive society. By enabling universal access to high-speed broadband, the NBP facilitates the strategy's objectives of enhancing digital skills and promoting digital businesses, as more people and companies can fully take advantage of the opportunities presented by the digital economy. Furthermore, it allows for the successful implementation of digital services by the government, making public services more accessible to the population. The NBP is therefore key to the Digital Connectivity Strategy and to its continued implementation.

4.6.5 National Development Plan

Overview of the policy

The National Development Plan (NDP)[77] is a long-term infrastructure investment strategy that aims to drive sustainable and balanced growth across all regions of Ireland. It sets out a strategic blueprint for public capital investment covering areas such as education, health, transport, housing, culture, communications, and climate action. The plan focuses on enhancing Ireland's infrastructural capacity, fostering economic competitiveness, and achieving a better quality of life for its citizens.

Impact of the NBP

The NBP plays an important role in the NDP, as it ensures that high-speed broadband services are provided across the country. This encourages economic competitiveness by improving digital accessibility, fostering information-sharing, enhancing service delivery, and promoting innovation. It

[76] https://www.gov.ie/en/publication/f1f85-digital-connectivity-strategy/
[77] https://www.gov.ie/en/publication/774e2-national-development-plan-2021-2030/

also enhances the capacity for remote working and learning and enables businesses to operate seamlessly and more efficiently. Furthermore, by providing high-speed broadband to all regions of the country, the NBP supports the balanced regional development ambition of the NDP. High-speed broadband access can contribute to reducing regional disparities thereby aiding in the growth and development of both urban and rural regions. The NBP is an important enabler of the NDP's goals and objectives by providing the necessary digital infrastructure for sustainable inclusive growth, innovation, and improved services.

4.6.6 Rural Development Policy

Overview of the policy

The Rural Development Policy[78] aims to improve the economic opportunity, social cohesion, and quality of life in rural areas. Its key objectives include supporting rural job creation, fostering innovation in rural services, supporting cultural development in rural communities, and enhancing rural infrastructure.

Impact of the NBP

The NBP supports this policy by providing the digital infrastructure needed for rural development. It does this by firstly committing to provide reliable, high-speed broadband to all areas of the country, including rural and remote areas. This upgrade to the digital infrastructure can stimulate economic activities, open up new business opportunities and support the creation of jobs in rural areas. Secondly, with the availability of high-speed broadband, rural areas have the opportunity to leverage digital technologies for the provision of various services, resulting in improved access to education, healthcare, and government services, among others. Finally, the NBP's focus on providing broadband access to educational institutions in rural areas is intended by the policy to aid in fostering innovation and enhancing skillsets among rural students. This indirectly influences rural development policy by improving educational outcomes and potentially reducing 'brain-drain' from rural to urban areas. The high-speed broadband provided by the NBP therefore plays a fundamental role in progressing the goals of the Rural Development Policy.

4.6.7 The National Islands Policy

Overview of the policy

The National Islands Policy[79] is designed to ensure sustainable, economic, and social development of offshore islands and to ensure that the inhabitants of Ireland's islands enjoy the same standard of public services as those on the mainland. The policy includes a wide range of actions across sectors like transport, education, healthcare, and culture, focusing on infrastructure, public services, and language preservation.

Impact of the NBP

A key objective of the islands policy is ensuring digital connectivity on the islands, which will reduce the impact of geographical barriers and enable island communities to fully participate in a digitally enabled society, opening up opportunities in education, business, and remote working. It will also enhance public services like access to remote healthcare (which the Household Survey confirms is easier to access following the upgrade to high-speed broadband) and supporting cultural preservation through digital platforms. The NBP supports the Islands Policy by providing high-speed broadband to island communities, which will help to bridge the physical disconnect of the islands through improved digital connectivity. Both schemes also share a common goal of balanced regional development and equal access to opportunities and services. As of December 31st, 2023, high-speed broadband is available on 10 of Irelands 26 island deployment areas.

[78] https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/
[79] https://www.gov.ie/en/policy-informatioN/a7188-our-living-islands/

Conclusion

Overall, the rollout of the NBP has resulted in and enabled notable changes to the delivery of government services delivered nationally or locally within the IA. This section has demonstrated that the high-speed broadband provided through the NBP has been referenced as a key enabler of at least seven major Government policies. These policies would be less effective without the State aid, and the connectivity it enables.

4.7 Wholesale Service Providers and Retail Service Providers

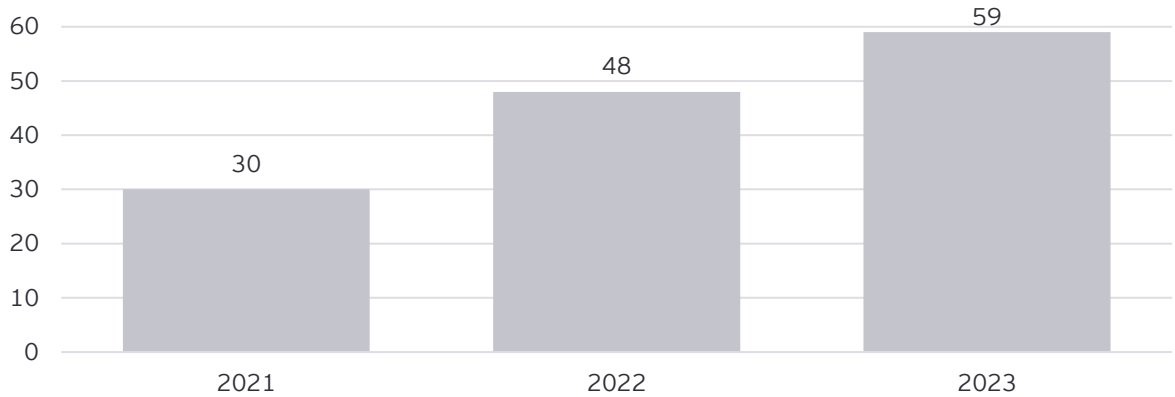
This section provides an overview of how the WSP and RSP markets have evolved since NBII began providing high-speed broadband infrastructure to the IA. It answers the following Evaluation Question:

2.5.1 Has the granting of aid changed the way the Wholesale Service Providers (WSPs)/Retail Service Providers (RSPs) provide services in the IA (e.g., geographic reach)?

The section will examine how the provision of high-speed broadband services in the IA has evolved since the NBP rollout began, examining both how the average number of RSPs in each county and the market of RSP subscribers have evolved over time. A key limitation of this analysis is the lack of data available on both the number of RSPs in the IA prior to the rollout, and the market share held by each RSP. Were this information available, it would be possible to demonstrate the direct impact of the State aid on the RSP market more tangibly. In lieu of this, the RSP analysis has instead focussed on the period 2021 to 2023, which is sufficient to indicate that the NBII rollout has led to an increase in the total number of RSPs providing services in the IA, the average number of RSPs in each county, and the market share of subscribers held by each RSP.

Figure 4.5 below shows the total number of RSPs ready to sell services in the IA over the period 2021 to 2023. The figure does not include RSPs that have signed agreements to provide services at the end of 2023 but who were not ready to begin doing so; including them would raise the total number of RSPs from 59 to 63. Nonetheless, the total number of RSPs providing services has risen steadily.

Figure 4.5: Number of RSPs ready to sell in the IA 2021-2023



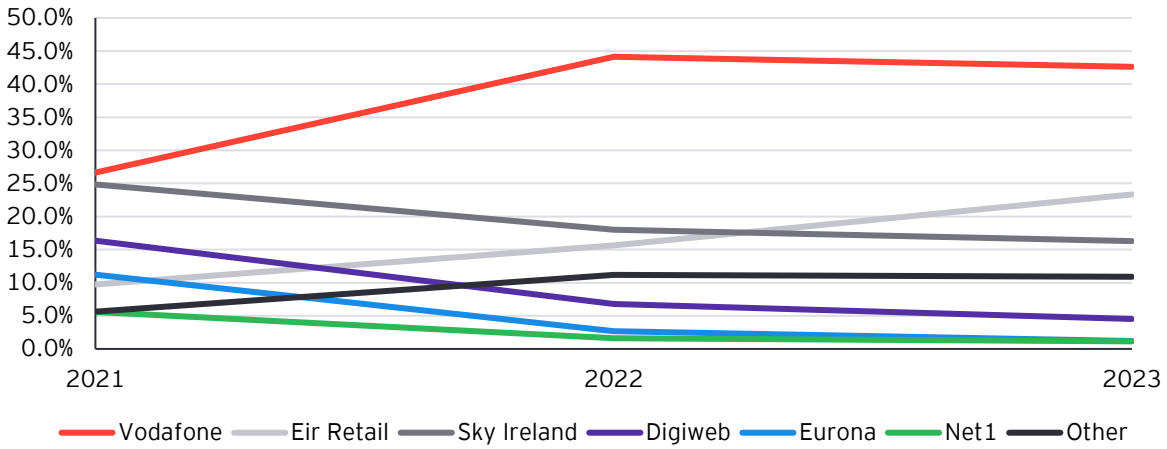
Source: NBII RSP Onboarding update

The composition of the IA RSP market since 2021 is shown in Figure 4.6 below. Unlike the national market, smaller RSPs such as Eurona, Digiweb, and Net1 were initially able to capture a significant proportion of the market. However, they were not able to sustain this as the rollout progressed, dropping from a combined 50% of the market in 2021 to approximately 18% in 2023[80].

[80] Data on premises passed and connected, provided by DECC, 31 December 2023

The larger RSPs have since been able to capture the majority of the market, with Vodafone, Sky, and eir Retail now holding 82% of the IA market combined. This is in line with the composition of the national RSP market, where eir Retail, Sky, Vodafone, and Virgin Media control a combined 86% of the market. The key differences between the IA RSP market and the national RSP market are that Vodafone is the strongest performing RSP in the IA, compared to eir Retail in the national market, and that Virgin media have almost no presence in the IA.

Figure 4.6: High-speed broadband market share of RSPs in the IA, by year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

As noted in response to Evaluation Question 1.4.1, NBII is the primary WSP in the IA and is not competing with other WSPs in offering high-speed broadband provision to the IA. It has achieved significant growth in the number of premises passed since the rollout began, with c.205,000 premises passed at the end of 2023, and is on course to ensure that ubiquitous high-speed broadband coverage is available to all premises within the IA by the target date of October 2027. Continued growth in the number of premises passed may incentivise additional RSPs to enter the IA market in the coming years.

Conclusion

The RSP market has changed notably since the State aid was granted in 2019, with premises in the IA now having a greater number of RSP options for customers to choose between since the rollout began. RSP market share has also changed considerably, with smaller RSPs initially holding half of all subscribers. As of 2023, the IA RSP market now more closely resembles the national market.

Without data on the number of RSPs operational in the IA prior to the NBP, it is not possible to determine the exact impact of the rollout on the overall RSP market. However, the available data does show that more RSPs are offering services in the IA than prior to the rollout and that, at least initially, smaller RSPs were able to capture a higher proportion of subscribers than was achieved nationally.

5 Effects on competition

5.1 Overview

This chapter seeks to address the following evaluation questions:

2.6.1 Does the granting of aid result in retail prices for NGA broadband in the IA that are in line with commercial areas?

2.7.1 Does the granting of aid result in end-users of NGA broadband in the IA having a choice of provider?

2.8.1 Does the granting of aid for the IA have an impact on competition in the national fixed broadband market?

2.9.1 How does the granting of aid for the IA impact on basic broadband providers and the provision of basic broadband services?

This chapter analyses the effects on competition of the state-aid provided to NBII through the NBP, focusing on the impact on retail prices, competition, and the provision of basic broadband. The provision of high-speed broadband in the IA provides end-users with the option for attaining faster broadband than their existing deal, therefore it is assumed that this will create a new market for RSPs to provide such broadband to meet this demand. This chapter assesses the applicability of this assumption and the impact of this new market on retail prices and competition both in the IA and in a national context, using the following methodologies:

- Descriptive statistics and trend analysis to review IA and national data on market shares and retail prices of broadband packages.
- Desk-based research to calculate the price of broadband packages for randomly selected Eircodes inside and outside the IA using switcher.ie.
- Analysis of quantitative results from the Ipsos B&A Household and Business Surveys to assess perceived impacts and reactions of end-users to the increased number of RSPs offering high-speed broadband.
- Integration of qualitative feedback from interviews with RSPs to gain insights into their actions within the IA in response to the opportunity to provide high-speed broadband services.

