TELSTRA CORPORATION LIMITED

Submission to the Productivity Commission's 5-year Productivity Inquiry: Australia's data and digital dividend

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List of Abbreviations

ACCC	Australian Competition and Consumer Commission
APEC	Asia-Pacific Economic Cooperation
AI	Artificial Intelligence
AR	Augmented Reality
ARPU	Average Revenue Per Unit
BBM	Building Block Model
CALD	Culturally and Linguistically Diverse
CCA	Competition and Consumer Act (2010)
CDR	Consumer Data Right
CVC	Connectivity Virtual Circuit
DRCF	Digital Regulation Cooperation Forum
DP-REG	Digital Platform Regulators Forum
FY	Financial Year
GDP	Gross Domestic Product
GVA	Gross Value Add
ICT	Information and Communications Technology
IoT	Internet of Things
IRR	Internal Rate of Return
LEO (Satellite)	Low Earth Orbit
MBSP	Mobile Black Spot Program
ML	Machine Learning
MNO	Mobile Network Operator
MVP	Minimum Viable Product
NAB	National Australia Bank
NDIS	National Disability Insurance Scheme
NBN	National Broadband Network
nbn (co)	national broadband company limited
NPPU	Net Payments Per User
OECD	Organisation for Economic Cooperation and Development
OTT	Over the Top
RBA	Reserve Bank of Australia
RCAID (Telstra)	Risk Council on AI and Data
RCP	Regional Connectivity Program
RKR	Record Keeping Rules
RSP	Retail Service Provider
SAU	Special Access Undertaking
SoCI	Security of Critical Infrastructure
SMS	Short Message Service
STEM	Science Technology Engineering Maths
TSSR	Telecommunications Sector Security Reforms
USG	Universal Service Guarantee
USO	Universal Service Obligation
U3A	University of the Third Age
VR	Virtual Reality
WACC	Weighted Average Cost of Capital
WEF	World Economic Forum

EXECUTIVE SUMMARY

The telecommunications sector plays a critical role in delivering the infrastructure and digital technology needed to realise the economic gains that are expected to flow from the digital economy. As Australia's leading telecommunications provider, Telstra is committed to ongoing investment in its network and technology platforms to ensure Australian businesses and consumers have access to the digital technology resources that will help support the productivity uplift that is essential for our economic and social well being. We believe it's important that the final report give prominence to the role of the telecommunications sector in delivering the future data and digital dividend.

Investment in telecommunications infrastructure is critical

The ongoing demand for digital connectivity requires continued investment in underlying infrastructure. The way technology is delivered to the end-user is critical in realising the productivity gains from the digital economy. The pandemic and post-pandemic business and healthcare environments demonstrated the role of digital communications and systems in the economy that has helped to facilitate structural changes to business and service models across a range of industry sectors highlighted by the Productivity Commission. The benefits of digital communication and enabling infrastructure were highlighted during the pandemic where the Australian economy performed above other OECD economies. This was in part due to the technology which enabled businesses to adapt to the changing and uncertain environment. The use of digital communications during that time have resulted in transformation across a range of industry sectors, including healthcare, education, and retail. However, to maintain this growth and transformation, ongoing investment will be required in Australia's digital communication infrastructure.

A key driver of Australia's low speed take up is linked to NBN pricing and service standards

The Productivity Commission highlights that Australia's internet coverage is high, but speeds are relatively low, which has largely been driven by high NBN pricing. nbn co's wholesale pricing has led to significant under-utilisation of the NBN. In addition to this there is a need to address service quality issues that hamper customers' use of the NBN by uplifting baseline service standards to meet customer needs and expectations. Forty per cent of fixed premises can attain 1 Gbps speed, however less than 1 per cent of customers take up these speeds. There is a need to reduce barriers to investment and innovation, and a suitable regulatory framework that aligns with a NBN pricing regime that provides certainty and less complexity. Without appropriate policy, regulatory, service and price settings, Australia will fail to achieve its digital transformation ambitions.

Digitisation and ensuring access to telecommunications technologies are inclusive will deliver significant economic benefit

Enhanced digital adoption will yield significant social and economic benefits such as improved productivity, quality of life, competitiveness, innovation, and job creation. In healthcare for example, digitisation will provide benefit to the States and the Commonwealth by improving efficiency, reducing unnecessary hospitalisations, and costs associated with chronic and complex disease management. As one of the key investors in telecommunications infrastructure and digital health services in Australia, Telstra has assisted businesses and health and aged care providers to digitise their processes in response to COVID-19, including end-users' continued access to reliable internet services. Ubiquitous and equitable connectivity is essential in realising the full potential of a digital economy, one that supports the inclusion of all citizens and removes barriers to accessing digital infrastructure, and technology. We have a shared interest with government in ensuring that Australia meets its digital transformation ambitions.

Ensure Regional Australia is digitally connected

For Regional Australia to reach its full digital productivity potential it will be critical to ensure investment by industry is complemented by the right policy framework and the right approach to government co-funding. That approach needs to be based on the specific geographic, social, and economic needs of the regional communities under consideration – i.e., place based. This requires increased coordination between the Australian state and territory governments, industry, and regional stakeholders to harness the power of private and government investment to drive optimal outcomes for regional communities.

In this respect, Telstra supports the 2021 Regional Telecommunications Independent Review Committee (RTIRC) recommendation to develop a long-term investment and planning framework for digital infrastructure including increased coordination and investment between the Australian, state and territory governments and other relevant sectors to address regional connectivity. We also endorse the RTIRC recommendation for continued and enhanced government investment initiatives, given the significant and enduring economic challenges of telecommunications deployment in regional and remote Australia.

Improve clarity on how investment decisions are made

In considering various investments made by governments in digital infrastructure in recent times different initiatives will target different outcomes and are not always readily comparable. A 'change of technology' program managed by nbn co is for example considerably different from the Mobile Blackspot Program (MBSP). With mobile coverage for example, there are limitations to the extent to which new coverage can be established in Australia given the breadth of landmass and population distribution. Where mobile coverage does not exist today those locations will likely be uneconomic to serve through standalone investment — where co-investment pathways cannot be found, other solutions, such as those involving the use of satellite technologies, may be more appropriate.

Regarding health technology, we note that any investments must have a clear link to sustainable outcomes for all key system participants, including consumers, health and aged care providers, the vendors that deliver their technology services, and the governments that fund and administer care. Clarity on the productivity and other benefits to various system participants is necessary for those actors to successfully implement effective changes in such a complex system.

Invest in developing cyber-security

Uplifting the security and resilience of critical infrastructure through appropriate and proportional critical infrastructure reforms is essential. Telstra invests substantial resources to ensure its critical infrastructure stands up to external and internal threats and consider all hazards in our resilience and risk planning across regional and metropolitan areas of the country. Telstra has a mature cyber security posture and considers the value in regularly monitoring cyber resilience and defences. We welcome the Government's objective of uplifting the security and resilience of critical infrastructure through appropriate and proportional critical infrastructure reforms, however government funding will be necessary to ensure this is achieved. Telstra believes that cyber security education needs to be built into adjunct technical areas like engineering and IT and in non-technical areas like health, law and management.

INTRODUCTION

Telstra welcomes the opportunity to provide this contribution to the Productivity Commission's consultation on the two interim reports as part of its 5 Year Productivity Inquiry. In our submission, we focus solely on the second of the two reports, the **5 Year Productivity Inquiry: Australia's data and digital dividend** (hereafter, the **interim report 2**).

Our submission draws on our knowledge and experience as Australia's largest telecommunications company with a portfolio that builds and operates telecommunication networks covering fixed line, mobile, internet, subscription television in addition to entertainment. Telstra operates within the Information Media and Telecommunications sector[1] and through our significant investments we are a major provider of enabling technology for the delivery of digital services and data. Over the 7 years to end FY22 Telstra has invested $11bn in our mobile network nationally with $4bn of this invested in our regional mobile network. Enabling technology will assist in facilitating growth of the digital economy, which involves the economic activity that results from the billions of everyday online connections among people, businesses, devices, data, and processes.[2] The productivity gains from digital technology and data identified in this report will only be realised if the infrastructure required to deliver the enabling technology is available to and used by end users.

We also put forward a unique perspective from Telstra Health - Australia's largest health software and digital services provider with unique coverage of health software and analytics in general practice, aged care, indigenous health, virtual care, and pharmacy, as well as national health platforms delivered for government.

Our response will broadly address the three key sections of the interim report 2:

1. Use of digital technology and data in the Australian economy.
2. Potential barriers to adopting new technologies and data.
3. Targeting government investments and policy priorities.

We draw upon quantitative and qualitative research and data that could be used by the Productivity Commission to inform its recommendations to government on how the communications sector can assist in boosting Australia's productivity performance. Our submission advocates for specific focus areas for government policy including:

1. Continued investment in communications infrastructure to deliver the digital technology and data.
2. A recognition of the importance of secure digital communications as an enabler of productivity growth. Regulation and policy for digital, data and cybersecurity should be coordinated across all levels of Government and amongst key international jurisdictions to minimise costs and encourage industry investment.
3. Lower pricing and uplifting baseline service standards for communications infrastructure such as the NBN to enable adoption of new technologies.

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1 Australian Bureau of Statistics, https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/53F5CB930DC8A41FCA257B9500133B99?opendocument

2 Deloitte, 2022, https://www2.deloitte.com/mt/en/pages/technology/articles/mt-what-is-digital-economy.html

4. More efficient funding for regional telecommunications infrastructure that is not commercially viable without Government support to assist in providing more equitable access.

5. Better coordination between all levels of government in the delivery of services, such as healthcare and education for example that require more coordinated delivery if the gains from the digital economy are to be realised.

6. Policy and regulation that can adapt quickly to changes in technology or be agnostic to specific technology while providing defining frameworks to reduce investment risks.

1 Use of digital technology and data in the Australian economy

Telstra acknowledges the extensive research that the Productivity Commission has undertaken regarding the digital economy policy. The additional information that we are providing in our response is designed to add further value to the Productivity Commission's recommended directions for government to support future activity in the digital economy.

The WEF noted in their report on delivering digital infrastructure that productivity growth needs to be supported through a complex ecosystem delivered by multiple parties. The report highlights the significant amount of money that is invested in capital and operating expenditures, along with the research and development to construct and maintain the infrastructure that supports the digital ecosystem that facilitates the digital economy.[3]

Telstra believes that the final report should clearly acknowledge the role of the communications sector and associated enabling infrastructure required to deliver the digital technology and data which are critical to the economy today. The pandemic and post-pandemic business and healthcare environments have demonstrated the role of digital communications and systems in the economy that has helped to facilitate structural changes to business models across a range of industry sectors highlighted in both interim reports 1 and 2.

1.1 Economic gains from using technology and data

Potentially transformative technologies that will cause rapid changes in the way our economy and society functions include:

5G and 6G

5G built on the advances of Telstra's successful 4G network and assisted in advancing the move forward to wireless connectivity. It is estimated that by 2030 5G technology will add up to US$1.3 trillion in global GDP, with industry sectors such as healthcare (US$530 bn), utilities management (US$330 bn) and consumer and media applications (US$254 bn), accounting for 85% of the GDP contribution.[4]

5G, and then 6G in the years ahead, will provide a range of enabling use cases serving a range of needs for business such as managing remote workforces, industrial manufacturing, and automated agriculture. The telecommunications sector through organisations such as Telstra will be able to play a role in supporting companies to determine how their work environments look in the future. This will help companies determine what connectivity platforms and technology infrastructure are required to make working in the office and working from home productive and enabling a seamless switch to hybrid working environments.

