Papua New Guinea Telecommunications Blueprint

Final Report, October 2026

Foreword

The 31st Australia–Papua New Guinea Ministerial Forum held on 20 October 2025 recognised the importance of strengthening the telecommunications partnership between Papua New Guinea (PNG) and Australia and agreed on the importance of the compatibility and resilience of telecommunication systems. Ministers agreed that the next step was to undertake an independent assessment to prepare a Telecommunications Blueprint to guide reform and investment.

Ministerial Forum Communique –

"Ministers acknowledged the close existing partnership between PNG and Australia on telecommunications and agreed that bringing down consumer internet prices was critical to improving digital access, driving business investment and economic growth and enabling increased education opportunities through online learning. Ministers further agreed on the importance of ensuring the compatibility and resilience of telecommunication systems. Ministers agreed the next step in advancing our telecommunications partnership was to undertake an independent assessment to guide a blueprint for further reform and investment. Ministers tasked senior officials to complete the assessment by PNG Investment Week (December 2025) with a view to finalising a blueprint prior to the next Ministerial Forum."

In response, a project delivery team was established to develop the PNG Telecommunications Blueprint. The team is led by Professor Rod Sims as Eminent Person and Mr Jack Tomon as Expert Advisor. The Blueprint is supported by Long Street Advisors led by Mohammad Chowdhury and supported by Catherine Quaden, Maxine Loynd and Rob Nicholls.

Drawing on extensive expertise across telecommunications, infrastructure, competition, regulation and investment, the team has undertaken an independent assessment of the sector and engaged with key stakeholders across PNG and Australia.

The PNG Telecommunications Blueprint is the outcome of this work. It provides key information on the history and structure of the telecommunications sector, a fact base on the current state and recommendations to support the continued development of the sector.

The focus of the Blueprint recommendations is to act immediately on ensuring a strong, safe, sustainable and resilient telecommunications sector, focusing on improving coverage, affordability and adoption of digital connectivity across PNG. It identifies opportunities for reform and investment that will strengthen digital connectivity and support PNG's broader economic and social objectives.

We acknowledge the contributions of all stakeholders who have supported this important work.

Executive Summary

Claimed at 27 per cent, PNG has one of the lowest internet uptake rates on earth. Internet adoption in PNG ranks behind every Asian and Pacific neighbour and 191st out of 205 countries.

With three quarters of the population unable to afford a basic package, internet in PNG is one of the least affordable anywhere. A typical internet package costs 6 per cent of average monthly income, compared to 3 per cent in Fiji, 2 per cent in Thailand and 1 per cent in Indonesia. Internet prices in PNG are almost 20 per cent of monthly income for the poorest fifth of the population.

Structurally there are two bottlenecks blocking PNG from growing the internet, overpriced and underutilised international connectivity and an unreliable and underinvested domestic network.

International bandwidth costs are 15 to 400 times higher than similar Pacific and Asian routes. The data transit rates offered by DataCo to Mobile Network Operators (MNOs) and Internet Service Providers (ISPs) for Port Moresby-Sydney are 15-30x higher than a Suva-Sydney link and 100x higher than Jakarta-Sydney. PNG's rates are 1500x higher than a London-New York link.

High international input costs force higher customer retail prices, resulting in lower overall affordability. International input costs play a significant role in setting overall costs, which are also made up of domestic and access network costs and marketing and distribution costs.

PNG's domestic telecommunications network is costly, unreliable and incomplete. Difficult topography, seismic activity, land access and safety challenges make the deployment and maintenance of towers and fibre difficult. Significant gaps in reliable fibre connectivity between major centres and limited redundancy force operators to rely on less efficient microwave links and expensive Geostationary Earth Orbit (GEO) and Medium Earth Orbit (MEO) satellites. Reliable coverage is available to only around 60–65 per cent of the population at any point in time.

The cost of operating and expanding the network is increased by limited access to grid power and infrastructure sharing. The lack of grid electricity at many tower and fibre sites requires operators to rely on expensive diesel backup power, while historically low levels of infrastructure sharing have resulted in duplicated networks and higher capital and operating costs.

Only 81% of PNG's population is reached by a network that provides broadband internet speeds. This is explained by the high cost of connecting remote areas combined with low population density, making it unattractive for commercial operators to invest in building more and more towers.

The responsible sector department, Department of Information and Communication Technology (DICT), has not dedicated itself to modernising the nation's telecommunications policy. In recent years, DICT has been more focused on Digital Government and Digital ID and has neglected to focus sufficiently on addressing major challenges in telecommunications policy. The country lacks a current telecommunications masterplan or sector policy statement to guide the industry's growth or set the context for effective regulation. Ingrained issues that have impeded growth as described here have not been tackled through policy leadership.

The sector regulator, National Information and Communications Technology Authority (NICTA) has not done enough to apply and enforce regulatory arrangements, promote effective market competition and enable lower prices and faster growth. Whilst regulatory instruments are available and domestic network competition is allowed, a lack of enforcement of regulatory undertakings, especially in maintaining wholesale and retail market behaviours has hampered progress.