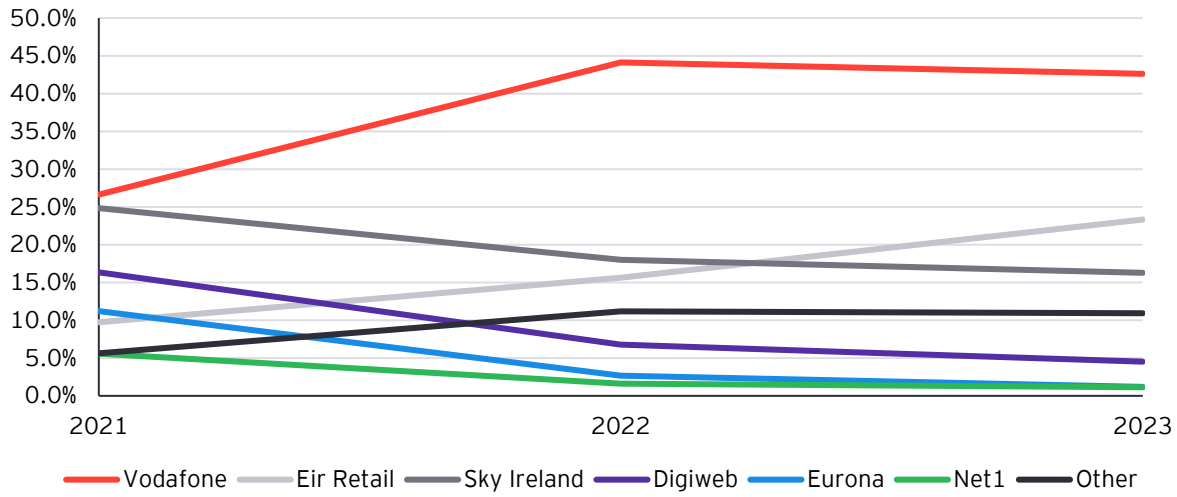
The following table provides a high-level overview of the outcomes resulting from this analysis. Further detail with regards to each evaluation question is provided in the remainder of this chapter.

Table 5.1: Key effects on competition from the NBP

Outcome	Description
2.6.1 Does the granting of aid result in retail prices for NGA broadband in the IA that are in line with commercial areas?	
Retail prices for high-speed broadband are consistent between the IA and non-IA, with equivalent packages being offered across the country.	In the IA, the cheapest broadband deal (excluding bill credit offered by eir Retail) totalled €419.88 for 12 months, with other common deals totalling €420 for speeds of 500 Mbps. Meanwhile outside the IA, the same packages were generally offered, with the cheapest being the same €420 package. Interviewees noted that NBII has strived to achieve this equilibrium, with services from NBII a very similar price to other WSPs OpenEir and SIRO operating elsewhere.
2.7.1 Does the granting of aid result in end-users of NGA broadband in the IA having a choice of provider?	
During the period of the NBP rollout to date, there has been a	The number of RSPs ready to sell in the IA has risen from 30 in 2021, to 59 in 2023. Moreover, those with an active connection has also risen, from 19

Outcome	Description
notable rise in the number of RSPs in the IA.	in 2021 to 50 in 2023, while the average number of RSPs per county has increased from c.15 in 2021 to c.32 in 2023. This demonstrates that the NBP rollout has resulted in many more RSPs providing high-speed broadband in the IA.
2.8.1 Does the granting of aid for the IA have an impact on competition in the national fixed broadband market?	
The NBP presented an opportunity for smaller RSPs to capture high-speed market share in the IA, but market shares generally reflect the wider country, with Vodafone, eir Retail and Sky Ireland obtaining the majority of customers.	Vodafone holds the largest market share, followed by eir Retail and Sky Ireland. These three providers hold over 82% of the market share, with other smaller RSPs not holding more than 5% by 2023. The smaller RSPs did emerge initially with high market shares but have gradually reverted to the share they hold nationally.

Figure 5.1: High-speed broadband market share of RSPs in the IA, by year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

2.9.1 How does the granting of aid for the IA impact on basic broadband providers and the provision of basic broadband services?	
While some RSPs have faced challenges in adapting to high-speed broadband provision, many RSPs have adapted and are already selling in the IA.	Insights from interviews suggest that some RSPs may have faced initial challenges in moving to fibre broadband while retaining a viable margin. Nevertheless, there has been a rise in the number of RSPs selling high-speed broadband in the IA, indicating that many RSPs have been willing and able to make the transition.

5.2 Retail prices

This section examines the effects of the NBP on retail pricing in the IA. It answers the following Evaluation Question:

2.6.1 Does the granting of aid result in retail prices for NGA broadband in the IA that are in line with commercial areas?

Retail price levels for high-speed broadband are consistent between the IA and non-IA, with equivalent packages being offered across the country.

- In the IA, 25 randomly selected Eircodes were analysed, out of which 20 were deemed 'ready to connect' by NBII's network map. The remaining five were not yet ready for connection, either due to pending surveys or ongoing network builds, hence they had no offers for high-speed broadband. Detail on the prices and broadband packages offered to these premises is addressed in section 5.5.
- Of the 20 ready-to-connect premises, according to NBII, all of them had 35 RSPs ready to sell to the premises if it was residential, or 34 if the premises was a business, according to NBII's network map. The least expensive retail price of high-speed broadband for these Eircodes was very consistent, varying between just two prices. Prices were calculated according to Switcher.ie[81]. For 10 of the 20 premises, the cheapest broadband deal was with eir Retail, offering €34.99 per month for 12 months, totalling €419.88. New customers were eligible for €50 bill credit, reducing the 12-month price to €369.88.
- The other deal, the least expensive for the remaining 10 premises, was equally offered by Vodafone and Sky Ireland. Vodafone's offer was €30 per month for the first six months, followed by €40 thereafter. Alternatively, Sky offered €35 per month for the entire 12-month contract. Both totalled €420 for the full year. Vodafone's deal included a discount for existing customers holding additional contracts, such as mobile contracts. Nevertheless, for the majority of customers, the cheapest deals were either with eir Retail at €419.88, or Vodafone or Sky at €420 for the year. All these contracts represent deals offering high-speed broadband with speeds up to 500 Mbps.
- Outside of the IA, focusing on 10 Dublin premises, similar results were evident, suggesting retail prices are consistent across the country. Of the 10 premises, high-speed broadband packages were available for six. The least expensive deal for three of these was from eir Retail, offering the same price and speed as in the IA. One of the six premises' least expensive deal was €420 as before, from Vodafone and Sky, with Pure Telecom matching this price by offering €35 per month for 12 months. Lastly, two premises were provided their cheapest deal by Virgin Media, offering €35 per month for 12 months, but with an additional €30 activation fee, bringing the total to €450 for the year.
- This analysis suggests that retail prices for high-speed broadband are ultimately consistent between the IA and non-IA.
- IA households that have been passed can also now avail of cost savings from communications bundling. IA households that have not yet been passed have limited or no access to communications bundling, requiring them to purchase TV and broadband separately. Based on comparison information drawn from the website Switcher.ie[82], the savings associated with gaining access to bundling are estimated to be worth €5 per month, or €60 per year.

Interviews with RSPs corroborate the general price consistency of broadband products in the IA and non-IA.

- To triangulate the findings of broadband price consistency, semi-structured interviews were conducted with key representatives from RSPs to further understand how NBP implementation influences pricing strategies, competition among providers, and service delivery.
- One RSP perspective highlights the NBP's dual impact on maintaining customer bases while navigating financial adjustments. For example, it was noted that the NBP has enabled RSPs to retain their existing customers by transitioning them from various connection types, including wireless, to fibre connections. However, this transition has also tightened profit margins, as fibre connections reportedly yield lower margins compared to some alternative types. Despite these challenges, retail prices remain relatively consistent between IA and non-IA areas, indicating a general market equilibrium. An RSP perspective reveals that the cost for RSPs to sell on the NBII network is broadly comparable to selling elsewhere, but with a slight price premium on the NBII network due to an additional connection fee.

[81] Ireland's Best Broadband Deals | Compare Broadband, TV & Phone (switcher.ie)
[82] https://switcher.ie/?gad_source=1&gclid=EAIaIQobChMIqPrNsPe0hQMVPZmDBx2UIAusEAAYASAAEgJLYPD_BwE

- During the interview process, NBII's role in progressing towards price parity was expressed. It was noted that NBII had generally aligned its offerings with the existing market price. Moreover, wholesale prices are strictly non-discriminatory towards RSPs looking to sell on the network, to benchmark wholesale prices in the IA against wholesale prices in non-IA areas to ensure competitive pricing for end-users in the IA. This approach maintains a balanced competitive environment, wherein the NBP's aid does not distort market prices but ensures equitable access across both IA and non-IA.
- Interviews with other RSPs underscored operational challenges, particularly in connection capacity and installation timelines, which could potentially influence customer satisfaction and demand. However, a broader strategic vision by RSPs is generally maintained to harmonise prices for different customers and ensure no discrimination between IA and non-IA areas. This strategic adaptation to the NBP and emphasis on maintaining competitive pricing strategies highlight the dynamic interplay between operational efficiencies and market competitiveness.
- From a retail pricing perspective, the RSPs strategy does not differentiate prices based on the network provider (NBII versus OpenEir versus SIRO), maintaining consistency in offers to end-users. It should be noted that one RSP noted that they adopt a tiered offering in the IA, selling only 1GB plans through NBII due to the assumption that IA customers, transitioning from no service to high-speed service, are less price sensitive. In this case, this tiered offering represents a form of strategic product differentiation rather than price discrimination.
- The interviews, together with data analysis, paint a picture of a broadband market shaped by the NBP to promote competitive balance, service quality, and equitable access across Ireland. The consensus among RSPs that the NBP has not disrupted but rather stabilised retail prices for high-speed broadband in the IA aligns with the programme's objectives. This consistency across diverse geographic regions points towards the NBP's success in bridging the digital divide and fostering a more competitive Irish broadband market. However, the specific challenges highlighted in the interviews, such as installation delays, operational costs (i.e., NBII's connection fee for RSPs), and the evolving competitive landscape, suggest that maintaining this price consistency may become increasingly complex.

5.3 Retail Level Competition

This section examines the effects of the NBP on provider choice in the IA. answers the following Evaluation Question:

2.7.1 Does the granting of aid result in end-users of NGA broadband in the IA having a choice of provider?

Survey responses indicate that the NBP has permitted IA users to access to a more diverse market of broadband providers.

- Data from the Ipsos B&A Business Survey provides indirect evidence that end-users have the freedom to choose from multiple providers. This choice is evidenced by the diversity of providers serving businesses, with 28 different RSPs supplying the 150 surveyed businesses. 51% of businesses surveyed claimed they switched providers following the upgrade to avail of the high-speed offer, with 75% responding that they would be likely to recommend their current broadband provider.
- A wide range of broadband providers were listed by businesses as their current service providers, including eir Retail, Vodafone, Digiweb, and several other niche and local providers. This variety indicates that businesses in the IA have access to a diverse market of broadband services, suggesting a choice of providers enabled by the high-speed broadband rollout. Further, 51% of businesses reported switching their broadband provider upon upgrading to high-speed. This proportion indicates that businesses are not only aware of their options but are also willing and able to switch providers, further indicating a competitive market with multiple provider choices. Finally, the high likelihood of businesses recommending their current broadband service to another business (54% very likely) suggests that businesses are generally satisfied with their chosen provider.

The NBP intervention has had a role in increasing the number of RSPs in the IA.

- This trend exists in both the number of RSPs ready to sell in the IA and the number of RSPs with an active connection in the IA. Furthermore, this trend is prevalent across every county in Ireland, illustrating that rollout is having a positive impact on end-user choice for broadband provider across the country.
- The number of RSPs ready to sell high-speed broadband in the IA has risen from just 30 in 2021, to 59 in 2023, an increase of 96.7%.[83] This growth demonstrates the commercial attractiveness to broadband providers of capturing this growth in customer base and has the effect of increasing end-user choice of provider.