Industry 4.0

Industry 4.0 has sometimes been referred to as the next production revolution that will occur due to a range of technological confluences that will alter the nature and availability of work and production. These changes range from digital technologies to new materials (e.g., bio- or nano-based) to new processes (e.g., data-driven production, artificial intelligence, synthetic biology).[5] The technology has the potential to

3 WEF, 2014, https://reports.weforum.org/delivering-digital-infrastructure/

4 PwC, 2022, https://www.pwc.com.au/industry/telecommunications/assets/2022-australian-tmt-outlook.pdf

5 OECD, 2017, https://www.oecd-ilibrary.org/science-and-technology/the-next-production-revolution_9789264271036-en

influence a range of economic and social factors including (but not limited to); productivity, employment, skills, income distribution, trade, well-being and the environment.

Digitally enabled healthcare

Australian governments and healthcare providers have invested in digital health systems and enablers over decades to improve efficiency safety and quality of care, quality, and timeliness of data for policy making, and to drive clinical research and improvement. These have been in focus during the COVID-19 pandemic to address access, workforce, and public health imperatives. Public and private sector investment has been significant but needs clarity and active support through policy frameworks to deliver safe, secure, and sustainable services in Australia, including industry exchange between Australia and other aligned markets such as the UK.

1.1.1 How can digital technologies and data contribute to productivity?

Research conducted by McKinsey found the USA, despite being one of the most highly digitised economies in the world, only captured around 18% of its digital potential.[6] The same study concluded that certain sectors of the economy such as agriculture, mining, construction, entertainment, and recreation had low levels of digitisation compared to sectors such as ICT, media, and the professional services sector. Although economic, technical, and social factors will impact the extent and rate of technology adoption facilitating the diffusion of digital technology will increase the competitiveness and productivity of the economy. McKinsey estimates that automation as an example could increase global productivity growth by between 0.8 and 1.4 percent p.a. In addition to this, in the most digitised sectors, productivity has increased by up to four times compared to the economy wide average.[7]

The use of digital technologies can lead to efficiency improvements across a range of areas. They can lower market transaction costs for example in transport costs, order tracking and verification, along with helping to match buyers and sellers. They promote innovation in companies in product and process development, an example being the outsourcing of digital spend through cloud computing and teleworking. Digital technologies due to their intangible nature allow companies to achieve scale without mass which has enabled firms with relatively small physical assets and employee numbers to become global businesses.[8]

The APEC Policy Support Unit released a report showing a positive correlation between the value add of digital services, labour productivity and the goods sector of the economy[9]. Their report found that ICT services play a significant role in knowledge dissemination and diffusion. They concluded that research and development and engineering services for example can lead to improved manufacturing processes through the introduction of new hardware, that improves labour productivity either through improved production times, or increasing output with fewer employees.

Data sharing can assist in facilitating a deeper spread of technology, with research by the OECD showing that access to valuable data has improved productivity for frontier and non-frontier firms.[10] For example,

[6] APEC, 2018, https://www.apec.org/docs/default-source/publications/2018/11/arta---the-digital-productivity-paradox/arta_nov-2018.pdf?sfvrsn=8924ad1_1

[7] McKinsey, 2017, https://tinyurl.com/yu9fs73h

[8] Goldfarb, A and Tucker, C, 2019, http://dx.doi.org/10.1257/jel.20171452.

[9] APEC, 2015, https://www.apec.org/Publications/2015/11/Assessment-of-the-APEC-Leaders-Growth-Strategy

[10] OECD, 2021, https://www.oecd.org/global-forum-productivity/events/Spurring-growth-and-closing-gaps.pdf

the data on customer purchasing history enables companies to develop targeted advertising that can lead to additional sales. Data on browsing history enables companies to more accurately predict consumer interests and tailor offers to suit those interests. Access to this data by frontier firms has benefitted non-frontier firms and contributed to productivity improvements in the wider economy.[11]

1.1.2 Better use of technology and data can improve productivity

Telstra agrees that digital tools when used in conjunction with data can assist businesses in lowering production costs. Telstra would add to the analysis in this section that another channel that can assist businesses in lowering operational costs is digital communication, which encompasses interaction via tools such as email, instant messaging services, video streaming, social media channels and other online services enabling digital communication based on tablets, smartphones, wearables and other technology tools.[12].The way we interact using online services and digital communications has resulted in a hyperconnected reality where human activity is intertwined with these tools and devices. In terms of productivity gains, digital communication enables time savings, accelerated communication has also increased the amount of information available to organisations, increased the frequency and number of contacts with customers and suppliers and reduced travel and associated costs.

The benefits of digital communication were highlighted during the pandemic where the Australian economy performed above other OECD economies. This was in part due to the technology which enabled businesses to adapt to the changing and uncertain environment. The use of digital communications during that time have resulted in transformation across a range of areas, including:[13]

- Remote working.
- Digital healthcare delivery.
- E-Commerce.
- Online learning.
- Digital government service delivery.

1.1.3 Measuring the digital economy is challenging

How the digital economy is measured will have a direct and indirect impact on measuring the productivity gains that can be realised from digital technology and data. The digital economy as evidenced in the interim report 2 will impact all industry sectors to varying degrees, however the growth of the services sector, which now accounts for about 80 per cent of production and 90 per cent of employment, will benefit the most.[14] Digital technology and data have the potential to deliver better quality services which results in productivity growth, however as noted by the Productivity Commission, much of the improvement will not be reflected in the statistics measuring productivity.[15]

[11] OECD, 2021, https://www.oecd.org/global-forum-productivity/events/Spurring-growth-and-closing-gaps.pdf
[12] Entschew, Elisa Maria 2021, https://link.springer.com/article/10.1007/s41463-020-00103-9
[13] Australian Industry and Skills Committee, 2022, https://nationalindustryinsights.aisc.net.au/industries/information-and-communications-technology
[14] Productivity Commission, 2021, productivity-insights-2021-services.pdf
[15] Productivity Commission, 2021, https://www.pc.gov.au/media-speeches/speeches/services-productivity

Telstra agrees with earlier findings from the Productivity Commission that measuring the service sector, which includes the digital economy, may involve looking beyond the National Account aggregates.[16] This may include looking at other sources of data to better understand what the drivers of productivity are in those sectors as traditional measures of productivity fail to fully capture quality improvements. Recent work by the OECD on innovation in the education sector found that often policy makers are not fully aware of the unique circumstances that exist within industry sectors in which they implement reforms.[17]

Telstra notes that the Productivity Commission itself has previously suggested that the policy mix to deliver and measure productivity gains may involve adopting less of the top-down microeconomic reforms of the past, replacing it with a bespoke approach that is tailored to adapt to the aspects of a specific industry, which is particularly so with the digital economy.[18]

1.1.4 Businesses' use of technology and data has been increasing

Telstra believes that increased utilisation of technology requires specific investment in underlying infrastructure. How technology is delivered to the end user is important in realising the productivity gains from technology and data. As the demand for data from businesses and consumers has increased over time, the telecommunications sector has had to invest to increase infrastructure supply to meet this demand.[19] Investment decisions are being taken now that will deliver the data capacity requirements for the next few decades. Infrastructure upgrades will be needed to ensure that telecommunications supply is able to meet demand for work related activity. There is also a need to invest in expanding connectivity coverage (both mobile and fixed), to ensure regional Australians can also benefit from these productivity gains. Data will be created and modified through edge computing with the emergence of 5G and eventually 6G, and communication will become more interactive, especially with remote work and for those living in regional Australia.

1.1.5 Different adoption rates likely reflect heterogenous benefits and costs

When complex systems digitise there can be incongruent benefits between actors, which will impact adoption rates and coordination needed to realise benefits. In healthcare for example, those who contribute most to digitisation and interoperability and data sharing may not be the same actors in the system that benefit from increased access to those data. We recommend that government consider the benefit case for each group of system participants when investing in digitisation benefits.

1.2 International comparisons on technology and data use

The Productivity Commission highlights that Australia's internet coverage is high, but speeds are relatively low. In Telstra's view, this has largely been driven by high NBN pricing.

Link Economics' research illustrates that in some countries, such as the UK, Denmark, and Italy, RSPs can access the last mile at 1000 Mbps speeds for as little as AU$24-40 on an unbundled basis.[20] Those RSPs need to provide their own backhaul, but this comes at a substantially lower cost than the access provider's CVC component of pricing. Figure one provides an international price comparison of selected

[16] Productivity Commission, 2021, productivity-insights-2021-services.pdf

[17] OECD, 2021, https://www.oecd.org/education/ceri/How-to-measure-innovation-in-education.pdf

[18] Productivity Commission, 2021, https://www.pc.gov.au/media-speeches/speeches/services-productivity

[19] McKinsey, 2022, https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/a-blueprint-for-telecoms-critical-reinvention

[20] Link Economics, 2020, https://www.accc.gov.au/system/files/Submission%20-%20Telstra%20-%20Expert%20Report%20-%20Link%20Economics%20-%20NBN%20Co%20SAU%20Variation%20March%202022%20-%2021%20July%202022.pdf

countries without unbundled access and with unbundled access for both 50 Mbps (graph one) and 100 Mbps speeds (graph two). Figure two provides an international price comparison of selected countries without unbundled access and with unbundled access for 1000 Mbps speeds.[21]

[21] Link Economics, 2020, https://www.accc.gov.au/system/files/Submission%20-%20Telstra%20-%20Expert%20Report%20-%20Link%20Economics%20-%20NBN%20Co%20SAU%20Variation%20March%202022%20-%2021%20July%202022.pdf

Figure 1: International price comparison of selected countries for 50 Mbps and 100 Mbps