DataCo has not focused on its mandate to build PNG's domestic network and operate as a wholesaler only. In the past five years, DataCo has deployed only PGK40m in network capex, barely five per cent of the Blueprint's

estimated investment gap of PGK 750-950m of backhaul network investment today. The Blueprint estimates a range for backhaul network investment given there are options available to industry to mix technologies and infrastructure to find workable solutions, including the significant use of LEO Sat technologies not available until now.

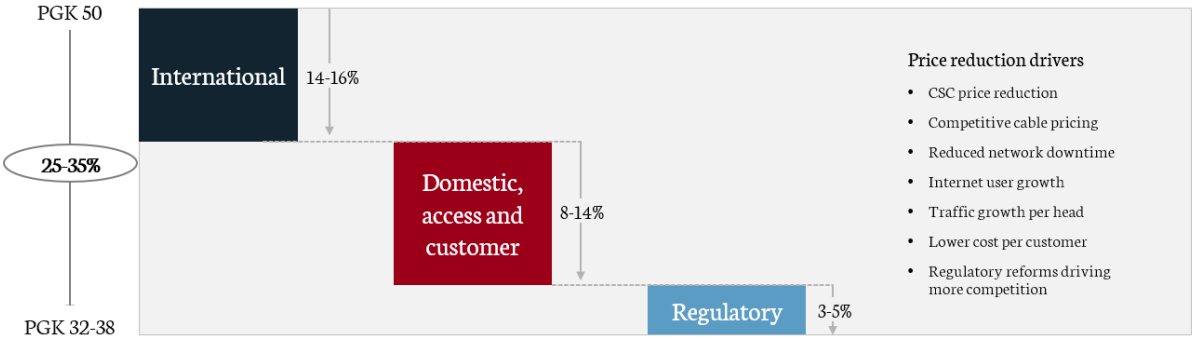
Telikom PNG has struggled to remain a sustainable and competitive third telco retailer in the market and its market and financial deterioration is discussed in the Blueprint. Taking steps to enable Telikom to be a stronger third player, commercially sustainable including through financial restructuring and systems improvement, halting further capital investment and selling a stake in the company are steps that the Blueprint discusses.

Universal Access and Service (UAS) funds have not been utilised effectively to extend the network's reach to rural or remote areas. The UAS fund has underspent funds collected from licensed operators. Where spending has occurred there has been a lack of coordination in choosing sites, mandates to build shareable infrastructure have not been enforced and there has been a lack of sustainability of service post deployment.

The basic internet value proposition for Papua New Guineans remains unconvincing to many. Due to a combination of all the above challenges, the majority of PNG's population remain offline. On top of that, an insufficient range of digital services and applications in Tok Pisin or indigenous languages isn't convincing people to make the shift. PNG's data use per head is just one sixth of the average per head use in Fiji.

Core to changing that value proposition is to improve affordability. Implementing the Blueprint actions can be expected to result in a 25-35% drop in retail prices as shown below:

Potential consumer price reduction ranges on a nominal PGK50 monthly mobile internet package by 2031 based on Blueprint measures implementation



Source: Long Street Advisors analysis

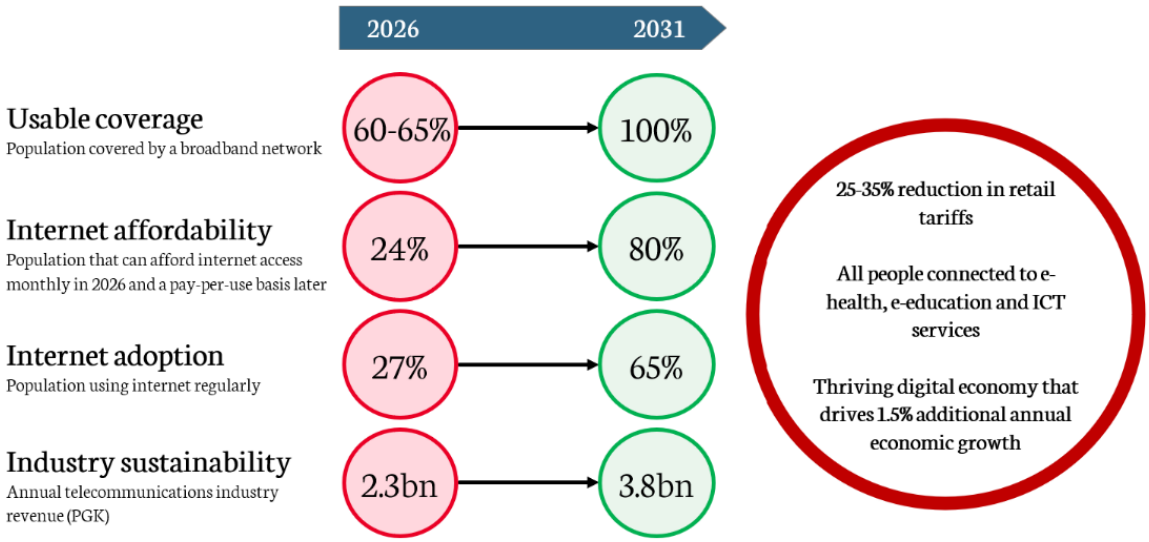
The Blueprint is not mandating price changes. The Blueprint's analysis predicts that the above changes will be facilitated by the recommendations, driven by lower operating and capital costs, stronger retail market competition and a disciplined regulator committed to seeing through the changes it is working on.