Figure 5.2: Number of RSPs ready to sell in the IA, by year

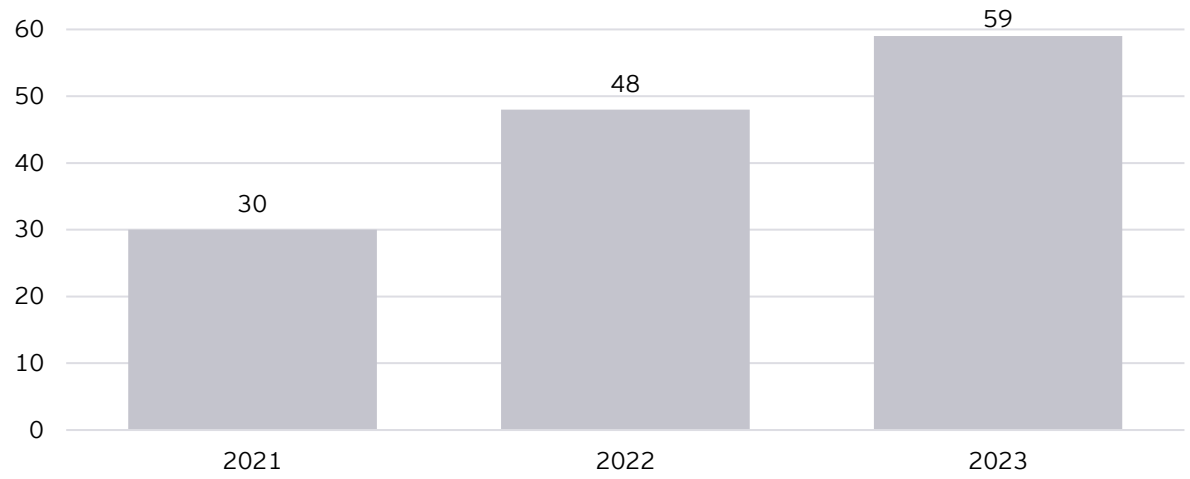
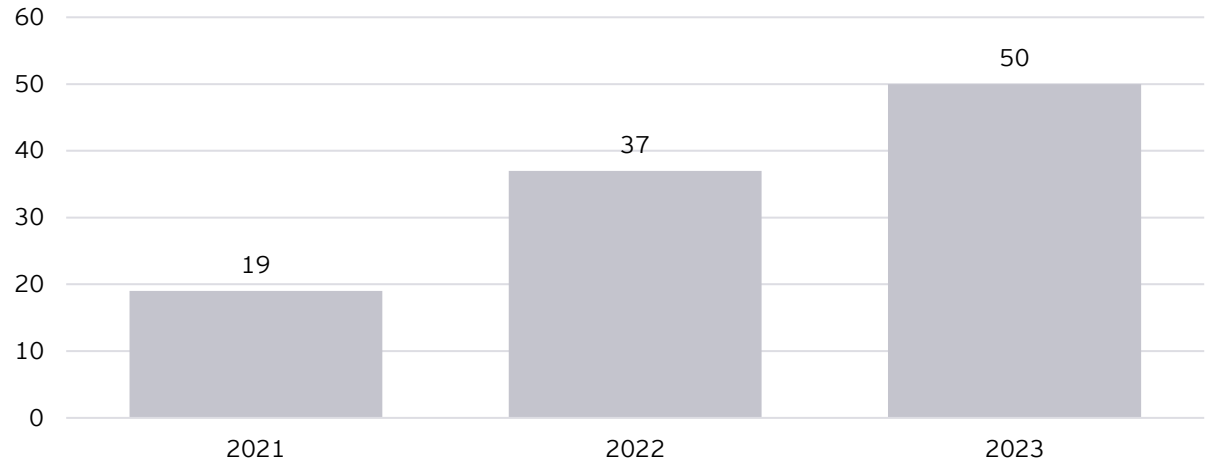


Figure 5.3: Number of RSPs with an active connection in the IA, by year (right)



Source: NBII RSP Onboarding update 2021-2023; Data on premises passed and connected, provided by DECC, 31 December 2023

- Similarly, the number of RSPs with active connections in the IA has risen, from 19 in 2021 to 50 in 2023, an increase of 163.2%,[84] while the average number of RSPs per county has also increased, from approximately 14 in 2021 (across 15 counties) to an average of approximately 32 (across all counties of the IA).[85] This data illustrates that end-users are actively selecting different broadband providers, suggesting competition is strong, which should provide better deals and customer service for end-users.

[83] NBII RSP Onboarding Updates 2021-2023
[84] Data on premises passed and connected, provided by DECC, 31 December 2023
[85] NBII State aid evaluation reports, 2021-2023

5.4 National Retail Market for High-Speed Broadband

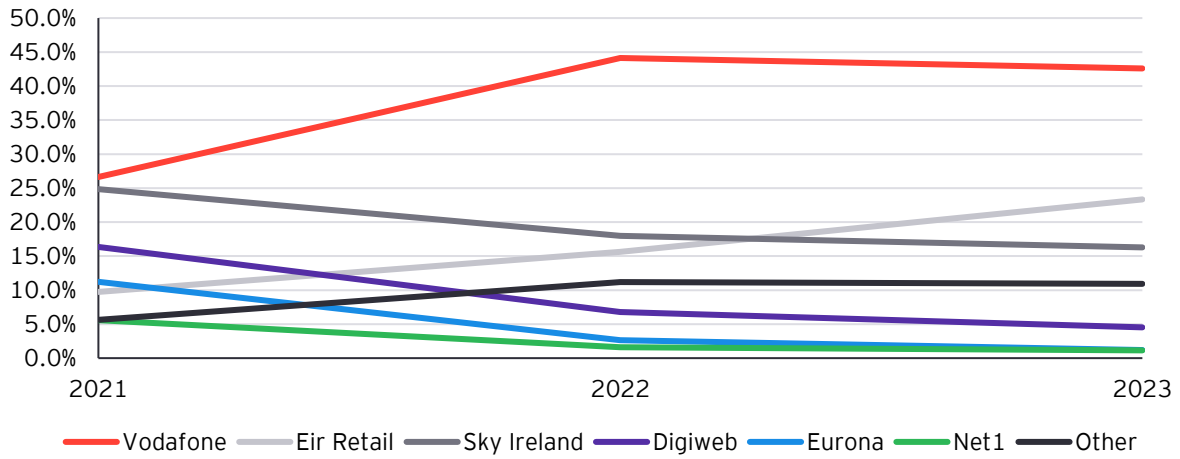
This section examines the effects of the State aid on the national retail market for high-speed broadband. It answers the following Evaluation Question:

2.8.1 Does the granting of aid for the IA have an impact on competition in the national fixed broadband market?

The NBP presented an opportunity for smaller RSPs to capture high-speed market share in the IA, but market shares generally reflect the wider country, with Vodafone, eir Retail and Sky Ireland obtaining the large majority of customers.

- Initially, some smaller RSPs such as Digiweb, Eurona, and Net1 gained a relatively large share of the premises newly passed with high-speed, however as NBP rollout has advanced to many more premises, the larger retailers have captured most of the more recently connected customers.[86] Vodafone has emerged as the largest RSP with 42.6% market share high-speed broadband connections. The three largest RSPs are Vodafone, eir Retail and Sky, making up 82.2% of all connections. In 2023, no other RSP had over 5% market share. This is illustrated in Figure 5.4.

Figure 5.4: High-speed broadband market share of RSPs in the IA, by year

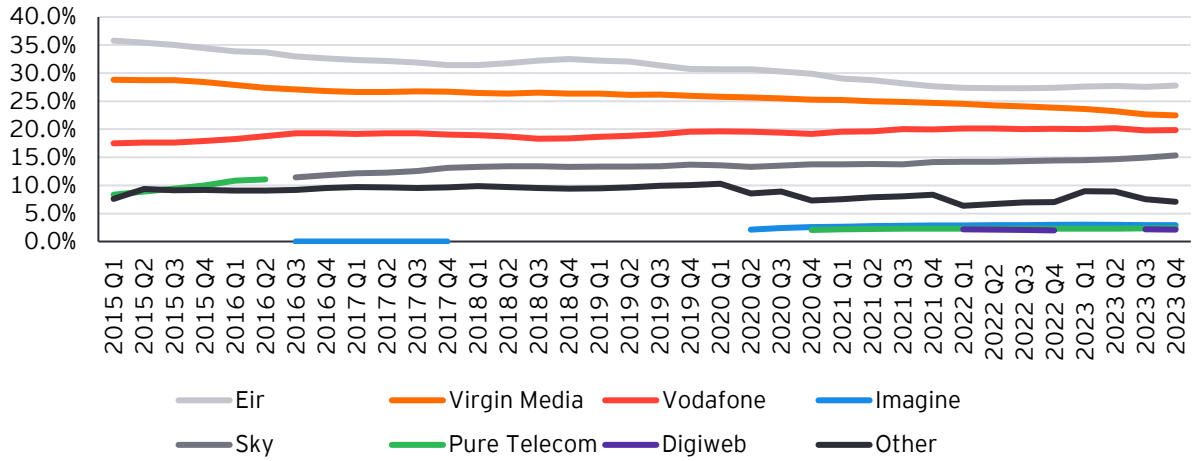


Source: Data on premises passed and connected, provided by DECC, 31 December 2023

- Comparing this to the market shares across Ireland for fixed broadband demonstrates a similar trend that larger companies tend to capture most of the market, with four standout providers nationally, compared to the three in the IA.[87] It should be noted that this national data is based on all broadband speeds, not solely those providing high-speed. Nevertheless, it illustrates a good comparison, showing similar market characteristics. The share of the IA RSP market currently held by smaller RSPs now broadly resembles their share in the national market.

[86] Data on premises passed and connected, provided by DECC, 31 December 2023
[87] ComReg QKDR All Data Q4 2023

Figure 5.5: Fixed broadband market share of RSPs nationally, by year



Source: ComReg QKDR All Data Q4 2023

5.5 Impact on Basic Broadband Providers

This section examines the impact of the State aid on basic broadband provision. It answers the following Evaluation Question:

2.9.1 How does the granting of aid for the IA impact on basic broadband providers and the provision of basic broadband services?

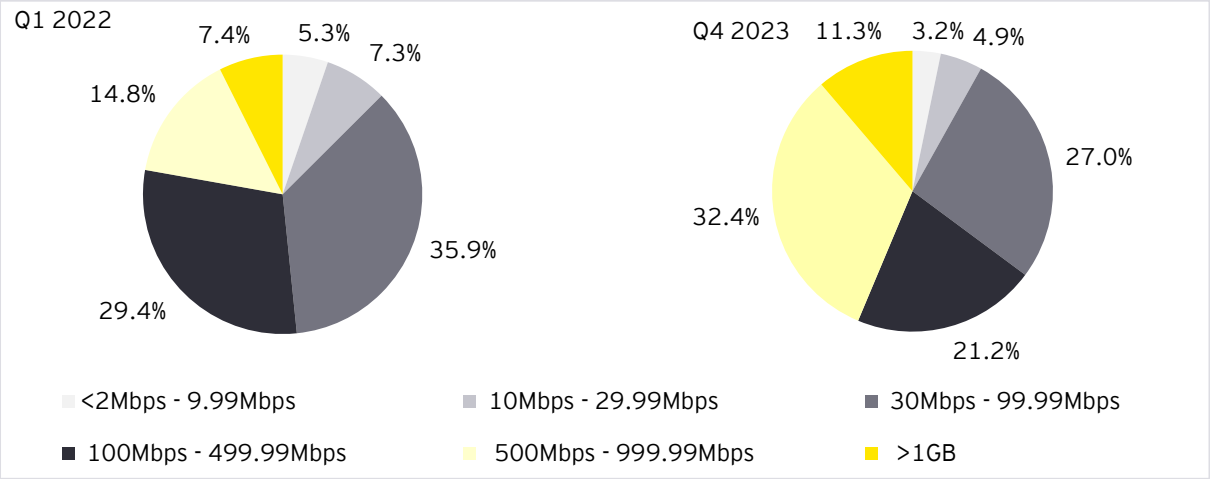
The number of premises connected to basic broadband nationally and in the IA is falling.

- Basic broadband, characterised by speeds of 30 Mbps or lower, is seeing a decrease in uptake. Nationally, connections have reduced from 12.6% to 8.1%[88], and within the IA, the proportion of connections below the threshold for high-speed broadband has dropped from 77.9% to 56.3%[89]. These figures reflect a growing preference for high-speed services, potentially challenging basic broadband providers to upgrade their offerings to retain customers.
- Figure 5.6 demonstrates this shift, showing the national connection proportions to high-speed broadband in the first quarter of 2022, and the fourth quarter of 2023. The charts underscore the incremental transition from lower to higher broadband speeds over time. Specifically, the combination of the two lowest speed categories ('<2Mbps - 9.99Mbps' and '10Mbps - 29.99Mbps') shows a decrease from 12.6% in Q1 2022 to 8.1% in Q4 2023.

[88] ComReg QKDR All Data Q4 2023

[89] Data on premises passed and connected, provided by DECC, 31 December 2023

Figure 5.6: Proportion of premises nationally connected to high-speed broadband in Q1 2022 and Q4 2023



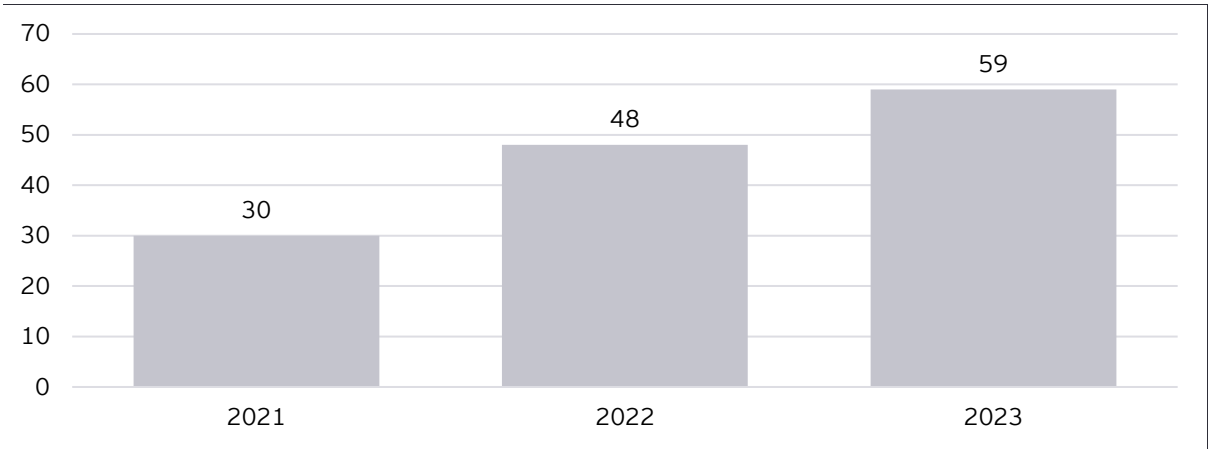
Source: ComReg QKDR All Data Q4 2023

- Within the IA, as detailed in section 3.33.2, the take-up rate for NBP has been increasing, reaching 31.7% by the end of 2023. This uptrend underscores a growing demand for high-speed broadband, indicating that customers are progressively transitioning away from lower-speed services to higher-speed options, both within the IA and across the nation.