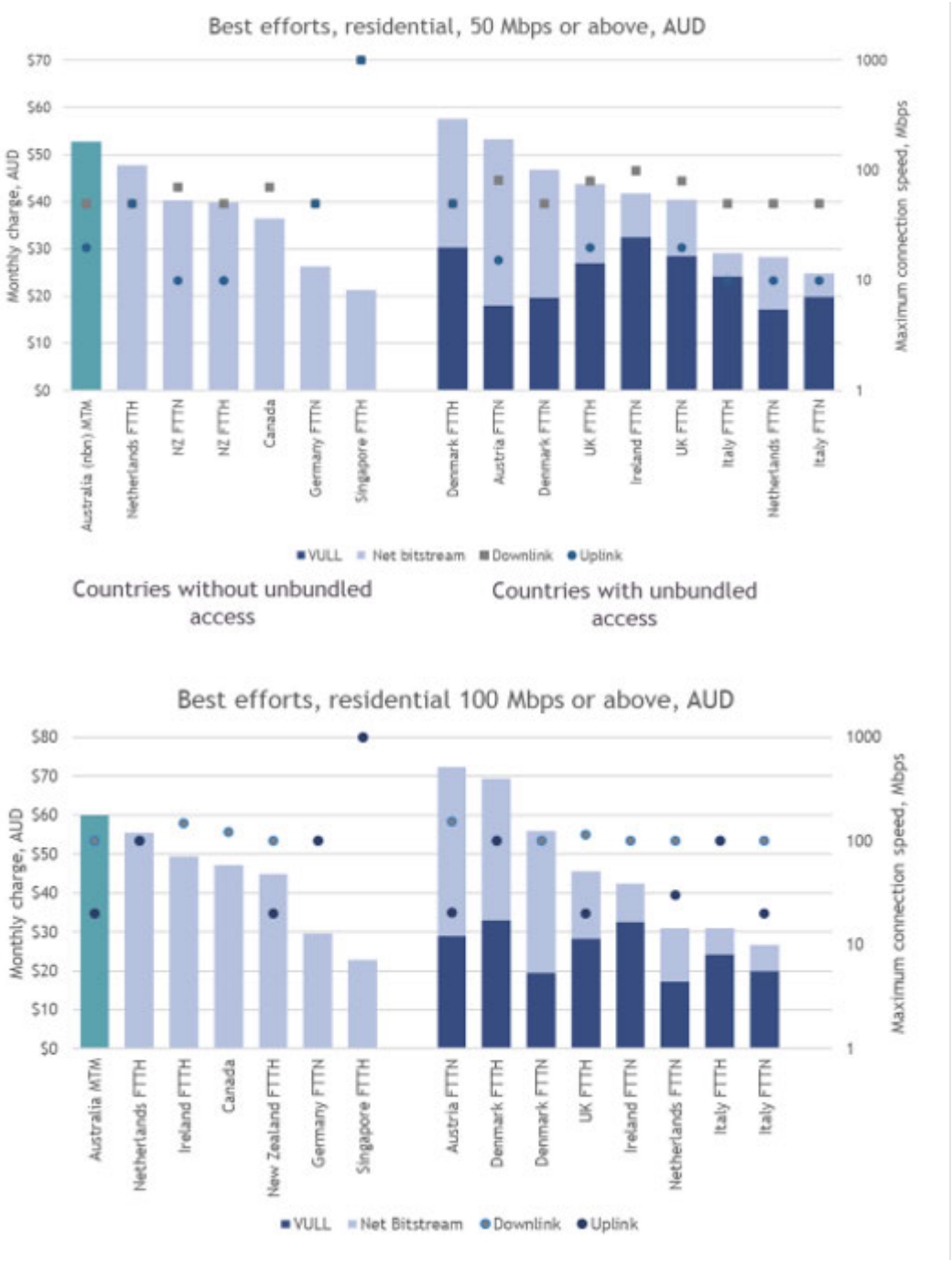
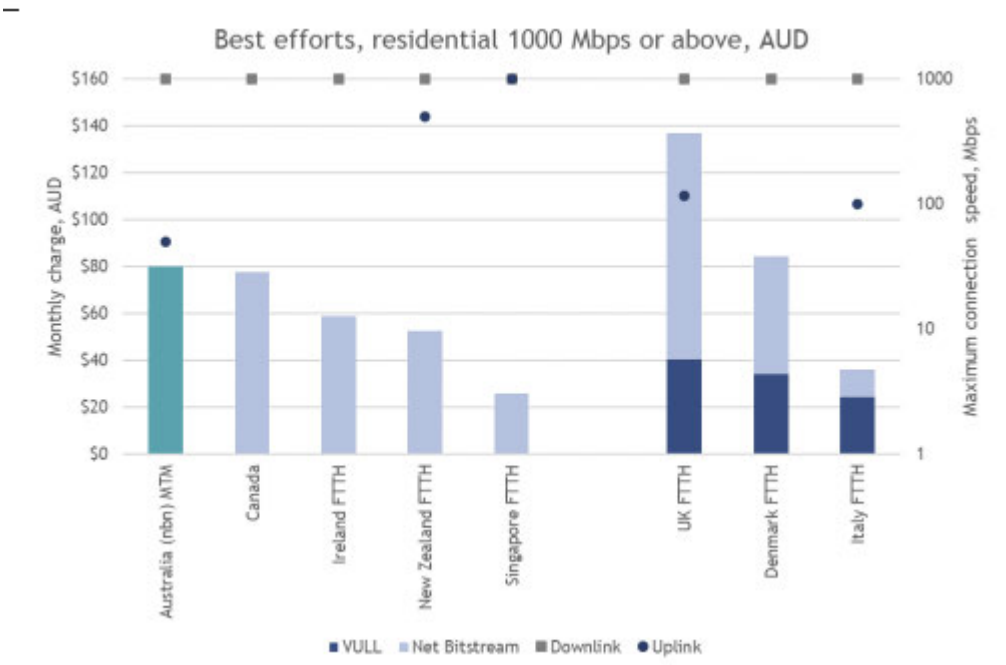
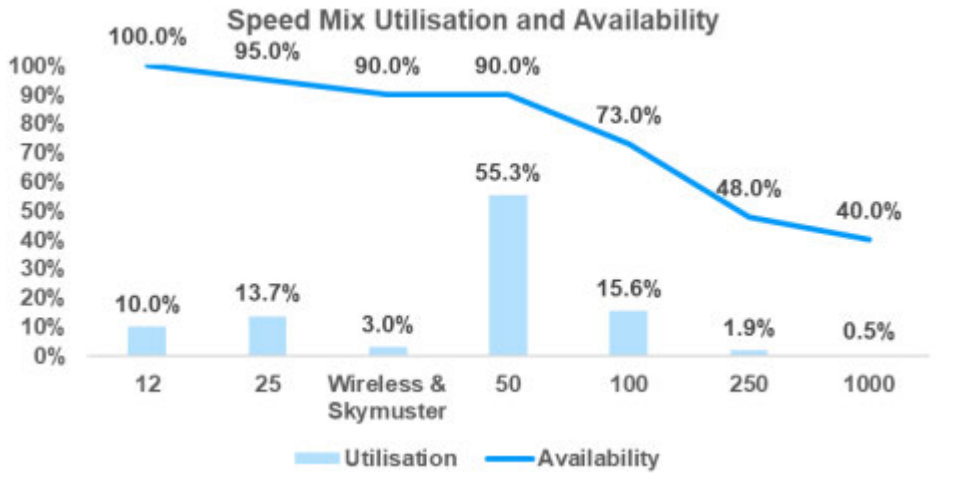


Figure 2: International price comparison of selected countries for 1000 Mbps



nbn co's wholesale pricing has led to heavy under-utilisation of the NBN – while 40% of fixed premises can attain 1 Gbps speed,[22] less than 1% of customers take up these speeds. Further, 73% of nbn co's fixed-line footprint can achieve over 100 Mbps speeds, while only 18% of customers take up plans with speeds of 100 Mbps or more, highlighted in Figure 3.

Figure 3: NBN speed mix utilisation and availability

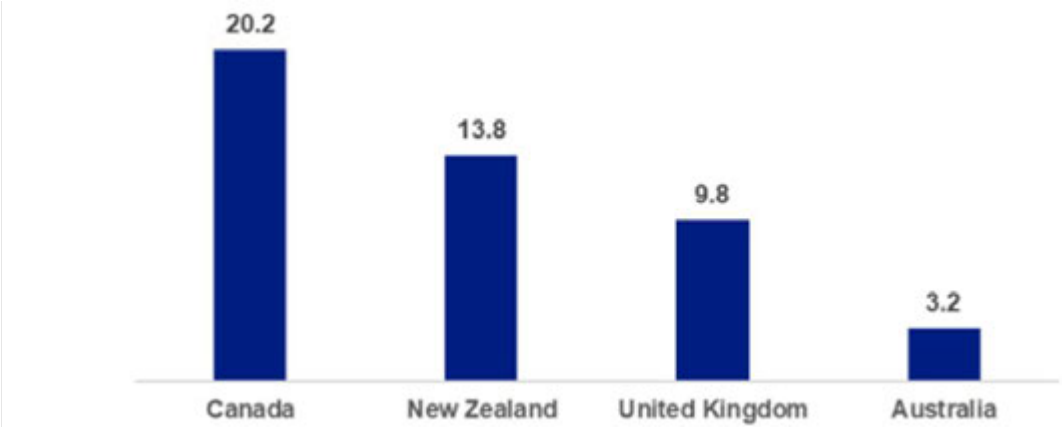


Relative to international peers, Australia's penetration of high-speed fixed broadband remains very low. While OECD statistics are updated less frequently than ACCC statistics. Figure 4 illustrates that as of a

[22] ACCC, Measuring Broadband Australia Report, 31 March 2022.

year ago, the OECD reports that Australia's penetration of high-speed broadband was just 3% while in Canada it was as high as 20%. GREX Consulting reported that in New Zealand, a mere 7% of customers take up plans at the 50 Mbps level. The vast majority of New Zealanders take up high speed plans with 18% of Chorus GPON customers taking up 1 Gbps speeds and approximately 70% of Chorus connections are on 100 Mbps.[23]

Figure 4: Selected OECD countries high speed broadband penetration



nbn co's pricing has also led to low adoption with 30% of premises passed by NBN choosing not to buy any NBN plans.[24] This is in an environment where customers were mandated to disconnect their copper services, and strongly encouraged by many RSPs and nbn co to migrate to a NBN plan.

Despite that encouragement, we estimate 25% of premises that were disconnected from the copper network chose not to migrate to the NBN.[25] This is a missed opportunity for those users living and working in those premises, and for nbn co, which must charge higher wholesale prices than may otherwise be the case as a result.

1.2.1 But use of data-driven technologies is low

Refer to section 2 for commentary related to this.

[23] GREX Consulting, New Zealand Broadband Market & Regulatory Landscape Presentation, 2021, p. 19.
[24] nbn co, Weekly Progress Report (Build), 23 June 2022
[25] nbn co, Weekly Progress Report (Build), 23 June 2022

2 Potential barriers to adopting new technologies and data

2.1 Business-level barriers to digital and data uptake

McKinsey conducted a survey of global business leaders toward the end of 2020 and found that COVID-19 forced companies to accelerate the digitisation of customer, supply chain interactions and internal operations by three to four years.[26] They found that the changed business and economic environment will require new strategies and business practices. One of the findings from the McKinsey survey was that businesses have been successful in responding to the challenges and opportunities only where they have implemented digital technologies, including filling gaps for technology talent during the crisis, the use of more advanced technologies, and speed in experimenting and innovating. The rollout of 5G for example has the potential to enable innovation by business using a range of technologies including AI, IoT, AR/VR, drones and Edge Computing. However, research conducted by Deloitte found that despite awareness by Australian businesses of the benefits of 5G they are struggling to take tangible actions implementing 5G.[27]

Research conducted on behalf of CPA Australia found a range of barriers to technology adoption despite accelerated digitisation by firms through the pandemic.[28] The research found that for organisations both large and small, technology related barriers, notably around data security and data privacy, were major concerns for organisations. In addition to this, organisation related barriers such as senior management support, information technology system support and training support for technology systems impact the rate of technology diffusion and hence impact productivity gains. Regulatory and economic barriers to technology adoption did not rank as highly as the technology and organisational barriers, however for it did rank highly for small firms (which account for a large proportion of Australian business counts). Addressing these barriers will be critical for the government if the productivity gains associated with digital technology and data are to be realised. In healthcare as an example, a key barrier to adoption is the business case for major public and private healthcare providers, because the investment made by a single healthcare provider in digital systems often results in complex benefit realisation for several other providers, to the healthcare consumer, and to governments.

We encourage government to continue funding programs around data security, data privacy and general training, to improve business skills and confidence in these areas.