While the transition to high-speed broadband has been challenging for some RSPs, many have adapted and are ready to sell in the IA.

- The transition to high-speed broadband within the IA presents both opportunities and challenges for RSPs. One challenge highlighted is the lower profit margins associated with migrating existing customers to high-speed fibre connections, as opposed to maintaining them on other broadband types (e.g., satellite). One RSP noted that NBP has enabled RSPs to continue serving their existing customer base by transitioning them from various connection types including wireless, onto fibre connections. However, this has simultaneously lessened margin, since fibre reportedly has lower margin than some alternative connection types. This indicates a strategic decision by RSPs to retain customers by offering high-speed broadband, albeit with reduced profitability. The competitive need to retain customers seeking high-speed services is evident, yet it has introduced financial pressure on RSPs accustomed to higher margins from traditional broadband services. An RSP further noted that some RSPs have failed to adapt to the lower margins on fibre broadband, leading to a loss of customers seeking high-speed broadband, and in some cases, resulting in RSPs ceasing operations. Survey responses reinforce this view, where only 57% of households and 51% of businesses have switched broadband providers in order to obtain high-speed broadband, suggesting a lag in adaptation by some RSPs.
- Nevertheless, the number of RSPs prepared to offer high-speed broadband in the IA has risen by 96.7%, from 30 in 2021 to 59 in 2023. This growth may indicate a broad adaptation among RSPs, moving from basic to high-speed broadband offerings in response to escalating consumer demand. Despite initial challenges, a substantial segment of the market has therefore been able to transition to high-speed broadband.

Figure 5.7: Number of RSPs ready to sell in the IA, by year

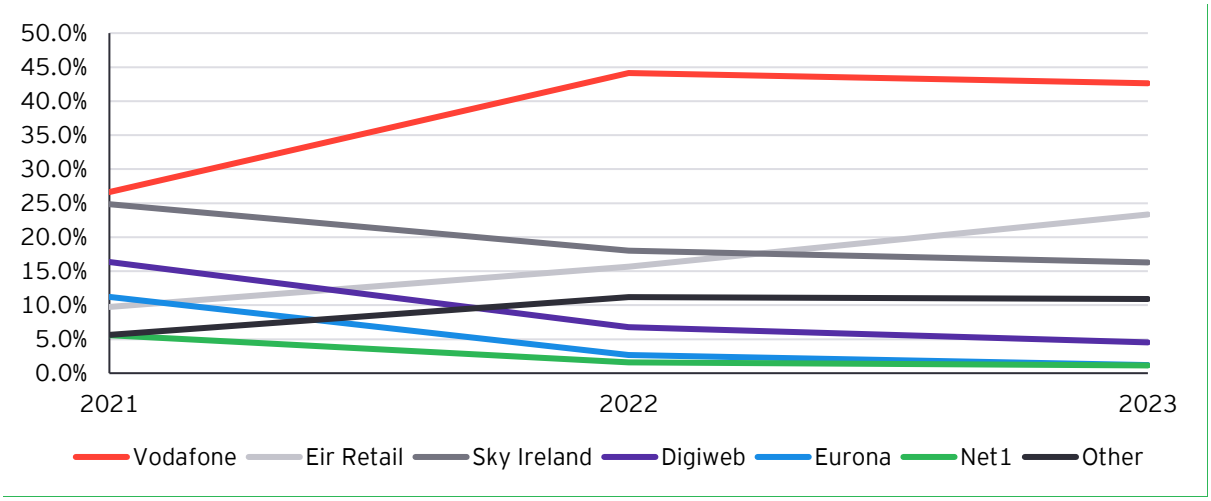


Source: NBII RSP Onboarding update

Since 2021, there have been minimal changes to RSP market shares at the national level, despite the introduction of the high-speed broadband market in the IA, suggesting that RSPs have generally retained customers by transitioning them to high-speed services.

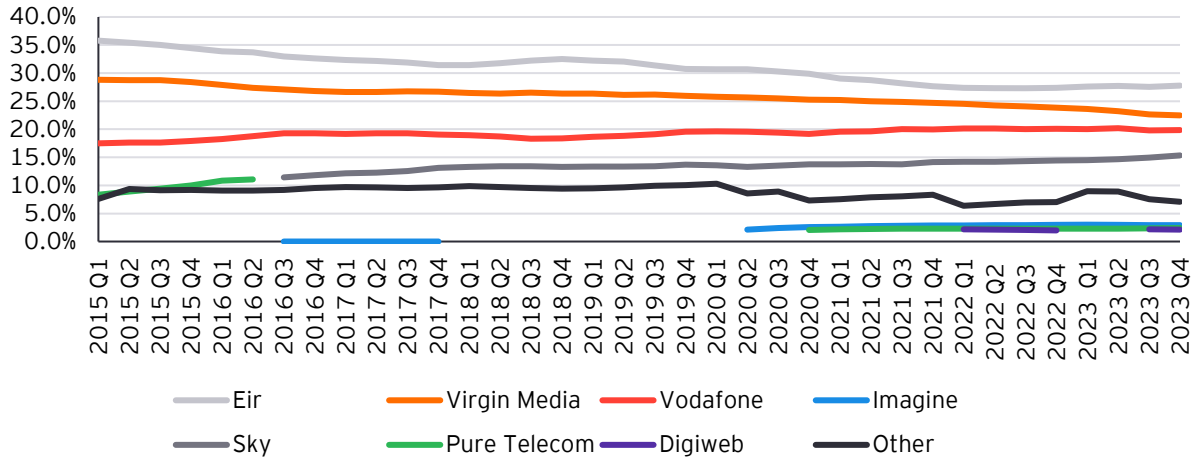
- Within the IA, Vodafone has established itself as the largest RSP, holding a 42.6% market share of high-speed broadband connections. The three largest RSPs – Vodafone, eir Retail, and Sky – collectively account for 82.2% of all connections. While smaller RSPs like Digiweb, Eurona, and Net1 have experienced notable market shares, their proportions have begun to decline since 2021, as illustrated in Figure 5.8.
- Nationally, however, market shares have remained relatively consistent, with eir Retail leading, followed by Virgin Media, Vodafone, and Sky, as depicted in Figure 5.9. This consistency suggests brand loyalty among end-users, who prefer to upgrade to high-speed broadband with their current RSP. Nonetheless, the full effects of the NBP on national competition have yet to fully materialise. As more time elapses and with advanced deployment of the NBP, market dynamics may shift, potentially altering the current landscape of service providers.

Figure 5.8: High-speed broadband market share of RSPs in the IA, by year



Source: Data on premises passed and connected, provided by DECC, 31 December 2023

Figure 5.9: Fixed broadband market share of RSPs nationally, by year



Source: ComReg QKDR All Data Q4 2023

Basic broadband continues to be available in areas where high-speed broadband has been introduced, with its pricing marginally lower than that of high-speed services.

- Using the same random selection of Eircodes as mentioned in section 5.2, each Eircode, both within and outside of the IA, was offered speeds below high-speed broadband. These packages were either up to 100 Mbps or up to 24 Mbps. The pricing was consistent across locations, with the most affordable deal offered by Pure Telecom at €30 per month, amounting to €360 for the first year. Comparatively, the cheapest high-speed broadband deal in the IA was €369.88 from eir Retail, inclusive of a €50 bill credit; otherwise, the cost was €419.88 from eir Retail or €420 from Vodafone and Sky Ireland.
- These figures illustrate that broadband speeds below the high-speed threshold, including basic broadband, are marginally less costly for consumers. However, the price difference is relatively small and is unlikely to serve as a significant incentive to remain with lower-speed broadband services.

6 Proportionality and appropriateness

6.1 Overview

This chapter seeks to address the following evaluation question:

2.10.1 How much subsidy is required per premises passed and per premises connected?

2.11.1 How much existing infrastructure is NBII using as a percentage of total poles/ducts being used by NBII?

2.11.2 Has the granting of aid affected commercial investment in the IA (in NGA or in general) beyond that envisaged by the NBP project?

This chapter also:

- Compares the current project IRR with the IRR forecast at Bid stage
- Considers the likely evolution of the socioeconomic value for money of the NBP

This chapter assesses the proportionality and appropriateness of the State aid provided to NBII through the NBP. The analysis examines the level of subsidy required per premises passed and premises connected, it reviews the development and use of physical infrastructure by NBII and assesses whether the aid has had any impact on commercial investment in the IA, beyond that envisaged by the NBP. The analysis underpinning this chapter primarily uses descriptive analysis, financial analysis, trend analysis, and desk-based research.

This chapter also assesses the project's value for money thus far, first by comparing the current forecasted IRR with the IRR forecast at Bid stage, then by considering the likely evolution of the project's eBCR in light of updated technical parameters, macroeconomic trends and the Ipsos B&A survey findings.

The efficiency and value for money of the NBP is enabled through various mechanisms, as outlined in the NBP contract, these include milestone contingent subsidies, conditional subsidies, and subsidy clawbacks should NBII achieve savings on costs, achieve a higher-than-expected IRR, or if, on expiry of the contract, the Terminal Value of the project is higher than forecast at Bid stage. NBII has achieved efficiencies to date with an IRR that is marginally higher than forecast,[90] and which will result in a clawback for the State. Additionally, the State has also received a clawback of c.€43m from a sale of NBII's equity. The following table provides a high-level overview of the outcomes resulting from this analysis. Further detail in regard to each evaluation question is provided in the remainder of this chapter.

Table 6.1: Key proportionality and appropriateness findings from the NBP

Outcome	Description
2.10.1 How much subsidy is required per premises passed and per premises connected?	
The subsidies received by NBII equate to €2,632 per premises passed. NBII's most recent re-forecast (December 2023) shows an IRR marginally exceeding that at Bid stage. This indicates that the	The latest available IRR forecast provided by NBII is from December 2023. The results show a marginal increase in the projected IRR compared with Bid model stage. This suggests that the Subsidy amount agreed remains appropriate to finance the capital related investment costs and NBII establishment costs on a commercial basis.

[90] NBII financial information, provided by DECC

Outcome	Description
subsidy received to date has been appropriate.	
The subsidy required per premises connected was €994 to date and is 18% lower than forecast at Bid date. Connection costs per premises are expected to rise in future years.	The subsidy required per premises connected was €994 to date. This figure is significantly lower than the connection subsidy forecast at Bid date of €1,212. The total subsidy per premises connected is forecast to rise in future years, based on NBII's internal forecasts of outstanding subsidies and forecast connections. It should be noted, however, that should subsidies exceed the cost of connections, 75% of this will be clawed back.
2.11.1 How much existing Infrastructure is NBII using as a percentage of total poles/ducts being used by NBII?	
NBII is building and renting fewer poles and shifting a higher proportion of cabling underground than planned.	This was primarily due to an assumption that OpenEir poles existed on route lengths when in reality they do not due to limitations within the infrastructure databases. Frequently, unrecorded duct exists on these route lengths which has resulted in the cable moving underground as opposed to NBII building new poles. This shift meant that less pole investment was needed than planned at Bid stage.
NBII is renting a greater proportion of its physical infrastructure than planned, renting 97% of the poles it uses (compared to a planned 90%). It has also built 52% less duct than planned and is renting 29% more.	This decision aligns with the recommendation on page 16 of the State aid decision that NBII reuse suitable existing infrastructure in order to avoid unnecessary and wasteful duplication of resources.
2.11.2 Has the granting of aid affected commercial investment in the IA (in NGA or in general) beyond that envisaged by the NBP project?	
While not within the current IA, the NBP has arguably contributed to increased high-speed network coverage and commercial investment in the less commercial areas of Ireland.	The NBP process since its original inception in 2012 has arguably contributed to a greater focus by private sector providers on the economics of network rollout and how best to deliver more widespread coverage in Ireland. The evidence supporting this is that in the years following the initial announcement of the NBP in 2012, the number of premises classified as being in the IA decreased in size to c.535,000, before rising again to c.560,000.
Within the IA, 31% of the businesses surveyed also stated that the upgraded internet had influenced their investment decisions.	The question of whether the granting of aid has contributed to an increase in commercial investment generally was answered through the Ipsos B&A Business Survey, which directly asked businesses in the IA whether receiving an upgrade to high-speed broadband influenced their investment decisions, seen in the table below. Examples given include investment in new software that was not previously usable, new operating systems and software that has facilitated remote working, and a planned expansion to a company's physical footprint.
Businesses who had their investment decisions influenced by the upgrade tended to experience the best all-round benefits of the upgrade.	55% of the businesses who had their investment decisions influenced had also experienced a reduction in costs associated with the upgrade compared to just 34% of businesses in the cohort whose investment decisions were not influenced. Similarly, 53% had experienced new revenue streams or products as a result of the upgrade, compared to just 19% in the not influenced cohort.

Outcome	Description

Table 6.2: Proportion of respondents whose investment decisions have been influenced by receiving high-speed broadband

Has receiving an upgrade to high-speed internet influenced your investment decisions?	Response %
Yes, significantly	11
Yes, somewhat	20
No	69

Source: Ipsos B&A Business Survey, March 2024

Cost Benefit Analysis	
The socioeconomic benefits of the NBP have likely increased since the rollout began.	Based on the Ipsos B&A survey findings, as well as demographic and macroeconomic factors, there is reason to believe that the Benefit to Cost Ratio (BCR) of the NBP is likely to have increased. However, further analysis would be required to support this, notably the quantitative impact of macroeconomic, technical and demographic parameters on the net present value of benefits and costs compared with those resulting from the 2019 CBA.

6.2 Subsidy per premises passed and per premises connected

This section examines the appropriateness of the State aid subsidies received by NBII. It answers the following Evaluation Question:

2.10.1 How much subsidy is required per premises passed and per premises connected?

High-speed broadband access is of significant socioeconomic benefit, as evidenced by the scope of government policies relying on the NBP (see section 4.4). However, there are important market failures that make the provision of high-speed broadband to the IA challenging. The State has therefore opted to subsidise the deployment of the high-speed network in the IA, to ensure that otherwise financially unviable infrastructure investments can be undertaken.

Public subsidy is being invested in accordance with the commercial stimulus model, otherwise known as 'gap funding'. This means that the subsidy paid to NBII is no greater than the amount of the capital related investment costs and NBII establishment costs that cannot be financed on a normal commercial basis (i.e., subsidy should only be used to fund the gap between the commercially viable investment level, which is to be funded by NBII, and the total investment required).

This was calculated by forecasting the financial cashflows (capital expenditure, financing costs, operating costs and commercial revenues) of the project over a 25-year contract period, and then calculating the amount of capital investment that needs to be funded by Government in order for the private sector partner to achieve a commercial internal rate of return (IRR) on the remaining capital investment that it finances. The subsidy available from Government is comprised of three main elements:

- Deployment subsidy, which is paid on a milestone basis in respect of the successful deployment of the pass network across 227 Deployment Areas. When premises are passed, this means that end-users are then able to order a service which can be delivered by an RSP. It should be noted that each Deployment Area has a different number of premises within it, and that the subsidy allocated to each Deployment Area is not directly linked to the number of premises or the capital cost associated with passing the premises within that Deployment Area.

- Connection subsidy, which is paid on a take-up milestone basis in respect of first-time connections to premises (i.e., paid for every 1,000 connections completed). The payment per 1,000 connections figure is circa €1.1m and is subject to indexation. Where the average actual connection cost is less, DECC can claw back 75% of this saving, and where the average actual Connection Cost is more, DECC is required to pay 85% of this increase (net subsidy increases subject to an overall cap of €66m).
- Conditional subsidy, which is an additional capped subsidy allowance from which further subsidy may be paid to NBII, subject to overall caps, where there is an adverse variance in an agreed 'Contract Assumption' risk share mechanism. Similarly, where there is a beneficial variance in the Contract Assumptions, there is a corresponding reduction in the Subsidy Payments. The Contract Assumptions are intended to address the risks outside of the control of NBII, the impact of which would have otherwise been priced into the fixed Subsidy Payment. This aims to incentivise efficiency through ensuring that the increased Subsidy Payments are only paid should the specific risk materialise. Changes in Contract Assumptions will not impact the IRR as the change in costs results in an equal and opposite change in the Subsidy.
- The Project Agreement contains a protection to ensure that the net present value of the total subsidy payments paid or payable to NBII does not exceed the total net present value of capital-related investment costs and NBII establishment costs validated by DECC.
- The Project Agreement also contains clawback mechanisms, which ensures that appropriate levels of public subsidy are returned to the State if NBII is achieving levels of financial performance (i.e., improved IRR) that exceed those forecast in its financial model at final tender stage.
- This IRR (in addition to the subsidy and contingencies) was set at Bid stage at a level deemed sufficient to secure private operator investment in a large-scale infrastructure project. Within this specific context, there is a provision whereby DECC has the right to secure a clawback if the IRR realised by NBII exceeds the IRR envisaged at Bid stage. This clawback may arise in a range of circumstances including but not limited to: higher take-up revenues, higher product pricing, lower operating costs, infrastructure rental costs being lower than projected and faster than projected take-up.
- An on-track or higher than anticipated IRR is indicative not only of positive commercial outcomes, but likely also of higher than projected demand and, as such, increased socioeconomic benefit of access to high-speed broadband.
- NBII is required to report updated financial forecasts for the project (including IRR) to DECC, based upon actual information up until the date of the forecasts and forecast assumptions based upon the latest information available.
- The latest available IRR forecast provided by NBII is from December 2023. The results show a marginal increase in the projected IRR compared with Bid model stage.[91] This suggests that the Subsidy amount agreed remains appropriate to finance the capital related investment costs and NBII establishment costs on a commercial basis.
- NBII attributes the main drivers in the movement in IRR to the higher than anticipated levels of take-up, leading to increased commercial revenues, offset by greater than anticipated overhead costs, primarily comprised of higher salaries/headcount.
- Based on consultation with DECC, it is possible that NBII may improve upon these forecasts due to assumptions made in relation to the increase of premises within the IA and the longer-term take-up assumptions. It should be noted that these are NBII-produced forecasts which the Evaluator has not provided an opinion on. The projected financial information is based on judgemental estimates and assumptions made by the management of NBII, about circumstances and events that have not yet taken place. Accordingly, there can be no assurance that the projected results will be attained. In respect of a gap funding contract of this nature, value for money can only be assessed with certainty at the end of the contract period, when the final outturn costs and benefits, net of actual clawback, are known.

[91] NBII financial information, provided by DECC

Subsidy per premises passed

Given that the total subsidy received to date for premises passed includes an element of upfront payments related to establishment and mobilisation milestones (i.e., not directly related to premises passed), it won't be possible to determine the subsidy per premises passed until the deployment period is complete. To answer this question, this analysis instead assesses the total deployment milestone subsidies both received to date and forecast to be received across the remainder of the deployment period (€1.48bn) and divides this by the total number of premises forecast to be passed by the end of the deployment period (560,436). This gives a subsidy per premises passed of €2,632.

EY has liaised with the DECC finance team on this figure; whilst it is likely that there will be a drawdown on conditional Subsidy for Premises Passed, it is expected to be less than the conditional Subsidy caps. It is too early to quantify this figure with confidence at this point in time.

Subsidy per premises connected

Unlike for premises passed, subsidies received per premises connected to the end of 2023 can be calculated, due to the subsidy being linked to the number and cost of premises connected. The subsidy per premises connected to the end of 2023 is shown in Table 6.3 below. The subsidy required per premises connected was €994 as at the end of 2023; this figure is lower than the expected subsidy per connection at Bid stage of €1,212, equating to a difference of 18%. The total subsidy per premises connected is forecast to rise in future years due to labour and materials inflation.

Table 6.3: Average subsidy per premises connected, to the end of 2023

Connections	Total at Bid	Total Actual
Total subsidy received	€61.11m	€72.31m
Total ACMP clawback	-	-€7.57m
Total subsidy	€61.11m	€64.74m
Average Subsidy Paid per connection	€1.14k	€0.91k

Source: NBID State aid Evaluation report, 2022, 2023, EY analysis of NBII financial information

6.3 Use of Physical Infrastructure

This section examines NBII's infrastructure usage and investment. It answers the following Evaluation Question:

2.11.1 How much existing infrastructure is NBII using as a percentage of total poles/ducts being used by NBII?

Poles

NBII's Bid model forecast total poles built by the end of 2023 to number 35,355, however, to date it has built only 8,233, a deficit of 27,122 (-77%). In addition, whilst it had planned to rent 307,233 poles, it is instead currently renting 284,857 poles (-7.3%), as shown in Table 6.4.[92] This means that deployment to date has been achieved using considerably fewer poles than planned. It also means that pole-related costs are now considerably lower than planned to date. NBII has so far invested 78.9% less in the development of new poles than it had originally planned, however, for the poles it has built, NBII has delivered a cost per pole that is 9% lower than planned. In addition, the reduction in pole development meant that NBII spent approximately 30% less on overhead cabling than planned. This information is drawn from NBII's 2023 management accounts. The ratio of poles built

[92] NBII's Management Accounts, 31 December 2023

to poles rented has fallen considerably short of the planned 90/10 split in favour of renting, the ratio is now 97/3.

Table 6.4: Total poles built and rented, and associated cost, by end of year 2023

	Planned	Actual	Difference	% difference
Poles built	35,355	8,233	-27,122	-77%
Poles rented	307,233	284,857	-22,356	-7%

Source: NBII Management Accounts, 31 December 2023

The key contributor to the lower than planned pole usage is primarily due to more network being delivered underground than planned. This occurred as a result of the infrastructure database upon which NBII based its high-level network design containing inaccurate/missing information. Where NBII had assumed that there were poles available, there was instead underground duct which had not been recorded in the database. This required NBII to move more network underground, using a mix of pre-existing OpenEir ducts, and new ducts built by NBII. The proportion of network delivered underground rather than overhead is now 44%, compared to the planned 24%.[93] This shift meant that less pole investment was needed than planned at Bid stage. However, it has also meant that more duct and sub duct was needed.

Ducts

To date, NBII has spent 130% more on duct-related Capex than planned, and 12% more than planned on Duct rental. The trend towards renting physical infrastructure rather than building is present here also, as NBII has built 52% less duct than planned and is renting 29% more.

Table 6.5: Total KM's of duct built and rented by NBII, and the associated cost, by end of year 2023

	Planned	Actual	Difference	% difference
Duct KM's owned (KM)	210	100	-110	-52%
Duct KM's rented (KM)	5,771	7,463	1,692	29%

Source: NBII Management Accounts, 31 December 2023

This decision aligns with the recommendation on page 16 of the State aid decision that NBII reuse suitable existing infrastructure in order to avoid unnecessary and wasteful duplication of resources. Total deployment costs to date are 8.8% higher than planned at Bid stage. The single largest line-item contributor to this is the cost of clearing blockages when installing ducts and sub-ducts, as NBII were required to clear more blockages than expected.

6.4 Commercial Investment in the Intervention Area

This section examines the impact that the granting of aid has had on commercial investment in the IA, in high-speed broadband access, or in general. It answers the following Evaluation Question:

2.11.2 Has the granting of aid affected commercial investment in the IA (in NGA or in general) beyond that envisaged by the NBP project?

As this section will show, some evidence exists that the NBP has led to an increase in private sector investment in high-speed broadband. The original NBP[94], announced in 2012, envisaged that state intervention would be required to connect over 750,000 households and businesses[95]. At that time,

[93] Based on EY analysis of NBII financial information
[94] https://assets.gov.ie/3659/031218155859-d8444baca01e49f29a9625ea23622792.pdf
[95] https://assets.gov.ie/180280/d74fb8b7-21b8-4bec-b6b4-a1deba8d56dc.pdf

it seemed unlikely that the private sector would deploy to these premises. Just under 700,000 households in Ireland are classed by the European Commission as being rural, highlighting that the original NBP was seeking to cover not only rural areas but also suburban areas where the cost challenges of deploying FTTP networks suggested that the private sector would not deploy in these areas.

However, the NBP process since its inception has arguably contributed to a greater focus by private sector providers on the economics of network rollout and how best to deliver more widespread coverage in Ireland. The evidence supporting this is that in the years following the initial announcement of the NBP in 2012, the number of premises classified as being in the IA decreased in size to c.535,000,[96] as a result of other WSP's increasing their investment. For example, between 2016 and 2019 OpenEir rolled out FTTP broadband to c.340,000 rural premises that were initially judged to be part of the IA.[97] This reduced the size of the IA and has meant that more rural homes could benefit from high-speed broadband earlier and without the need for state intervention.

The rollout of the NBP has also resulted in an increased number of RSPs providing services in the IA beyond the level originally envisioned, from the 47 originally targeted in 2020[98] to 59 in 2023, with more expected to begin providing services in 2024, as noted in Evaluation Question 2.5.1. By the end of 2020, 56 RSPs were in discussions to provide RSP services in the IA, with 29 RSPs confirmed. By the end of 2023 the number of RSPs that had signed contracts to provide high-speed broadband services to the IA had increased to 63, a 13% increase. While it is not possible to clearly identify causation, the speed of the NBP rollout in recent years is likely an important motivation for new RSPs deciding to provide services in the IA. This speed would not be possible without the State aid received by NBII.