2.2 Improve affordability to encourage adoption and digitisation

A key driver of the digital transformation of Australia's economy will be innovation and investment in telecommunication and digital services, which enable productivity and competitiveness in various sectors of the economy. Crucially, though, investment in Australia's internet infrastructure – both NBN and non-NBN – will be one of the key drivers in ensuring that Australia meets its digital economy ambitions by 2030.

To ensure that Australia's digital economy ambitions can be achieved, there needs to be an appropriate regulatory framework in place that incentivises investment and innovation in digital and telecommunication technologies. There is a need to reduce barriers to investment and innovation, and a suitable regulatory

[26] McKinsey, 2020, https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever
[27] Deloitte, 2022, https://amta.org.au/wp-content/uploads/2022/03/5G-Unleashed-Final-Report_combined-21-March-2022.pdf
[28] CPA, 2021, https://www.cpaaustralia.com.au/-/media/project/cpa/corporate/documents/barriers-to-tech-report.pdf?rev=a1dcb66d2436488eb58a2083fcd1be62

framework that aligns with a NBN pricing regime that provides certainty and less complexity. Without appropriate policy and regulatory settings, Australia will fail to achieve its digital transformation ambitions.

Enhanced digital adoption will yield significant social and economic benefits such as improved productivity, quality of life, innovation, and job creation. As noted by the former government*: "Greater digital adoption will improve our competitiveness and lift our productivity – driving job creation and higher wages"*.[29] As one of the key investors in telecommunications infrastructure and services in Australia, Telstra has assisted businesses to digitise their processes in response to COVID-19, as well as ensured that end-users continued receiving reliable internet services. Enhanced digital adoption, driven by greater take-up on NBN services due to lower prices, will yield significant economic benefits.

2.2.1 Digitisation and access to telco technologies have significant economic benefit

Access to digital and telecommunication technologies are the key enablers in this digital transformation. Digital technologies have the potential to uplift productivity in many sectors of the economy. The Productivity Commission should ensure that the benefits of the digital economy are available across society, particularly to those that are most disadvantaged. To this end, tools such as the Australian Digital Inclusion Index provide granular data on digital inclusion in Australia and assist in identifying critical barriers to inclusion.[30] Barriers such as accessibility, prohibitive costs, digital skills and literacy can be identified and help shape programs to improve digital inclusion. As noted by the OECD (2020), digital technologies have the potential for "individuals to participate in society, firms to boost productivity, and governments to go digital and adopt a user-driven approach". Importantly:

"Digital innovation not only gives rise to new goods and services, but it also creates opportunities for new business models and markets, and it can drive efficiencies in the public sector and beyond. Digital technologies and data spur innovation in a wide range of sectors, including education, health, finance, insurance, transportation, energy, agriculture, fisheries and manufacturing, as well as the ICT sector itself."[31]

Digitisation is a key enabler of research and innovation in every sector. Secure digital infrastructure and policy is the backbone of research capability such that standards-based and reusable systems are available to support research, validation and innovation, and avoid duplication of investment of research funding.

Given that digital and telecommunication technologies have the potential to uplift productivity in various sectors of the economy, the scale of the opportunity presented by accelerated digitisation is potentially significant. In analysis by PwC (2020), digitisation was estimated to uplift GVA by up to $90 billion by 2025 and add *up to* 250,000 new jobs.[32] The sectoral impacts of this added economic value ranges from an estimated $5 billion in the education sector, to $9 billion in supply chain and Transport & Logistics. The uplift in jobs depends on the relative capital-to-labour intensiveness of each sector. Healthcare, which is

[29] Australian Government, 2021, https://digitaleconomy.pmc.gov.au/sites/default/files/2021-07/digital-economy-strategy.pdf, A modern digital economy to secure Australia's future | Treasury Ministers

[30] Australian Digital Inclusion Index, 2021, https://www.digitalinclusionindex.org.au/download-reports/

[31] OECD, 2020, https://www.oecd-ilibrary.org/sites/bb167041-en/1/3/1/index.html?itemId=/content/publication/bb167041-en&_csp_=509e10cb8ea8559b6f9cc53015e8814d&itemIGO=oecd&itemContentType=book

[32] The estimates are based on PwC analysis of the economic growth potential from increased digitisation, applied to the individual circumstances of major Australian industry categories across every region of Australia, using unique insights developed specifically for Telstra from PwC's Geospatial Economic Model. https://images.businessnews.telstra.com/Web/Telstrab2b/%7Bce2040dd-9bfd-4258-96b2-139da514c95a%7D_Be_What's_Next._Embracing_the_Digital_Economy_in_Australia.pdf

relatively labour intensive, is estimated to have an increase in jobs by up to 40,000 in addition to a number of efficiency gains, while the supply chain sector is estimated to have a jobs uplift of up to 15,000 (refer table 1).

Table 1: The impacts of digitisation across industries in Australia

Sector	Gross Value Add	Employment
Education Educators can teach more students more effectively, empowered by digital curriculum products and offering a secure and continuous online-offline classroom experience	$5 billion Up to 5.0% increase	Up to 30k The equivalent of about 2 major Australian universities and up to 100 schools.
Healthcare Healthcare providers can expand their patient reach across Australia, through smart devices and enhanced remote treatment technologies which drive inclusion, affordability, and access.	$8 billion Up to 4.8% increase	Up to 40k The equivalent of up to 10 large hospitals.
Supply Chain and Transport & Logistics Warehouse workers can better prepare for deliveries using blockchain technology and smart tracking solutions, to add security and transparency over their supply chain, and reduce work-related injuries through artificial intelligence, smart video analytics and IoT.	$9 billion Up to 5.4% increase	Up to 15k About half the entire logistics workforce in WA
Government Government helpline staff can respond to citizen calls with on-the-spot targeted advice, empowered by analytics that route calls to the most suitable person, prompt nuanced responses to citizens and make it easier for citizens to connect from multiple devices.	$5 billion Up to 5.0% increase	Up to 20k Enough to fill the Sydney Opera House four times.

Source: PwC, 2020

Telstra would like to see the Productivity Commission recommend in its final report to the government that it is possible to transform Australia into a prosperous digital economy, but only if the government provides the appropriate regulatory and policy conditions for industry investment and innovation to flourish. The private sector will continue to drive investment in digital and telecommunications infrastructure, as well as the uptake of these technologies. The government, however, has a crucial role in removing barriers to innovation and investment, to facilitate the acceleration of digitisation, drive the uptake of technologies and ensure diffusion of benefits to wider society. As noted by the OECD (2020), having an "agile" approach to regulation and policy is important for "unleashing innovation". [33]

[33] OECD, 2020, https://www.oecd-ilibrary.org/sites/bb167041-en/1/3/1/index.html?itemId=/content/publication/bb167041-en&_csp_=509e10cb8ea8559b6f9cc53015e8814d&itemIGO=oecd&itemContentType=book

2.2.2 RSPs and nbn co are key drivers of this benefit

Investment by nbn co generates significant benefits to the economy. In the Connecting Australia report[34], it was estimated that the NBN Access network created almost 3,000 additional jobs in 2017, and that in FY21 the number of additional jobs created was projected to be 31,000. In addition to jobs, other benefits include the facilitation of STEM and entrepreneurial skills, and digital literacy in education and the workforce.[35]

Crucially, nbn co's investment needs to be complemented by significant industry investment to facilitate innovation, competition, and optimal end-user experiences. RSPs invest significantly in complementary infrastructure such as software, organisational skills and digital applications that are necessary in diffusing the benefits of the nation's core internet infrastructure. Additionally, RSPs invest in technologies and skills required to optimise network performance so that end-users receive quality services.

The RSPs invest in ensuring that the network is reliable, secure, resilient, and able to scale when required. Services that depend on the NBN want solutions that enable them to respond to a rapidly changing digital landscape, and RSPs develop customised services and products that meet these needs.

Estimates by the Centre of International Economics (CIE) show that in FY20 approximately one-third of the internet capital stock is NBN-related, while the remaining two-thirds is non-NBN. Accordingly, *"Any reduction in investment is likely to be across each of these categories and has the potential to reduce the quality of services."* [36]

RSPs invest in developing and maintaining core infrastructure such as backhaul links, which underpin the delivery of mobile services. Some invest in mobile networks that serve as critical alternative technologies when nbn co's network or services go down. The investment by industry and RSPs is critical in ensuring the uptake and diffusion of digital and telecommunication technologies by businesses and the community.

The OECD has recognised that private sector invests the highest share in communications infrastructure and services. While government supports private sector investment (e.g., through co-investment), policies should address barriers to investment and improve the competitive landscape:

"Policy makers can promote investment in communications infrastructures, especially broadband networks, by encouraging the deployment of more fibre into networks to drive a substantial increase in speeds across technologies. Among OECD countries, the private sector invests the highest share in communications infrastructures and services. However, governments sometimes support such investments when it is not economically feasible otherwise. To spur further investment in networks, policy makers should address barriers to investment and improve competitive dynamics".[37]

Given that industry investment is crucial in achieving Australia's digital economy ambitions, it is imperative that the government provide appropriate policy and regulatory settings. In a "COVID-normal" world investment in digital and communications technologies will be crucial in allowing sectors to capitalise on

[34] nbn co, 2019, http://www.connectingaustralia.com.au/pdf/Connecting_Australia_Bright_Futures_Report.pdf
[35] nbn co, 2019, http://www.connectingaustralia.com.au/pdf/Connecting_Australia_Bright_Futures_Report.pdf
[36] CIE, 2021, Report prepared for Telstra, Investment, and rate of return
[37] OECD, 2020 https://www.oecd-ilibrary.org/sites/bb167041-en/1/3/1/index.html?itemId=/content/publication/bb167041-en&_csp_=509e10cb8ea8559b6f9cc53015e8814d&itemIGO=oecd&itemContentType=book#chapter-1

new opportunities and drive productivity growth. Policies have the potential to "*affect competitive pressure and business dynamism, and in turn technology diffusion and better resource allocation*".[38]

2.2.3 Achievement of those benefits depends on ongoing efficient investment, reasonable prices, and less uncertainty

Australia has passed a turning point in the digital transformation of its economy. The NBN build is complete and the roll out of 5G is well underway – under our T25 strategy, Telstra will have 95% 5G population coverage by the end of FY25. As a result of the COVID-19 pandemic, businesses, government, and communities are embracing digital technologies and adapting to new ways of living, working, and operating. Digitisation and access to the next generations of high-speed connectivity are more a part of our lives than ever before. This positions Australia well for a digital-led productivity resurgence through the current global economic headwinds.

Addressing the low adoption and under-utilisation of the NBN is central to enabling productivity growth in the economy. In this regard, it is critical that wholesale prices are set to encourage efficient use of the NBN and promote RSP competition, and not to recover past inefficient costs. Historical incentives and processes have encouraged cost inefficiencies with the NBN network. In Telstra's submission to the nbn SAU Variation in July of this year we identified some of the following features of the market historically providing incentives for nbn co to incur costs regardless of their efficiency.[39]

- Being government owned, nbn co has been subject to different policy objectives with successive governments that have led to inefficient spend.
- Efficient network roll outs should target low cost and high profit areas first, to minimise any upfront losses. nbn co was required to roll out to high cost and low profit areas first.