The question of whether the granting of aid has contributed to an increase in commercial investment generally was answered through the Ipsos B&A survey, which directly asked businesses in the IA whether receiving an upgrade to high-speed broadband influenced their investment decisions. The answers to this question are shown in Table 6.6 below.

Table 6.6: Proportion of respondents whose investment decisions have been influenced by receiving high-speed broadband

Has receiving an upgrade to high-speed internet influenced your investment decisions?	Response %
Yes, significantly	11
Yes, somewhat	20
No	69

Source: Ipsos B&A Business Survey, March 2024

Almost one-third (31%) of IA businesses surveyed stated that the upgraded internet influenced their investment decisions either significantly or somewhat. Examples were not given for most businesses but those that did include investment in new software that was not previously usable, new operating systems and software that has facilitated remote working, and a planned expansion to a company's physical footprint. It is noteworthy that the businesses that had their investment decisions influenced by the upgrade, tended to be among the businesses experiencing the best all-round benefits of the upgrade. For example, 55% of these businesses had also experienced a reduction in costs associated with the upgrade compared to just 34% of businesses in the cohort whose investment decisions were not influenced, similarly, 53% had experienced new revenue streams or products as a result of the upgrade, compared to just 19% in the not influenced cohort.

[96] Note: the number of premises in the IA has since risen to c.560,000
[97] https://www.openeir.ie/home-2/
[98] Based on the 2020 NBII RSP onboarding report

6.5 Cost Benefit Analysis

The NBP rollout has been underway for four years as of January 1st, 2024. In that time over 200,000 IA premises have been passed, and more than 65,000 have been connected. Previous studies[99] have estimated the expected socioeconomic value of the programme. However, given the evolution of macroeconomic and demographic updates, the widespread uptake in online service usage and growth of remote/hybrid working, it is likely that these costs and benefits have evolved.

The Evaluator undertook a high-level reflection on how the programme's socioeconomic VfM is likely to have been impacted by evolving technical parameters in line with the Department of Public Expenditure's Infrastructure Guidelines, demographic and macroeconomic trends, Ipsos B&A survey findings and price uplifts. It is likely that the eBCR of the NBP has increased since the original 2019 Cost Benefit Analysis Report, where the eBCR was estimated to be 1.43.[100] However, a detailed CBA exercise, incorporating analysis of how key macroeconomic, technical and demographic parameters have evolved since the previous CBA was undertaken, would be required to confirm the scale of this. The following rationale, based on publicly available data and the Ipsos B&A survey supports this premise.

- Some of the key benefits associated with the NBP are likely to represent higher value for society than previously projected. Residential benefits are likely to have increased in this period, such as the widespread nature of remote working post-Covid. The original NBP CBA (November 2019) assumed that 20% of white-collar workers in the IA would work remotely for 20% of the time. The Ipsos B&A survey found a wider prevalence, with 66% of white-collar workers working remotely for 52% of the time. This is consistent with a national survey in November 2021 of Irish employees across a wide range of sectors that found that 65% of respondents were working remotely, despite just 23% working remotely before Covid-19.[101]
- In addition to the time savings resulting from reduced journeys (to work and to avail of services such as GP appointments), there is a significant socioeconomic benefit from reduced carbon emissions. Since the previous CBA, the shadow price of carbon[102] has increased from €46 per tonne to €322.[103] The NPV of reduced CO_2 emissions will reflect this increase.
- IA households are likely to be benefiting from cost savings stemming from access to communications bundling. IA households that have not yet been passed have limited or no access to communications bundling, whereby two or more communications products (e.g., Broadband, TV, streaming services etc.) are provided by the same RSP at a discounted price compared to purchasing them separately. Based on comparison information drawn from the website Switcher.ie,[104] the savings associated with gaining access to bundling are estimated to be worth €5 per month, or €60 per year.
- Non-residential benefits are also likely to have increased. High-speed, reliable broadband enables businesses to offer new services to new markets, both within Ireland and to the rest of the world. The main non-farm enterprise benefit stems from increased remote working; while research into the effects of remote working is ongoing, available studies indicate that employees are more productive when offered the opportunity to work from home.[105] Reduced absenteeism is likely to be a further benefit, though more contextualised research is required. It is also noteworthy that approximately 80% of white-collar workers commute from the IA to areas outside of the IA for work; these non-IA enterprises also stand to benefit from the NBP rollout.

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[99] Specifically, the November 2019 PwC Cost Benefit Analysis model and the 2022 National Broadband Plan: Benefits of high-speed broadband, EY.

[100] November 2019 Cost Benefit Analysis model, PwC.

[101] Central Statistics Office, (May 2020). Pulse Survey - Our Lives Online - Remote Work November 2021. https://www.cso.ie/en/releasesandpublications/fp/fp-psolo/pulsesurvey-ourlivesonlineremoteworknovember2021/introductionandsummaryofmainresults/

[102] This metric reflects the true socioeconomic cost of carbon usage to society, including the negative environmental externalities

[103] https://www.gov.ie/pdf/?file=https://assets.gov.ie/286767/89f0c763-708f-443e-8ccd-0fb2cb839f31.pdf#page=null

[104] https://switcher.ie/?gad_source=1&gclid=EAIaIQobChMIqPrNsPe0hQMVPZmDBx2UIAusEAAYASAAEgJLYPD_BwE

[105] https://www.nber.org/system/files/working_papers/w27612/w27612.pdf

- Increased prevalence of remote working across Ireland also has the potential to widen the talent pool for businesses based in the IA, as employees no longer need to be physically located there. The available data supports this, with 20% of enterprises surveyed by Ipsos B&A noting that they increased employment levels due to the high-speed broadband upgrade. Businesses outside the IA are also likely benefiting this increased talent pool and flexible working opportunities.
- The high prevalence of farm enterprises in the IA means that any benefits generated for this sector are a key consideration to capture. These benefits are likely to be realised over time as adoption of new technologies increases and skills improve. Further research is required on attitudes among farm enterprises in the IA towards high-speed broadband.

The extent to which these benefits – and any additional ones – are being realised will become clearer as the rollout progresses, but in some cases, there will be a significant time lag before benefits materialise (such as improved education outcomes of learners). This is applicable to programmes such as the SCP initiative, affording high-speed broadband access to schools throughout the IA. Such benefits are not readily monetisable nor likely to be apparent in the short to medium term; these can be more thoroughly explored in future evaluations.

7 Conclusions and observations

This Interim Evaluation Report has found that the NBP rollout to date represents a significant step in Ireland's journey towards bridging the digital divide by providing location-agnostic ubiquitous access to high-speed broadband. The evaluation found that tangible progress has been made in delivering the scheme, and that it has resulted in numerous direct and indirect benefits in the IA, such as improved RSP competition, increased employment and enterprise productivity, and higher quality of life for IA households. The evaluation answers 19 pre-determined questions, agreed between DECC and the EC, and provided by DECC at the outset of the Interim Evaluation Review process, which can be grouped into four overarching categories: direct effects, indirect effects, effects on competition, and proportionality and appropriateness.

7.1 Direct effects

The examination of direct effects has identified advances in coverage and service quality achieved as a result of the State aid. NBII has made observable progress in terms of coverage, with 205,638 premises passed by the end of 2023, which accounts for 36.7% of the IA. NBII is therefore ahead of its remedial targets for 2023 of 33.01% and is on course to achieve total coverage by the end of the deployment period (October 2027). NBII should remain focussed on the continued deployment of the network to ensure ubiquitous high-speed broadband coverage for all premises within the IA by this date. NBII should also continue to mitigate risks and manage issues which impact the pace of the network deployment, supported by DECC where appropriate.

NBII has also achieved notable growth in connections to date, with 65,121 connections as of December 31st, 2023 (a penetration rate of 31.7%), exceeding both its Bid and remedial targets in 2022 and exceeding its Bid target of 52,630 by the end of 2023. It has also connected all 955 SCPs, which are expected to deliver benefits to local communities. The robust take-up rate achieved is in part due to the demand stimulation activities undertaken by NBII. With connection demand expected to grow from 2024 onwards, NBII should seek to ramp-up its capacity to meet the demand for the heightened volume of new connections.

NBII has also been successful in delivering high levels of service quality to the premises it has connected, delivering broadband speed and reliability in the IA that is equivalent to, and often surpassing, the levels experienced in commercial areas. Download speeds have achieved 100.1% of anticipated levels based on sold packages, averaging 681.9 Mbps, while upload speeds have reached 104.7% at 71.4 Mbps.

In addition to its effects on coverage and service quality, the State aid has also enabled NBII to become the third largest WSP in Ireland, as measured by total subscribers. This was achieved through investment in passing and connecting premises in the IA. The total average cost of passing and connecting a premises in the IA (€2,156) compared to the cost in commercial areas (ranging from €597 to €1,053), supports that these investments would not have been financially viable without State aid.

7.2 Indirect effects

The NBP has resulted in positive indirect effects on households and businesses in the IA, as well as on how government policy is developed and delivered. Access to high-speed broadband has resulted in tangible improvements to the lives of IA residents, with 49% of respondents to the Ipsos B&A Household Survey noting that the upgrade had improved their quality of life. The survey also found that the upgrade enabled IA residents to communicate more with friends and family, improved access to education and employment opportunities, and increased the entertainment options available to residents.

Similarly, the Ipsos B&A Business Survey found that upgrading to high-speed broadband was providing benefits to enterprises in the form of increased productivity levels, improved

communication, and lowered costs. For example, 58% of businesses surveyed in the tourism and hospitality sector reported an increase in business activity as a direct result of upgrading to high-speed broadband. NBII, alongside DECC, Fáilte Ireland, Tourism Ireland and local tourism boards should seek to promote the benefits of high-speed broadband to the tourism sector, particularly to micro businesses and SMEs. Tourism stakeholders should promote the potential of innovative online tourism offerings, including the development of websites, social media presence, and online booking systems. The NBP has also aided the realisation and delivery of public policy priorities, having enabled and progressed key government policies, seven of which were explored in this evaluation. These policies would be less effective without the infrastructure made possible by the NBP. For example, the vision of the Remote Working Strategy is being realised by the ability of IA residents to avail of the opportunity to work from home.

7.3 Effects on competition

Competition within the IA RSP market has notably increased due to the NBP, with a rise in the number of RSPs offering services in the IA from 30 in 2021, to 59 in 2023. This increased competition is reflected in the fact that approximately 51% of IA businesses that availed of high-speed broadband services switched RSP post-upgrade. The NBP has also ensured that end-users in the IA face similar prices for retail broadband services as those in the commercial area, which has benefited customers and ensures a level playing field for RSPs. IA households that connect to high-speed broadband are also now able to avail of cost savings from communications bundling. IA households that have not yet been passed have limited or no access to communications bundling, requiring them to purchase TV and broadband separately; the savings associated with gaining access to bundling are estimated to be worth €5 per month, or €60 per year.

7.4 Proportionality and appropriateness

The evaluation also considered the proportionality and appropriateness of the NBP, examining the size and appropriateness of the subsidies received, the use of physical infrastructure, and assessing whether the NBP has led to any further increases in commercial investment in the IA. The subsidies received by NBII per premises passed (€2,632) and connected (€994) were assessed as being proportionate. They enabled NBII to deliver investment in passing and connections that would have otherwise been unviable in lieu of the subsidies, without resulting in excess profitability for NBII. NBII should continue its efforts to mitigate and manage costs, in particular costs associated with contractual risk share mechanisms which would result in contingent subsidy amounts being required. DECC should continue to ensure that robust governance is in place across risk share mechanisms where there is less commercial incentive for NBII to ensure cost efficiency.

The evaluation also found that NBII is renting a greater proportion of its physical infrastructure than planned, renting 97% of the poles it uses (compared to a planned 90%) and renting 29% more duct than planned, while building 52% less. This finding aligns with the recommendation on page 16 of the State aid decision that NBII reuse suitable existing infrastructure in order to avoid unnecessary and wasteful duplication of resources.

7.5 Further insights

This evaluation has also found that there is an observed shortfall in the availability of comprehensive data regarding the national coverage of high-speed broadband. This gap underscores a need for enhanced strategic planning and systematic documentation to track progress and ensure that Ireland remains on course to fulfil the Digital Decade's target within the stipulated time frame. Furthermore, the Ipsos B&A surveys have identified benefits and insights that would not otherwise have been evidenced. These insights should be harnessed by conducting an equivalent exercise in future evaluations. This will enable the survey outputs from this Interim Evaluation Review to form a 'baseline', against which future results can be tracked and compared. To achieve this, the same control-treatment design should be employed, with similar question topics and design to enable comparability. This will enable statistical analysis techniques such as Difference in Differences, that rely on time series data points from the two cohorts, to be conducted, which will help to isolate causality.

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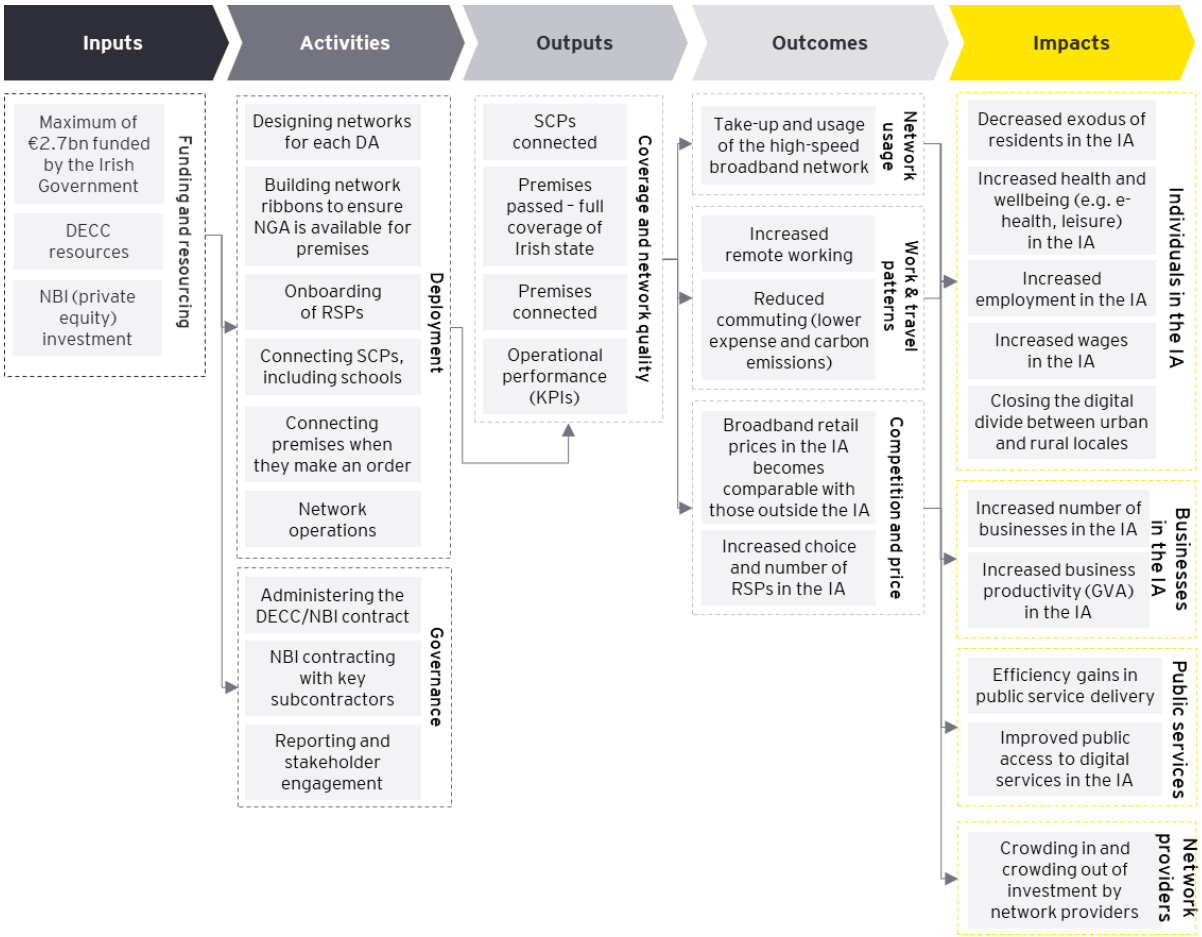
Appendix B Theory of Change

Figure B. 1: Revised Theory of Change for the National Broadband Plan



Source: EY analysis, Theory of Change for the National Broadband Plan

Appendix C Data sources

Table C. 1: Data sources for the Interim Evaluation Review

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis

1.1.1 Has the aid resulted in ubiquitous Next Generation Access (NGA) coverage for all premises in the Intervention Area (IA) by the end of the Rollout Period?
 	
1.1.2 How quickly has the rollout occurred (number of premises passed)?
	• Total number of premises passed by NGA services in the *IA, split into categories (e.g., residential, commercial, Strategic Community Points)*
	• Coverage level: Total premises passed as a percentage of total IA premises
	• Comparator: How does the rollout achieved compare to:
	  • the beneficiary's target rollout and
	  • the Department's target of 100% by end of year 7
	  • Digital Agenda target: Total number of premises passed by NGA services as a percentage of total premises
		• Data on premises passed and connected, provided by DECC, NBII
		• NBII Bid model
		• NBII Public Targets, 22 February 2023
		• NBII State Aid Evaluation Reports 2020-2023, NBII
		• SCP Information Document, DECC
		• Parliamentary Questions: Broadband Infrastructure Debate – Minister of State at the Department of the Environment, Climate and Communications, 20th March 2024
			N/A	N/A	N/A

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
1.2.1 To what extent is the NGA network in the IA being used by residential, business and other end-users: a. What is the take-up in terms of total subscriber numbers? b. What is the take-up by subscriber type? c. Has the beneficiary successfully used demand stimulation activities to drive take-up in line with its targets? d. What volume of data is being used?	• a & b. Number of premises/NBII take-up • Total number of premises connected by deployment area (DA) (premises will be split into categories, e.g., residential, commercial, mixed use, Strategic Community Points). • Penetration level: Total number of premises connected as a percentage of total premises passed. • Take-up by deployment area. Compare take-up in different deployment areas where different demand stimulation activities were undertaken. • a & b. Take-up comparison • How does take-up compare with (a) the beneficiary's target take-up and (b) the Department's take-up assumptions? • How does take-up in the IA compare to take-up of NGA services in comparable parts of the rest of the country? • c. Comparator • Compare take-up in different deployment areas where different demand stimulation activities were undertaken. • d. Data Usage • Total data usage (across network) • Average monthly data usage in IA (per residential connection and per business connection) • Compare data usage in the IA to data usage over NGA networks in comparable parts of the rest of the country.	• Data on premises passed and connected, provided by DECC, NBII • NBII FRP • ComReg QKDR All Data Q4 2023 • 2023 CDB Implementation Plan • Core Data and NBII Marketing Mix Model 2023 • Ipsos B&A NBP Household and Business Surveys, March 2024 • State Aid Evaluation Reports 2020-2023, NBII • SCP Information Document, DECC • Parliamentary Questions: Broadband Infrastructure Debate – Minister of State at the Department of the Environment, Climate and Communications, 20th March 2024	• Premises connected per deployment area • Non-IA number of premises passed, to calculate take-up rate nationally • Demand stimulation activities at a local level for comparison	• Instead used county data as the most local level of analysis • The overall percentage of premises connected to high-speed broadband has been used for comparison instead • Demand stimulation activities are considered at a national level, with attributable impacts still identifiable	• Minimal impact as county level data is still relatively detailed • Minimal impact as the percentage of premises connected nationally is still comparable to the IA • Minimal impact as demand stimulation activities, their effectiveness and value for money are still deducible from national impacts

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
1.3.1 Has the aid resulted in the delivery of high quality and reliable services in the IA, which are in line with commercial areas, measured by: a. average download and upload speeds (of least expensive NBPco product); and b. fault repair times?	a. Comparison of mean download and upload speeds of least expensive NBPco product v equivalent benchmarked product in commercial areas b. Comparison of number of days to repair faults v commercial areas (measured in days)	• Data on premises passed and connected, provided by DECC, NBII • NBII State Aid Evaluation Reports 2020-2023, NBII • ComReg QKDR All Data Q4 2023 • OpenEir KPI Report Q3 2023 • Ipsos B&A NBP Household and Business Surveys, March 2024	• Download and upload speeds split between counties • Download and upload speeds specific to least expensive product	• The analysis used IA-wide data and national data to compare • The analysis aggregated all broadband packages for an overall speed instead of splitting by broadband package	• Minimal impact as evaluation question still answered, only missing additional detail • Medium impact as cannot view the speeds by broadband package, but the aggregated data still offers valuable insight into broadband speeds
1.4.1 Has the aid had a material effect on the wholesale market position of the direct beneficiary? 1.4.2 Has the granting of aid affected the viability of investments in the IA compared to investments in the commercial areas?	Compile financial analysis of the aid beneficiary (NBPco) using key financial performance measures and metrics, e.g., • total revenues, fixed wholesale revenues • return on capital • productivity (employees) • network indictors e.g., geographic reach of network Comparators: SIRO and OpenEir Compare the financial models of market operators who have invested in commercial areas (i.e., OpenEir 300k rural plan) to the financial model of NBPco by comparing the NPV or costs associated with investments in the different areas to reveal the viability of investments	• NBII Management Accounts • ComReg quarterly key data reports • Public announcements by WSPs of their investment plans.	• Detailed OpenEir and SIRO financial information, including investment in premises passed and connected.	• The analysis relied heavily on publicly available WSP investment information	• Without clear and certain WSP investment data for OpenEir and SIRO it will be difficult to be confident that the investment per premises comparison is completely accurate,

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
2.1.1 Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements to the everyday lives of IA end-users? and b. Affected choice of location to live?	a. Percentage of residential end-users in IA who: • reported time savings from NGA broadband • reported being able to work from home as a result of NGA broadband • who reported improvements in efficiency of various work-related or lifestyle activities (e.g., farming) b. Number and percentage of residential end-users that have either moved to or considered moving to the IA due to improved broadband services.	• Ipsos B&A Household Survey, March 2024	N/A	N/A	N/A
2.2.1 Has the granting of aid delivered NGA services in the IA which have: a. Led to improvements in day-to-day activities (e.g., productivity levels and transaction costs) of IA business users? b. Affected choice of business location?	a. Percentage of business end-users within the IA who: • reported time savings from NGA broadband • reported increased productivity as a result of NGA broadband • reported lower transaction costs as a result of NGA broadband b. Number and percentage of businesses that have either moved to or considered moving to the IA due to improved broadband services.	• Ipsos B&A Business Survey, March 2024	N/A	N/A	N/A
2.3.1 Has the granting of aid delivered NGA services in the IA which have led to changes in the tourism sector in the IA?	• Increase in the number of accommodation bookings in the IA • Percentage of tourists who report a positive experience due to access to NGA services. • Increase in the number of tourists visiting the IA	• Ipsos B&A Household and Business Surveys, March 2024	Actual change to number of bookings and number of tourists in the IA	The survey provided perceived and reported versions of the missing data to supplement this section	Medium impact as perceptions to these changes are less robust. Also, the impact of Covid-19 will have affected perceptions. Yet nevertheless the perceptions still offer valuable insight to the change in tourist activity in the IA

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
2.4.1 Has the granting of aid delivered NGA services in the IA which have resulted in a change in the provision of government services delivered nationally or locally within the IA?	• Number of new or modified government initiatives post introduction of NGA services. • Increase in the usage of government services that are now available or enhanced due to NGA services. • Percentage of citizens reporting improved satisfaction with government services due to better internet connectivity.	• Publicly available Irish Government policy information. • Ipsos B&A Household and Business Surveys, March 2024	N/A	N/A	N/A
2.5.1 Has the granting of aid changed the way the Wholesale Service Providers (WSPs)/Retail Service Providers (RSPs) provide services in the IA (e.g., geographic reach)?	• Number of WSPs/RSPs whose customer base has increased as a result of NBPco offering services in the IA • Market shares of each retail provider in IA: (subscribers per retail provider/Total subscribers) • Number of new services or packages introduced by WSPs/RSPs	• RSP Onboarding File 2020-2023, NBII • ComReg QKDR All Data Q4 2023 • Data on premises passed and connected, provided by DECC, NBII	N/A	N/A	N/A
2.5.2 Has the aid affected the business of basic broadband providers in the IA?					
2.6.1 Does the granting of aid result in retail prices for NGA broadband in the IA that are in line with commercial areas?	Comparison of retail price of least expensive standalone broadband product in the IA vs equivalent benchmarked product in commercial areas	• NBII network map • Switcher.ie • Interviews with DECC, NBII and RSP stakeholders	N/A	N/A	N/A

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
2.7.1 Does the granting of aid result in end-users of NGA broadband in the IA having a choice of provider?	• Number of RSPs offering NBPco products in each deployment area • Market shares of each retail provider in IA: (subscribers per retail provider/Total subscribers)	• RSP Onboarding File 2020-2023, NBII • ComReg QKDR All Data Q4 2023 • Data on premises passed and connected, provided by DECC, NBII • Ipsos B&A Household and Business Surveys, March 2024 • Interviews with DECC, NBII and RSP stakeholders	N/A	N/A	N/A
2.8.1 Does the granting of aid for the IA have an impact on competition in the national fixed broadband market?	• Market shares by operator of the national fixed NGA broadband market based on subscriptions: (subscribers per retail provider/Total subscribers) • Compare retail market shares in IA to retail market shares in commercial areas •	• RSP Onboarding File 2020-2023, NBII • ComReg QKDR All Data Q4 2023 • Data on premises passed and connected, provided by DECC, NBII • Ipsos B&A NBP Household and Business Surveys, March 2024 • Interviews with DECC, NBII and RSP stakeholders	Market shares of RSPs in non-IA for high-speed broadband only	The analysis used national market shares for all fixed broadband	Medium impact as less of a direct comparison between IA and non-IA, yet given the dominance of few RSPs, the impact on data is likely minimal and therefore comparison is still effective