There are also poor capital governance incentives applied to nbn co. Very early in its existence, nbn co was targeting a return well below its WACC. As the peak of nbn co's capital expenditure – spending between $5.8-$6.7B per annum from FY17 to FY20 – nbn co's forward-looking IRR was 3.2% to 3.7% compared to its WACC of 4.9% to 6.2%. By targeting a return lower than its cost of capital, nbn co is encouraged to inefficiently over-spend on capital. If nbn co had faced a floor return on capital investment equal to its WACC, nbn co would have been forced to invest more efficiently.

To encourage higher adoption and better utilisation of the NBN the market needs a regulatory framework that delivers:

- Lower wholesale prices to encourage utilisation – we consider an ARPU of $45/TC4 service would allow nbn co to meet reasonable financial targets by FY32.[40]
- More rigorous appraisal of the prudency and the cost efficiency of infrastructure investment by nbn co in its expenditure of Australian government funding.

[38] OECD, 2020, https://www.oecd-ilibrary.org/sites/bb167041-en/1/3/1/index.html?itemId=/content/publication/bb167041-en&_csp_=509e10cb8ea8559b6f9cc53015e8814d&itemIGO=oecd&itemContentType=book#chapter-1
[39] Telstra, 2022, https://www.accc.gov.au/system/files/Submission%20-%20Telstra%20-%20Public%20-%20NBN%20Co%20SAU%20Variation%20March%202022%20-%2020%20July%202022.pdf
[40] Telstra submission, Response to nbn co's Discussion Paper on proposed changes to the SAU, September 2022

- Address service quality issues that hamper customers' use of the NBN using baseline service standards that meet customer needs and expectations, including penalties and incentives to meet those standards coupled with enhanced performance reporting that is transparently published.

To this end, we are currently engaging with the ACCC and nbn co on finding a suitable path forward on nbn co's updated SAU, which will set the framework for nbn co and RSPs including critically, pricing and service quality.

2.3 Broader limitations in the digital and data environment

2.3.1 Excessive exclusions to data use weaken its value

Refer to section 3.2 for commentary related to this.

2.3.2 Businesses are likely to be underinvesting in cyber security

Refer to section 3.4 for commentary related to this.

3 Targeting government investments and policy priorities

3.1 Investing in regional digital infrastructure

For Regional Australia to reach its full digital productivity potential it will be critical to ensure investment by industry is complemented by the right policy framework and the right approach to government co-funding. That approach needs to be based on the specific geographic, social, and economic needs of the regional communities under consideration – i.e., place based. This requires increased coordination between the Australian, state and territory governments, industry, and regional stakeholders to harness the power of private and government investment to drive optimal outcomes for regional communities.

In this respect, Telstra supports the 2021 Regional Telecommunications Independent Review Committee (RTIRC) recommendation[41] to develop a long-term investment and planning framework for digital infrastructure including increased coordination and investment between the Australian, state and territory governments and other relevant sectors to address regional connectivity. We also endorse the RTIRC recommendation for continued and enhanced government investment initiatives, given the significant and enduring economic challenges of telecommunications deployment in regional and remote Australia.[42]

Below, we set out our views on the role of the initiatives we're involved with in supporting connectivity in regional areas, and potential future changes given ongoing developments in technology and community expectations.

3.1.1 Better data would assist in linking investment to outcomes

Telstra is generally supportive of the sentiments within the Commission's interim report that better data (on connectivity outcomes) would assist in linking investments to outcomes. There are, however, some important differences between fixed and mobile networks that need to be kept in mind when considering policy areas such as the Universal Service Guarantee (USG) and co-investment programs, and opportunities for improving these in the future.

Fixed networks are architected to provide connectivity to fixed locations, usually premises, and can typically support multiple tiers of service delivery offering varying combinations of download and upload speeds (e.g., 50/10 Mbps). With the NBN being a wholesale model, different retailers offer different services and end-users make purchase decisions based on factors such as price, speeds, back up capabilities and market reputation.

Mobile networks, in contrast, are architected to provide coverage to geographical areas, typically population centres and other areas of economic activity. The economics are completely different from fixed networks and no industry cross-subsidisation programs (such as the Regional Broadband Scheme for fixed networks) are in place for mobile networks. Mobile networks also utilise wireless technology, and this is an inherently variable medium. There are multiple factors outside the control of mobile operators which can and do impact the coverage outcomes people receive — these include building materials, the construction of new buildings, topological considerations and even foliage which is continually growing. Furthermore, wireless networks rely on spectrum, and spectrum is a finite resource which can become congested at periods of high demand — that is, the demands from other end users connected to the same mobile site as you impacts your experience, usually in the form of lower mobile speeds, or dropouts.

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41 2021 Regional Telecommunications Review A step change in demand (infrastructure.gov.au), Recommendation 1.

42 Ibid, Recommendation 2.

A further difference between fixed and mobile networks is that with the former there have been historical policy decisions to create a government owned wholesaler (i.e., nbn co) and assign a statutory infrastructure provider. The mobile sector within Australia, by contrast, is a competitive market with multiple providers seeking to differentiate themselves in various ways (i.e., coverage, speeds, reliability) to attract end-users. With fixed networks there is capacity to readily observe and report on service standards consistent with plans sold in the market, but mobile networks are not amenable to this given the issues of variability and contention outlined above, noting mobile plans are typically sold based on data allowances as opposed to speeds. It is for these reasons that our mobile coverage maps depict the likely availability of coverage, not speeds.

Telstra supports the collection of data on genuine gaps in the provision of telecommunication services, with the differences between fixed and mobile networks, as outlined above, being kept in mind. By extension Telstra supports efforts to improve data about the availability of mobile services in Australia and we will participate in any initiatives by the Government or its agencies in this area noting these could potentially improve the design of future co-investment programs.

3.1.2 Measuring broadband performance

In terms of fixed broadband performance in the different parts of Australia, nbn co currently publishes aggregated monthly performance reports.[43] However, these reports don't necessarily give visibility as to whether there are regions in Australia which may benefit from investments to improve fixed broadband performance more than others. The ACCC's Measuring Broadband Australia report[44] provides a breakdown of average download and upload speeds by State and Territory, but it does not disaggregate the data further by location. The ACCC's Wholesale Market Indicator's Report is based on NBN data at a Point of Interconnect (POI) level, however the data on the speeds of the Services in Operation (SIOs) is only presented by the ACCC at an aggregated national level.[45] As the snapshots below show, by contrast in the UK there is public information available based on Ofcom data down to the postcode level showing which fixed broadband speeds are available at those locations,[46] enabling very targeted assessments to be made as to where future investments in improved fixed broadband speeds may be beneficial. In the Australian context, Telstra believes that nbn co could provide more transparency by providing access to its granular data relating to network speeds.

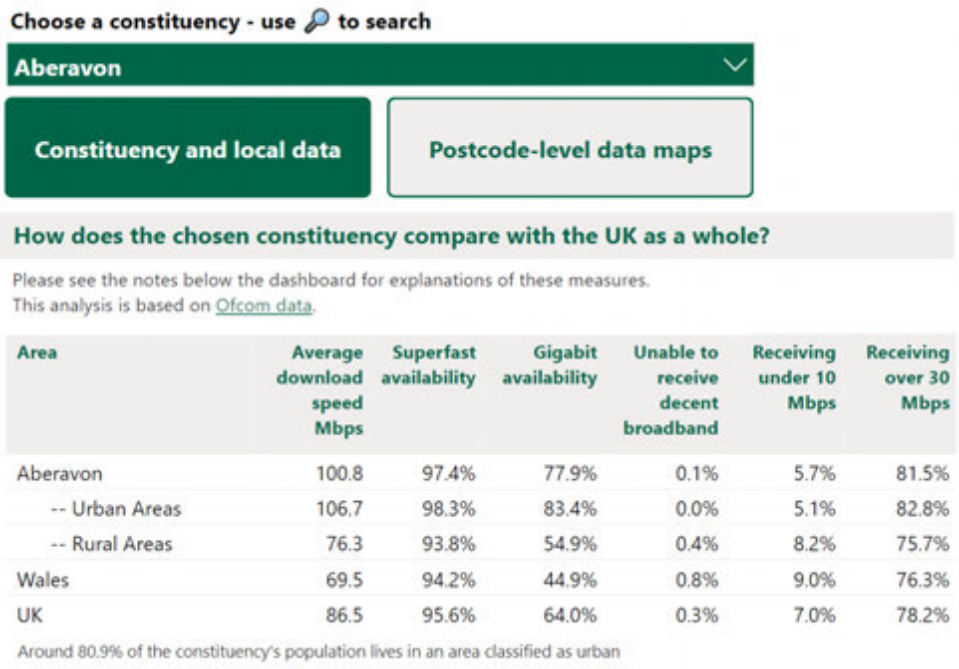
[43] See How we're tracking: July 2022 | nbn co (nbnco.com.au)

[44] See, e.g., for August 2022 - https://www.accc.gov.au/system/files/MBA%2018%20report%209%20August%202022.pdf p3

[45] See e.g., the June 2022 Quarter Report at: https://www.accc.gov.au/regulated-infrastructure/telecommunications-internet/national-broadband-network-nbn-access-regulation/nbn-wholesale-market-indicators-report/june-quarter-2022-report

[46] See https://commonslibrary.parliament.uk/constituency-data-broadband-coverage-and-speeds/

Figure 5: Ofcom sample shot of fixed broadband speeds in selected UK locality



Choose a constituency - use 🔎 to search

Aberavon

Constituency and local data | Postcode-level data maps

How does the chosen constituency compare with the UK as a whole?

Please see the notes below the dashboard for explanations of these measures.
This analysis is based on Ofcom data.

Area	Average download speed Mbps	Superfast availability	Gigabit availability	Unable to receive decent broadband	Receiving under 10 Mbps	Receiving over 30 Mbps
Aberavon	100.8	97.4%	77.9%	0.1%	5.7%	81.5%
-- Urban Areas	106.7	98.3%	83.4%	0.0%	5.1%	82.8%
-- Rural Areas	76.3	93.8%	54.9%	0.4%	8.2%	75.7%
Wales	69.5	94.2%	44.9%	0.8%	9.0%	76.3%
UK	86.5	95.6%	64.0%	0.3%	7.0%	78.2%

Around 80.9% of the constituency's population lives in an area classified as urban

Figure 6: Ofcom sample shot of fixed broadband speeds in selected UK locality

Which small areas overlapping the constituency have the best and worst connectivity?

Key to table shading: Best 10% of areas in the UK | Best 30% of areas in the UK | Worst 30% of areas in the UK | Worst 10% of areas in the UK

You can also view maps of small area data

Area name	Average download speed (Mbps)	Superfast availability	Gigabit availability	Unable to receive decent broadband	Lines receiving under 10 Mbps	Lines receiving over 30 Mbps
Aberafan	101.8	98.6%	83.2%	0.0%	8.9%	85.8%
Baglan	104.3	98.0%	74.3%	0.0%	5.0%	83.6%
Briton Ferry	106.1	98.3%	85.6%	0.0%	3.6%	84.4%
Cwmafan & Bryn	93.9	98.3%	77.5%	0.2%	7.3%	77.9%
Glyncorrwg & Blaengwynfi	46.9	94.2%	6.0%	0.2%	8.3%	73.9%
Port Talbot East	104.0	98.3%	81.3%	0.0%	2.7%	81.7%
Port Talbot South & Margam	98.9	94.7%	82.6%	0.2%	9.4%	77.3%
Sandfields	124.2	99.4%	94.1%	0.0%	5.4%	87.0%
Skewen & Jersey Marine	99.4	96.0%	82.7%	0.2%	4.2%	76.9%

Note that some of the areas shown may overlap only partially with the constituency. See the notes below for details.

3.1.3 Measuring mobile performance

The Productivity Commission cites the example of mobile coverage maps as an example where enhanced data may be used to provide better investment outcomes. However, it is necessary that the data being used be appropriate for the circumstances. For example, in the context of comparisons of mobile coverage, differences in carrier coverage are caused by many real-world differences, i.e., different frequencies of use, differences in device capabilities, and the differences in coverage predictions. These factors should not be considered assumptions but differences in the service level, or confidence levels an MNO may wish to provide its customers. In any event, these 'assumptions' would have a minimal impact on coverage differences between MNOs. At Telstra, our coverage mapping is plotted to provide the best customer guidance for our customers based on our network and device fleet and is conservatively estimated.

In the context of mobile coverage maps, the challenge for MNOs is that accuracy and comparability (the ACCC's focus, in the Mobile Infrastructure Report), are almost mutually exclusive. We can make coverage maps more accurate by making them even more specific and tailored to our specific customers, the devices type we predominantly sell and frequencies we use. This however makes them less comparable to other carrier's maps. Conversely, we can make maps more comparable by simplifying to a narrow specification that won't be relevant to all or many customers. For example, we may choose a specific signal level as coverage and plot to that regardless of frequencies used, device sensitivities, etc. Coverage will then be comparable, but the accuracy and utility to customers will be limited.

Defining the appropriate data is therefore very important. Informing investment decisions through better or more granular data may need to be supplemented by other forms of data. Minister Rowland has herself commented on this challenge and the need for accuracy to augment government decision making "*we need a really good baseline to know where those coverage gaps are, so we announced that we would commence an independent national audit of mobile coverage to find out where those black spots are. What we've decided to do is leverage off a great public asset, namely Australia Post…. we are going to be utilising those Australia Post vehicles to measure the mobile coverage and not only that there is a signal, for example, but also the quality as well…*" [47]

3.1.4 Improving transparency on how investment decisions are made

In considering various investments made by governments in digital infrastructure in recent times Telstra submits that the Productivity Commission should be mindful that different initiatives target different outcomes and are not always readily comparable. A 'change of technology' program managed by nbn co is for example considerably different from the Mobile Blackspot Program (MBSP). The former is focussed on improving the quality of services already available to premises, while the latter has primarily focussed on extending mobile coverage to areas where there is little or no existing mobile coverage.

Below, we explain for the Productivity Commission's benefit some of the practical aspects of the highly successful Federal Government MBSP which are pertinent to transparency of the program.

Telstra notes that the guidelines for the MBSP detail the assessment criteria that are used for that program. In essence proposals are assessed based on the cost to the Commonwealth per square kilometre of new handheld coverage with some provision also made for coverage that is new for a participating MNO but overlapping with another MNO's network. As per the MBSP guidelines "solutions with a lower cost per square kilometre will rank higher than solutions with a high cost per square kilometre".[48] Further, the

[47] Minister for Communications, 2022, https://minister.infrastructure.gov.au/rowland/interview/interview-jaclyn-underwood-2bs-live-local

[48] Page 18, MBSP Round 5A guidelines November 2020.

guidelines provide for solutions targeting priority areas such as transport corridors to receive reductions in their assessed cost per square kilometre (which will have the effect of moving the associated proposals up the ranking list). Telstra considers this an appropriate approach for the MBSP as it preserves incentives for the establishment of new coverage — to the extent competitive overbuild is eligible for government funding for example, this will reduce the incentive for coverage expanding investments motivated by competitive differentiation.

Considerations related to the nomination of candidate MBSP locations and the transparency of these locations include:

- Blackspots are typically locations that are uneconomic to build in as Government contributions are required to improve site viability, and often the investment case is marginal. With each successive round of the MBSP new site build activity has become less cost-effective, as locations with the greatest coverage benefits have already been addressed.
- The competitive nature of the mobile market means that carriers prepare their submissions independently, and the priority areas for investment varies between different carriers.
- Multiple bidders tender for contracts and are reluctant to publicise in advance the locations they are bidding for, as this could undermine the assessment process and build expectations among local communities.
- The sites reflect priorities for MNOs (such as Telstra), and in some cases, they also reflect the priorities of co-investing parties such as Governments.

As noted above, there are also limitations to the extent that new mobile coverage can be established in Australia given the breadth of landmass and population distribution. Where mobile coverage does not exist today, those locations will likely be uneconomic to serve through standalone investment — where co-investment pathways cannot be found, other solutions potentially involving the use of satellite technologies may be more appropriate.

Regarding health technology, we note that any investments must have a clear link to sustainable outcomes for all key system participants, including consumers, health and aged care providers, the vendors that deliver their technology services, and the governments that fund and administer care. For example, general practitioners are less likely to invest time and software upgrades to upload to My Health Record unless there is a commensurate benefit to them specifically. Clarity on the productivity and other benefits to various system participants is necessary for those actors to successfully implement effective changes in such a complex system.

3.1.5 Role of Government programs in supporting regional connectivity needs

There are several government policies and programs focused on supporting the fixed connectivity needs of Australians living in regional areas. Foremost amongst these is the Universal Service Guarantee (USG) for the delivery of voice and broadband services for all Australians.

1. Reform to the USG

Under the USG, nbn co is responsible for delivering broadband services and Telstra is responsible, as part of the USO, for delivering fixed telephone services using our existing copper and radio networks in NBN fixed wireless and satellite areas. Unlike nbn co, which can use satellite and wireless technologies

to meet its broadband obligation, in most cases Telstra is required to use the ageing copper network to meet our voice obligation.

The Commonwealth Government's USG envisages the efficient and ubiquitous delivery of high-quality voice and broadband services for all Australians, no matter where they live or work. This is a commitment to regional, rural and remote communities that we fully support and have a central role in delivering. However, for the USG to be fully realised and remain relevant far into the future, it must be technology-agnostic, so that customers are not tied to a single technology that will inevitably age and become less relevant over time.

The greatest barrier to achieving a technology-agnostic USG is the current requirement for Telstra to use the old copper network to deliver telephone services (in most cases) outside the NBN fixed line footprint. This copper has served us well for many decades, but it is now approaching the end of its useful life. There are already a range of technologies that provide better performing and more resilient telephone services than is possible over copper, including fixed wireless. We expect that more technology options will be available in the near future, including low latency, LEO services.

We understand the desire for regional communities to have access to new technologies and to expand their range of communications options. It will be much more difficult to deliver on this desire if we are required by Government policy to continue investing in maintaining the ageing copper network. This requirement is holding back the development and large-scale rollout of new technologies. The resiliency and redundancy concerns that have generated support for copper in the past are now squarely addressed by the expanding range of distinct networks becoming available in increasingly remote areas associated with technological changes in the sector.

The Federal Government has recognised the importance of alternative communication technologies to the future of regional Australia by funding the Alternative Voice Services Trial. Under this program we deployed 4G fixed wireless and more efficient USO satellite telephone services as well as partnering with nbn co to trial its fixed wireless and satellite solutions. Although it was challenging to attract customers to the trial, the technical results demonstrate that these alternatives to copper provide a superior service and should rightly increase community confidence in them.[49]

2. Enhancements to regional mobile co-investment programs

Government co-investment programs, such as the MBSP and the Regional Connectivity Program (RCP), have been critical and have supported commercial operators to successfully deliver regional mobile coverage.

However, with the MBSP the main challenge is that after five rounds and hundreds of new black spot site builds, most remaining black spot candidate locations are increasingly remote and costly to build and operate while also benefiting fewer customers. This makes many of them commercially unviable without reform to program guidelines.

We have identified several potential changes to the MBSP, as summarised below:

- Removal of the government $500,000 funding cap – the declining economics of mobile black spot sites makes it more difficult to find sites that are economic to bid for even with government

[49] https://www.infrastructure.gov.au/media-technology-communications/phone/phone-services/universal-service-guarantee-telecommunications/alternative-voice-services-trial

contributions. Removing the cap while still awarding funding on a value for money basis would help support the delivery of new coverage for areas unserved.

- Extend the definition of MBSP eligible solutions to include coverage extension devices and satellite handsets – the use of coverage extension devices for vehicles can dramatically increase existing coverage for those who use it and need it most. Extending the coverage of existing mobile towers via coverage extension devices is the most cost-effective means of providing new handheld coverage in areas with poor economics due to sparse populations. Subsidy programs for coverage extension devices could be targeted to customers who are likely to benefit from them the most. Satellite handsets can be an effective and resilient way of attaining coverage in areas prone to natural disasters (especially when a natural disaster occurs) and should therefore be candidates for funding. Any subsidy program for satellite handsets could also be targeted, possibly focusing on local government groups and/or organisations involved in disaster assistance activities.

- Extend the MBSP to include new indoor coverage, or infill coverage, in urban fringe, rural and remote areas – for many customers who raise concerns over coverage the issue is patchy, unreliable and/or absent indoor coverage. These customers often perceive the experience they are having to be the result of a wider black spot. Recognising new in-building coverage would address areas where customers find existing coverage does not meet their indoor performance expectations.

- Extend funding to cover ongoing operational costs – while the MBSP has recently allowed government contributions to be put toward some ongoing costs such as satellite and backhaul, other costs associated with the ongoing operation and maintenance of sites in regional locations are excluded. These operational costs for remaining remote sites typically well exceed any revenue that can be expected from the sites which means they would run at a loss regardless of how much Government contributes toward the build. Operational costs that could be opened to government contributions include the costs to maintain and upkeep primary solar powered systems, and for the costs to deploy maintenance staff to sites in very remote and disaster-prone areas, especially when this requires unusual seasonal costs (e.g., far northern Australia in monsoon areas may require helicopter access during flood season).

- Allow funding to be allocated for new and upgraded capacity backhaul links where these directly support new or improved mobile coverage – upgrades to existing fibre backhaul and core capacity should be considered eligible for funding where these directly support new or improved (e.g., technology upgrades) mobile coverage in rural and remote areas. These areas of investment will maximise the use of existing infrastructure to support new coverage and provide cost effective solutions to the MBSP. It would also help address network congestion concerns as outlined in the 2021 RTIRC report.

- Extend black spot qualifying criteria to include public Wi-Fi or public broadband – deployment proposals that include the provision of public Wi-Fi (or any other mobile network wireless broadband medium) in addition to mobile coverage could be factored into the MBSP guidelines. This would provide customers of other operators with access to data services outside of their mobile coverage. Calls and texts could also be made using voice and SMS over Wi-Fi technology or via over the top (OTT) voice and messaging services through third party applications.

- Government linking literacy and awareness program funding to awarded co-investment locations to support and better leverage the improvements made to connectivity in a specific region.

RCP is a welcome addition to the MBSP in supporting a holistic "place based" approach to improving connectivity in regional Australia because the program's focus is far broader than mobile black spots alone. RCP provides a degree of flexibility that we support and allows for a wider range of connectivity solutions to be considered to meet the needs of regional and remote communities.