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
2.9.1 How does the granting of aid for the IA impact on basic broadband providers and the provision of basic broadband services?	• Market shares by operator inside/outside IA • Take-up rates •	• RSP Onboarding File 2020-2023, NBII • ComReg QKDR All Data Q4 2023 • Data on premises passed and connected, provided by DECC, NBII • Ipsos B&A NBP Household and Business Surveys, March 2024 • Interviews with DECC, NBII and RSP stakeholders	Data for solely basic broadband (<30 Mbps) is minimal	Given this evaluation is assessing the rollout of high-speed broadband, this question has also used insight for all broadband speeds below 500 Mbps as a comparison	Minimal impact as the effect on the provision of broadband slower than high-speed services has still been assessed, supported with focus on both basic broadband and other speeds below 500 Mbps
2.10.1 How much subsidy is required: a. per premises passed; and b. per premises connected?	• Cost per premises passed: Total subsidy payments received by NBPco/premises passed • Cost per premises connected: Total subsidy payments received by NBPco/premises connected • Total cost per premises based on deciles (to show most expensive premises to connect) •	• NBII management accounts 2020-2023	N/A	N/A	N/A
2.11.1 How much existing infrastructure is NBPco using as a percentage of total poles/duct being used by NBPco?	• Number of existing poles used by NBPco (in the IA, Transit Area and Blue Area)	• NBII management accounts 2020-2023	N/A	N/A	N/A

Question	Indicator	Data Source	Missing Data	Alternative Data	Impact on Analysis
2.11.2 Has the granting of aid affected commercial investment in the IA (in NGA or in general) beyond that envisaged by the NBP project?	• Distance (in metres) of existing duct used by NBPco (in the IA, Transit Area and Blue Area) • Usage of other existing infrastructure	• Ipsos B&A Business Survey, March 2024 • Publicly available information on OpenEir investment • Desk based research to determine whether additional investment had occurred.	N/A	N/A	N/A

Appendix D SRFT Aims, Objectives and Required Methods

The key aims, objectives and required methods of the first Interim Evaluation Review were outlined in the SRFT. These are reflected below. The key aims and outputs were the following:

a. **Review progress**: To explore the efficiency and effectiveness of the procurement design and relevant process from contract award to the end of 2023.
b. **Scope methodologies**: Determine appropriate data sources and methodologies to explore the impact of the programme. This should cover pilot studies which scope suitable counterfactuals and design approaches to explore the specific evaluation questions set out in the baseline evaluation plan. The scoping and initial undertaking, including pilot studies, would be to create a baseline to inform the second Interim and the Final Evaluation Reports against the programme.
c. **Prepare an Interim Evaluation Report**: Informed by the methodological scoping findings and progress review, conduct a first round of evaluation for the programme.

The key objectives are the following:

a. To conduct a progress review to explore the effectiveness of the NBP rollout and implementation up to the end of 2023.
b. To undertake scoping activities to develop future research design and to conduct required baselining activities to quantify the impact of the NBP against its outcomes.
c. To support the continued development of the Department's narrative around the impact from improved connectivity and to produce estimates of the NBP's impact through an interim evaluation report.
d. To support preparations for future scrutiny such as from external bodies, i.e., Oireachtas Public Accounts Committee and Select Committees, Comptroller & Auditor General, Teachtaí Dála (TDs) and other external stakeholders.

Key methods requested in the SRFT include:

Econometric Analysis

i. Analysis of NBP management information data, covering up to the end of 2023, provided by the Department/NBII together with secondary data (e.g., Central Statistics Office reports on connectivity, ComReg quarterly reports, etc.) to explore the impact of the programme on connectivity. A key component to outcomes and public subsidy evaluation.

Primary Research

i. Surveys or telephone interviews across stakeholders and exploring counterfactual for future evaluation and comparator. It is anticipated that telephone interviews (c. 150) might be most suitable for establishing the counterfactual for businesses within the Intervention Area, while surveys (c. 500) would allow for a comparison of the treatment and control group of individuals. The Department is open to alternative proposed approaches and rationale for same.
ii. Enhanced indirect benefits research is proposed for Stage 2 of the NBP evaluation which is currently scheduled for year 8 of the programme. A baseline is required through this evaluation process to enable benchmarking.

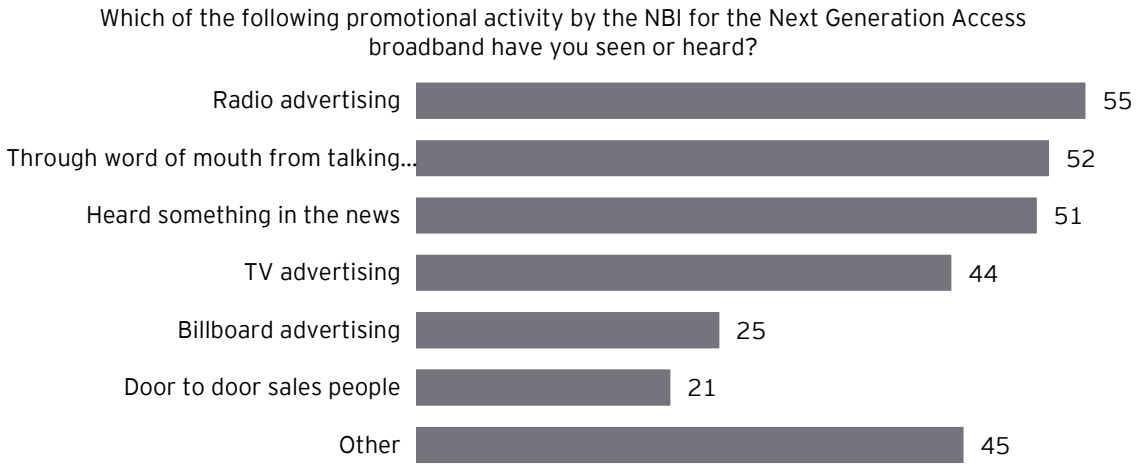
Quantitative Analysis

i. Financial analysis of National Broadband Ireland (NBI) financial reports and take-up forecast modelling (take-up reporting) to estimate and compare predicted internal rates of return (IRR) for the contract against the costs of capital.
ii. Market analysis across network operator coverage across the Irish State followed by a descriptive analysis of the Intervention Area.
iii. Understanding and analysis against wholesale network providers' services across the Intervention Area.

Appendix E Awareness and perceived effectiveness of demand stimulation activities

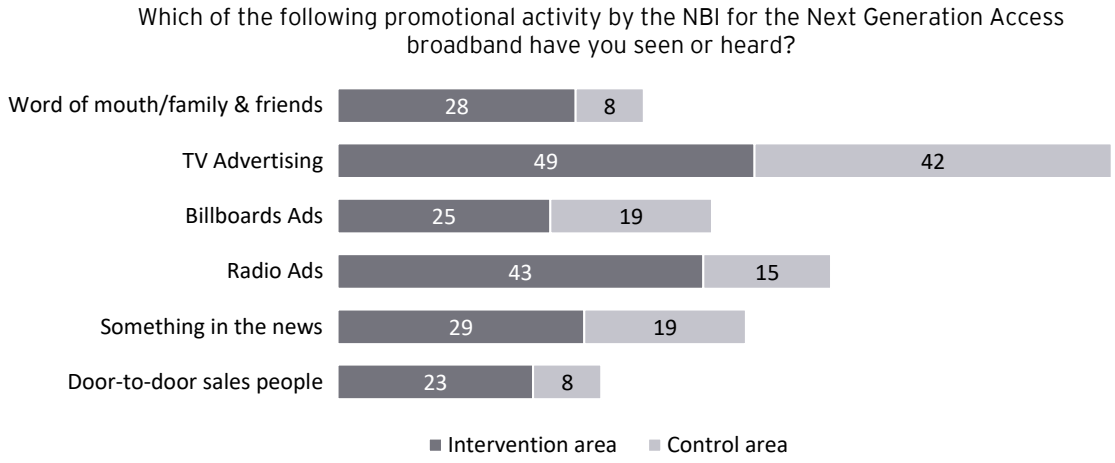
The charts below represent responses from the Ipsos B&A Household and Business Surveys. They cover the awareness of NBII promotional activities and the perceived effectiveness in encouraging take-up of high-speed broadband from both households and business.

Figure E. 1: Knowledge of NBII promotional activity in the intervention and control area by businesses



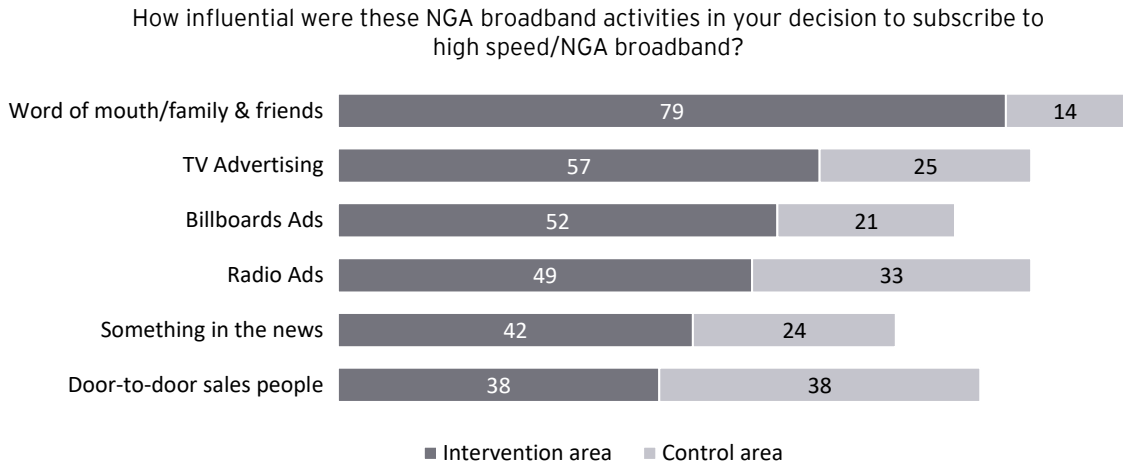
Source: Ipsos B&A NBP Business Survey, March 2024

Figure E. 2: Knowledge of NBII promotional activity in the intervention and control area by households



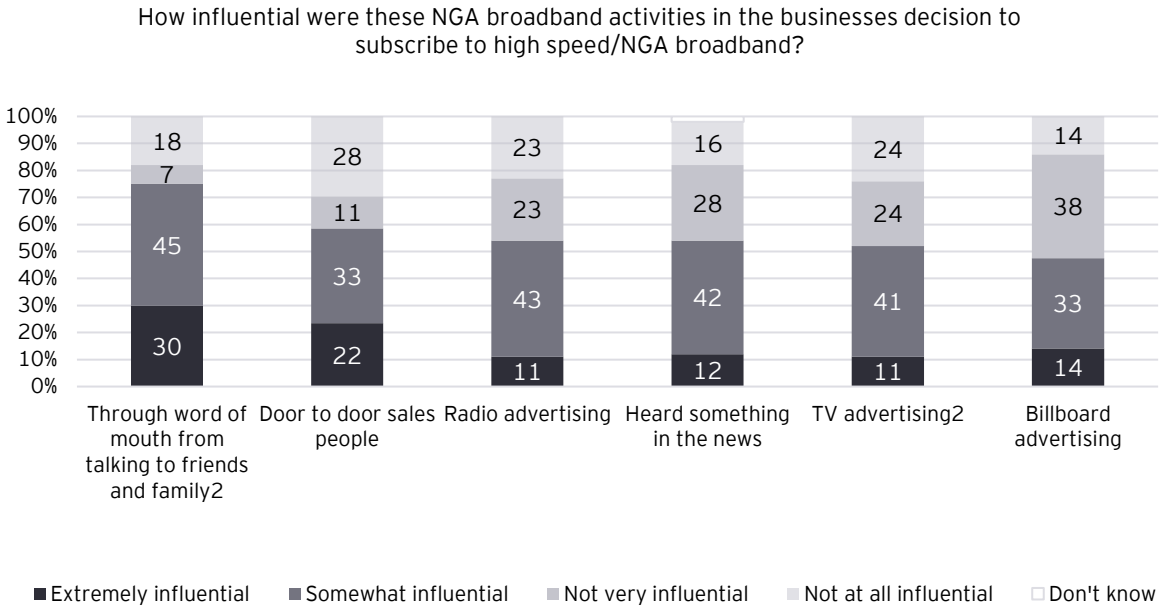
Source: Ipsos B&A NBP Household Survey, March 2024

Figure E. 3: Perceived effectiveness of promotional activity in the intervention and control area by households



Source: Ipsos B&A NBP Household Survey, March 2024

Figure E. 4: Perceived effectiveness of promotional activity by businesses



Source: Ipsos B&A NBP Business Survey, March 2024

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