Some of the benefits of the RCP include:

- Support for a broader program of activity that can allow for upstream build (in particular, transmission upgrades), not just downstream coverage. This means we can undertake works that improve capacity and end customer performance as well as basic connectivity.
- For mobile projects it is less prescriptive as it allows for improvement in coverage depth not just new outdoor coverage, so we are able to better address black spots in indoor coverage.
- It is not focused on narrow specified prediction thresholds or metrics such as the area of new outdoor coverage, rather allows a more holistic consideration of social and economic community benefits to be considered.
- More flexibility to combine different projects, without firm single solution funding caps.

Importantly, both the MBSP and RCP recognise the significance of competitive differentiation to regional investment and co-investment by mobile operators. At the same time as costs of deployment in regional and remote areas are typically higher, direct revenues from site coverage are typically lower. What drives continued private investment in regional mobile infrastructure and services in these conditions is the opportunity to generate returns on their investments through competitive differentiation in the national mobile market. There is accordingly a risk that any move towards prescriptive or inflexible mandated sharing arrangements under future government co-funding programs could undermine ongoing private investment incentives hence hold back improved productivity outcomes for regional Australia.

While enhancements to government co-funding program guidelines such as those we have recommended above are one way to support improved connectivity in regional and rural areas, challenges are also frequently encountered around site acquisition and associated approvals. Local and State/Territory Governments can play a role in supporting site acquisition and associated approvals to reduce the challenges in the deployment of solutions. For example, reforms to charges for access to Crown land could yield significant costs savings for industry in deploying regional mobile infrastructure. In addition, improvements to current planning permit and approval processes and requirements for access to land could help make regional deployment less costly and more efficient.

Lastly, when considering the costs and benefits of investment in expanding terrestrial based mobile network coverage in regional and remote areas, it will be important that Government and industry keep an eye on the potential for alternative technologies such as LEOs to deliver infill coverage for users in these locations and adjust policy settings accordingly. The potential for these technologies to widen coverage and provide redundancy for existing networks, especially for public safety purposes and regional businesses, looks promising.

3.2 Creating new data sharing and integration opportunities

In this section of our submission, we respond to section 3.2 of interim report 2 on creating new data sharing and integration opportunities. In principle, Telstra is keen to be involved in data sharing initiatives where there are tangible benefits and/or the sharing of data can lead to new collaboration and innovation. Likewise, we are interested to explore where value from data can be achieved without extraction or

transfer. For example, today we share information about the type and location of our network facilities with government Digital Twins (digital representation of a physical object, process, or service) to help emergency service organisations during emergency and disaster situation such as bushfires and floods.[50] Here, the tangible benefit is a better chance of maintaining network operation during a disaster, which can improve safety for the community. We have also committed to participating in the Consumer Data Right (CDR), which when operational for the energy and telecommunications sectors will allow our customers to share data about their use of our products and services with accredited data recipients.

However, allowing data sharing initiatives to simply grow organically risks inconsistent approaches, formats, rules, and regulatory obligations. Data and the sharing of data is already governed by an overlapping and at times confusing array of regulatory obligations. Telstra has certain record-keeping obligations under Part XIB, Division 6 of the *Competition and Consumer Act 2010* (Cth) under which Telstra provides the Australian Competition and Consumer Commission (the ACCC) with sensitive geocoded information on its mobile and fixed networks. At the same time, legislation such as the Telecommunications Sector Security Reforms (TSSR) and the *Security of Critical Infrastructure 2018 Act* (Cth) require Telstra to protect information about Critical Infrastructure, potentially creating conflicting regulatory obligations. Similarly, sharing data about our network facilities into Digital Twins for emergency services to use during disasters required careful consideration of the requirements to protect information about Critical Infrastructure, and we required data recipients to undergo an extensive review of the security controls in place to prevent unauthorised access to this data.

Returning to CDR as an example, there are bespoke CDR rules and data formats being developed for each sector. While not necessarily detrimental (there are good reasons why the rules and data formats are unique to each sector), lack of consistency can lead to implementation challenges and increased cost for data holders operating in multiple sectors (such as Telstra operating in both the energy and telecommunications sectors) as well as challenges for data recipients. On top of the various CDR rules sits obligations to protect our customers' data under the Privacy Act, and our concerns about the overlap between the privacy obligations under the CDR versus the Privacy Act are well documented.

It is vital that entities (public or private sector) participating in data sharing initiatives can comply with the various regulatory obligations efficiently. A consistent approach to sharing, securing and protecting data (especially consumer data and data associated with critical infrastructure), with minimal regulatory overlap, is essential to facilitating efficient and cost-effective data sharing.

3.2.1 More value from consumer data portability

Telstra has publicly committed to supporting CDR, as we believe providing customers with their data in a common, accessible format will enable them to make better, more informed decisions and help drive competition and innovation across the economy. In extending CDR to new sector(s), we stress that care must be taken to ensure the implementation maximises the operational efficiency and customer benefits while minimising the cost to industry, and therefore to consumers.

However, more work needs to be done to understand the cost/benefit for the telecommunications sector. At present, CDR appears to be a high-cost exercise across a wide range of different data sets, without a clear objective on how this data will benefit consumers in the short term and therefore justify the costs

[50] Telstra shares information about its network facilities in accordance with Communications Alliance Guideline G665:2021. https://www.commsalliance.com.au/Documents/all/guidelines/G665

imposed on industry. In our submission[51] to the CDR statutory review, we advocated for an MVP approach, which can be achieved by aligning the design of CDR to tangible and beneficial use cases while keeping implementation costs to a minimum.

We consider a shallow but broad application of CDR to the economy (that is, require generic product offer information across a range of different sectors at once - rather than doing extensive/deep applications of all data in individual sectors) would be a good way to deliver broad-ranging consumer benefits through an MVP approach, while minimising cost to industry.

3.2.2 More value from data provided to government agencies

This subsection in interim report 2 predominantly looks at expanding the sphere for sharing data *already held* by different levels of government. However, this section also touches on the possibility of increasing sharing of *private sector data* with government, academia or with other private sector participants. We tackle the two topics separately.

3.2.3 More value from data already held by government agencies

The different levels of government hold a lot of data. Data ranges from municipal and local planning data held by local governments, through to a vast array of data held by state, territory, and federal government agencies. interim report 2 notes *"…the Data Availability and Transparency Act 2022 (Cth) does not currently allow for government data to be shared with the private sector, including businesses and not-for-profit organisations, which could be a barrier to productivity- and welfare-enhancing data use."*[52] Insight 3.5, says (paraphrased) collaboration between government and the private sector can lead to new opportunities, and that the government needs to overcome risk aversion while ensuring data safety and security are maintained. We agree with and support the Productivity Commission's view on this insight and consider that increased sharing with the private sector is very likely to lead to new opportunities and innovation.

However, not all data already held by government is public sector data. As a carrier, Telstra has certain record-keeping obligations under Part XIB, Division 6 of the *Competition and Consumer Act 2010* (Cth) (the CCA) and the rules made pursuant to section 151BU of that Act. Pursuant to these record keeping rules (the RKR), we provide the Australian Competition and Consumer Commission with sensitive geocoded information on its mobile and fixed networks and other sensitive commercial information. RKR data is an example of commercially sensitive business data held by government that should not be shared except in specified circumstances pursuant to the CCA and with notice to Telstra.

Similarly, the Commonwealth collects and owns major data sets relating to healthcare delivery by private organisations. For example, while MBS and PBS data may be Commonwealth billing data, it relates to a significant amount of private sector activity in healthcare delivery.

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51 See Telstra's submission to Treasury's Statutory Review of the Consumer Data Right. Consultation website: https://treasury.gov.au/review/statutory-review-consumer-data-right. However, at the time of writing this submission, submissions to Treasury's consultation had not been published. We would be pleased to supply the Productivity Commission a copy of our submission to the Statutory Review.

52 Interim report 2, p.50.

3.2.4 More value by increasing the range of data provided to government

Section 3.2 of interim report 2 also touches on the possibility of increasing sharing of *industry held data* with government through increased collaboration between government and the private sector.[53] For example, Box 3.3 provides an example where National Disability Insurance Scheme (NDIS) data obtained from the private sector through the Digital Partner Program enables a so-called Digital Community of Interest to use the data (presumably de-identified) to identify "… *learnings and positive changes to be shared among interested parties*."

We have no inherent objection to increasing the collaboration and sharing of data between the private sector and government, however, we consider there are four important principles that should guide increased data sharing, or access: 1) there must be a purpose/goal; 2) the data provenance must be understood; 3) it must not violate commercial, proprietary, or national security interests; and 4) security, transparency and integrity must be maintained at the highest possible level; 5) clear authorisation in legislation and policy frameworks for the collection use and disclosure of all data; and 6) preference for use, access of and insight from data at rest at the point of collection, in order to reduce risk of transfer between entities.

A clear purpose/goal must be established before a private sector dataset is shared, preferably with a demonstrable economic benefit. Sharing data inevitably comes at a cost, as some level of curation is required to structure the data in a useable format. To avoid incurring cost unnecessarily, it is important to establish the purpose the shared data will serve along with an assessment that shows the benefit derived from sharing the data exceeds the costs incurred in preparing and sharing the data.

Data provenance is the concept that data can be relied upon because the source of data is known and trusted. Governments, business, and the community need confidence that data being used and shared has deep authenticity to protect against distortions and deep fake content that may cause harm through its use. For example, provenance of health data is critical to safety and utility of the data. Likewise, the context of the data is critical because the clinical context of health information is material to its interpretation, value, and privacy context. This may require the use of technologies such as Distributed Ledger technologies to track and verify the authenticity of data.

Sharing must not violate commercial, proprietary, or national security interests. Private sector datasets are predominantly proprietary as the data mostly relates customers and the products and services provided to them. Maintaining customer privacy is a key consideration when analysing any type of dataset.

Security, transparency and integrity must be maintained at the highest possible level. Consumers and businesses are increasingly conscious, and at times wary, of how data is collected and used. COVID-19 provides a useful example, where over time the Australian public has increasingly put aside hesitancy to embrace checking-in at public locations (shops, restaurants, cinemas, etc). An important concept the Productivity Commission should consider is the creation and maintenance of a 'social licence' for the use of data. A strong social licence, maintained by security, transparency, and integrity, will afford the government ongoing approval across the Australian public, businesses, and enterprises, to lead to the outcomes the government envisages. Failure to appropriately consider and entwine a set of values that reflect both community and commercial values risk undermining public and business confidence which in turn will undermine the possible productivity gains from greater sharing and use of data. It is also important

[53] Insight 3.5 specifically commences with the sentence "*Collaboration between government and the private sector can lead to new opportunities for digitisation and data sharing and derive more value from data provided to government agencies*."

for all relevant entities that there are clear legal frameworks for collection, use and disclosure or data, including across national and international jurisdictions.

We expand on this concept of the social licence and maintaining security, transparency, and integrity in our submission to the Department of Prime Minister and Cabinet's consultation on the Australian Data Strategy.[54]

3.2.5 More value from data held by government-funded service providers

The Commonwealth Department of Health has some existing and emerging approaches to use of health-related data by the Department and other entities under various governance frameworks. Telstra Health understands and supports the government's objective to gain insights about service utilisation and burden of disease to inform policy, and the need of healthcare providers (including State governments) to inform and improve service delivery.

3.3 Developing digital, data and cyber-security skills

Technology will continue to drive changes in the lives of consumers and the workplace, and businesses will need to respond and prepare for the future economy. Looking at the future demands for business in the digital economy and the skills that will be required, businesses will need to ensure they have an appropriately skilled labour force. At present Telstra, along with many other businesses, are facing a situation where demand for highly skilled digital technology talent is vastly outstripping supply. In addition to this, recent events in Australia in the telecommunications sector have highlighted a need for cyber security education to be built into adjunct technical areas, like engineering and IT, and in non-technical areas like health, law and management.

In recent research on the training and education needs for the future Australian workforce, RMIT found digital skills were forecast to have amongst the highest future workforce demand by businesses.[55] The study estimated that Australia will need 156,000 more digital technology workers by 2025, representing one in four jobs created during that period. It is important for policymakers to bridge digital divides and create the conditions to improve digital inclusion by assisting lower-skilled workers, marginalised communities and ensuring less-productive firms can close the gap with high performing firms. Skill development and enhancement are key priorities in this respect.

3.3.1 Specialist digital and data skills from formal education and training

There are three key areas that we believe we need to address and can play a role in developing specialist digital and data skills:

1. Create a future talent pipeline within Australia through industry engagement with the education sector, students, and parents. This could include the use of virtual internships to train teachers, career advisors, parents, and students what career pathways in digital technology are available.

[54] Telstra submission to Department of Prime Minister and Cabinet's consultation on the Australian Data Strategy, 6 August 2021. Available upon request.

[55] RMIT, 2021 https://online.rmit.edu.au/insights/2021

Telstra has already started building some of these (in partnership with Forage[56]) and we could scale and accelerate development of these programs.

2. Access the untapped talent pools, for example educating young females, First Nations People and under privileged youth. An example of this is the Telstra Foundation's Code Club Australia program that provides free capability building and tools to get students coding, with a focus on under-served cohorts. We need to ensure we have the right pathways to develop the skills we need when we need them. Telstra has partnered with the University of Melbourne to establish Melbourne Connect.[57] This purpose-built facility is designed to support the development of tech skills that matches our needs and increase the diversity in the digital technology talent pipeline through targeted scholarships.

3. Retrain, re-engage & upskill to help people participate in the workforce and evolve with the jobs of the future. This could include leveraging micro-credential courses and digital skills standards to have a retraining framework, potentially with government support (such as a retraining skills funding program) and making other training programs accessible for companies to run as internal retraining / upskilling programs. Some of Telstra's learning content, such as Future Ready, looks at developing the core skills required in all future roles are already developed and deployable (including a secondary school level course).[58] This content can lead to certification in these skills and ultimately, build credit towards qualifications (up to and including an MBA).

3.3.2 Supplementing the local workforce with overseas experience

During the pandemic global mobility was severely hampered by lockdowns and border restrictions, which impacted employment and the movement of workers. The reopening of international borders and the subsequent strong economic recovery and associated employment growth has resulted in significant labour shortages across a range of industry sectors, including the ICT sectors. There is an international shortage of expert health technology resources to support the digital transformation of health, ranging from software developers to clinical application specialists and change and benefit managers. The Australia-UK FTA should be considered as a key vehicle to share and develop this expertise. The government should also consider migration levers and streamline visa/PR processes for internationally accredited experts, this could be achieved by building equivalence between established programs such as CREST-UK and Australian certifications.

3.4 Balancing cyber security and growth

We place the utmost importance on the security of our assets and infrastructure. Telstra invests substantial resources to ensure they stand up to external and internal threats and consider all hazards in our resilience and risk planning. We welcome the Government's objective of uplifting the security and resilience of critical infrastructure through appropriate and proportional critical infrastructure reforms.

We have worked in consultation with Government on the development of critical infrastructure legislation. Telstra has a mature cyber security posture and considers the value in regularly monitoring cyber resilience and defences. The obligations created by the critical infrastructure legislation encourages

[56] Forage, 2022, https://www.theforage.com/virtual-internships/prototype/RNhbu8QnDzthwynEf/Cybersecurity

[57] Melbourne University, 2022, https://eng.unimelb.edu.au/telstra-creator-space

[58] The Institute for Working Futures, 2022, https://www.workingfutures.com.au/research/

businesses to have awareness of the practices and processes they undertake to be cyber-secure. While cyber uplift for some businesses, particularly those that are smaller in nature may be particularly burdensome and costly, there are greater benefits in being able to appropriately manage cyber risks and in being prepared to respond to incidents. The Government has also proactively provided support through guidance and resources about good security practices and responses.

As the effects of the legislation become more apparent, we support the development of streamlined obligations, avoiding duplication and aiming for consistency with the global regulatory activity in this space. We recognise that there are opportunities for greater coordination between government agencies regarding reporting requirements and notifications for cyber security incidents, which can reduce burdens on businesses. We encourage the Government to consult closely with industry in the continued development of rules and any proposed changes to government procurement standards.

3.5 Supporting ethical use of technology and data

Interim report 2 observes there are several domestic and international frameworks and principles guiding ethical use of technology and data, and that broadly, they contain elements embodying eight key principles.[59] We agree with the eight key principles and support the development of frameworks aligned to these principles. We also agree with the observation "*It is vital that government consults widely with industry and technical experts when designing and implementing policy responses to high-risk ethical issues.*"[60] It is vital that industry is included in the development of frameworks and principles, and as interim report 2 notes, Telstra was one of the participants in the Department of Industry, Science, Energy and Resources' AI ethics principles pilot program.

This section of interim report 2 goes on to observe that "*Most Australian companies are in the early stages of adopting ethically responsible technology practices*…", which probably places us in the minority, as we are well advanced and have worked hard to develop ethical practices and establish a governance framework around those practices. Following our participation in the AI ethics principles pilot program, we developed an approach to ensuring ethical use of Artificial Intelligence (AI) and Machine Learning (ML), and we share details of our approach below.

At Telstra, we purchase, develop, use, and sell products that use AI and ML. We also analyse our telecommunications data to gain insights into our network performance and how our customers use our products and services. As a responsible business, we are conscious of the potential impacts of AI and ML on our community and particularly those who are most vulnerable. At the same time, we are aware of the exciting opportunities they represent to deliver enhanced network performance and a personalised customer experience. We take our responsibility to develop, deploy and monitor these products seriously. We strive to do this in ways that not only respect the privacy of our customers and the wider community, but also include broader ethical considerations. Via Telstra Foundation we are supporting the Australian Red Cross Humanitech initiative to drive advocacy for and public discourse about ethical technology development.

Our healthcare organisation Telstra Health operates within this framework in conjunction with our Clinical Governance Framework to ensure our own and third-party AI products deliver intended benefits and uphold ethical standards.

59 Interim report 2, Box 3.6, p.78.
60 Interim report 2, p.81

Our approach is guided by our Responsible AI Policy, which is closely aligned to the Department of Industry's Australia's Artificial Intelligence Framework.[61] This provides guidance to everyone in the Telstra Group for the responsibility and care they are expected to take regarding these technologies. The Policy is governed by Telstra's Risk Council on AI and Data (RCAID).

We introduced new operational procedures to embed the implementation of our Responsible AI Policy. This included:

- creation of an AI Model Register to capture all AI use cases in Telstra.
- review by the RCAID of all in-production AI use cases with more than minimal risk; and
- update of processes for new projects to ensure that these are reviewed in line with the risks that they present.

Our approach uses a risk-based approach, aligned with the European Commission's regulatory framework proposal on AI (reproduced in Figure 3.15 of interim report 2). By adopting a risk-based approach, we can place governance around projects as and when required without unduly burdening minimal-risk projects.

3.6 Coordinating the policy and regulatory environment

Regulatory coordination is in some respects the most challenging aspect of enabling future productivity gains from data and the digital dividend. Balancing the twin objectives of promoting the uptake of data-enabled technologies and innovation, while simultaneously addressing the risks associated with it, is key to driving economic and productivity gains. An approach that is overly cautious and restrictive will stifle innovation, and an approach that fails to provide adequate guardrails risks misuse of the data, undermining public confidence and trust in sharing and using data, which will also inevitably restrict innovation and investment.

Complicating matters further, as interim report 2 notes, legislation intended to address a narrow issue or sector can have a broader impact and unintended consequences, especially where they are hastily developed. The Productivity Commission cites two examples of the *Criminal Code Amendment (Sharing of Abhorrent Violent Material) Act 2019* (Cth), and the *Telecommunications and Other Legislation Amendment (Assistance and Access) Act 2018* (Cth). Creating fit-for-purpose legislation to target specific issues in the dynamic environment that is modern technology is fraught with challenges, and we agree with the Productivity Commission's observation in this regard.

Section 3.6 of interim report 2 looks at possible approaches to address this challenge and discusses the Digital Platform Regulators Forum (DP-REG). The DP-REG was established in March 2022 to improve coordination on digital platform regulation between the ACCC, ACMA, OAIC and Office of the eSafety Commissioner. The DP-REG appears to be based on the UK Government's Digital Regulation Cooperation Forum (DRCF), established in 2020. We consider the establishment of cross-regulator forums can indeed improve the coordination between regulators and the regulation they produce, and we welcome the initiative of the regulators in this regard.

However, while introducing better coordination between regulators is necessary and important, it is not sufficient. It risks tipping the balance in favour of regulation, which as noted, risks stifling innovation. What is required is a principle-based policy framework that adopts a risk-management approach to the use of

[61] https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework

data and digital technologies. We discussed risk-based approaches in section **Error! Reference source not found.** below.

As digital technology becomes an ever more central part of every aspect of people's lives, people must be able to trust it; trustworthiness is a prerequisite for its uptake. We consider the development of overarching principles and a risk-based approach to be the best way to balance the objectives of promoting uptake and innovation while ensuring community trust is earned and maintained through appropriate policy settings and regulation for higher-risk use cases.

3.6.1 Government should adopt a risk-based approach

We agree with and support the Productivity Commission's recommendation that government should adopt a risk-based approach. As described in the previous section, Telstra has adopted a risk-based approach aligned to the approach proposed by the EU, as reproduced in Figure 3.15 of interim report 2. A risk-based approach facilitates fit-for-purpose governance and regulation where necessary, without creating undue compliance burden on industry or stifling innovation.

We acknowledge that even with a risk-based approach, it is still challenging for governments to determine when and how to apply regulation. As interim report 2 notes, it is not only the technology but the context that matters. Machine learning algorithms could fall into a higher risk category when used for decision making in relation to people, but if such an algorithm was used for the relatively innocuous purpose of a chess game, it could fall into a lower risk category.

This is where adopting a risk-based approach to regulatory intervention (insight 3.11) would be very beneficial. Technology is evolving rapidly, and laws and regulation struggle to keep pace. By adopting a risk-based approach, data analytics and technologies such as AI and ML can be adopted immediately in low-risk scenarios, while in parallel, policy and regulation can be developed for high-risk scenarios. Examples of low-risk use cases include optimisation of transport and logistics, improving farm and agriculture productivity, and optimising energy consumption in factories and warehouses (to name a few). In these cases, innovation using data, digitisation and digital techniques can be enabled now to improve Australia's productivity and economic wellbeing with little to no risk of harm to individuals.

Telstra therefore recommends the Productivity Commission considers adopting a risk-based approach in Australia that would enable low-risk use cases to proceed now, allowing innovation to drive productivity gains in these areas. In parallel and in consultation with industry, a framework can be developed for higher-risk scenarios.