While internet uptake is the target, safeguarding the digital future is a necessity and requires PNG to adopt a strict safety, resilience and security regime. At the connectivity level, this starts with mandating that equipment is sourced from trusted vendors for all elements of the network. At the application level, this is to be accompanied by modern cyber security protocols and arrangements. At the user level, there is need for the protection of the population from online harms as the nation strives to become an internet society.

LEO satellite technology represents a game changer, as the technology provides economically attractive solutions suited to PNG's challenging geography. Its value lies in four use cases that should be leveraged to drive connectivity outcomes: 1) providing backhaul for connecting mobile towers, meaning towers do not need to use fibre or microwave to link to the rest of the network; 2) direct-to-premises internet for metro households and businesses able to afford it, giving those premises more reliable connectivity; 3) shared-use community Wi-Fi sites, which can extend affordable connectivity to anywhere in PNG through the deployment of terminals; and

4) Community Gateways, which can be integrated into the domestic network to optimise traffic routing options for operators. Despite the opposition this technology has faced, the Blueprint welcomes its arrival and sees it as a critical enabler of PNG's digital future.

Implementing the Blueprint provides an opportunity to add PGK 87billion to national GDP over the next decade, plus bring millions of Papua New Guineans into employment and within digital reach of world-class education, health and other essential life services. With meaningful connectivity PNG can better participate in the digital revolution and transform outcomes in e-health, e-education and business across all provinces. National transformational change will be driven by ground-level attainments in coverage, affordability, adoption and the sustainability of the telecommunications industry. The expected five-year impacts are shown below.



Source: Long Street Advisors

The PNG Telecommunications Blueprint offers a pathway to change the current trajectory. Through a comprehensive programme of consultations, field visits, fact collection and analysis, the Blueprint team have defined six Recommendations and 25 Actions to realise PNG's digitalisation ambition.

Summary of Recommendations and Actions

1. Enhance international cable redundancy, reduce prices and drive volume

- Design the Pukpuk Digital Connectivity Initiative (PDCI) to meet PNG goals
  - Keep reducing international prices and driving increased volumes
  - Define cost recovery principles and safeguards
  - Drive performance through a multi-stakeholder SPV and a minority GoPNG stake
- Take immediate steps to cut Coral Sea Cable prices and restore original intent of grant to provide low-cost international connectivity to PNG's population

2. Embrace LEO satellite technology as a game changer for PNG

- Embrace LEO technology across all its use cases:
  - Bring high-speed internet to unconnected wards
  - Better internet for households and enterprises
  - Optimise mobile tower backhaul arrangements
  - Optimise domestic traffic routing and back-up
- Publish LEO Sat licensing framework and make clear the expectation on deploying earth stations
- Ensure direct enterprise satellite sales are regulated on level terms to local service providers

3. Drive rural connectivity in wards which don't have the internet today

- Create a bilateral programme to deploy 2,000 LEO Community Wi-Fi sites to connect schools, health centres and communities in unconnected wards
- Offer an immediate kick start to getting PNG's rural and remote population online
- Deliver practical digital literacy and e-safety training to communities alongside the deployment of the LEO Community Wi-Fi sites

4. Build the domestic network through investment, competition and shared infrastructure

- Instruct DataCo to focus on its mandate to be a wholesale-only provider
- Unlock wholesale network competition and mobilise new sources of investment
- Access PPL's infrastructure to speed up and facilitate domestic network deployment
- Agree a "dig once" policy for national infrastructure building through Connect PNG
- Aggregate and optimise domestic traffic routing using LEO Sat Community Gateways
- Strictly enforce wholesale service-specific pricing to correct current monopolistic behaviour
- Transform Telikom to be sustainable, competitive and ready for private investment
- Encourage infrastructure sharing to cut duplicated infrastructure cost and accelerate expansion

5. Strengthen cybersecurity and network resilience to protect PNG's national interest

- Put in place trusted vendor and responsible procurement principles for all network activities and to support a safe and secure connectivity system in PNG
- Build a digital trust ecosystem through cybersecurity and data governance legislation
- Create a clear hosting protocol for PNG's most sensitive data

6. Implement delayed telecommunications policy and regulatory reforms

- Adjust the Operator Class License framework to limit future retail-bypass licensing
- Re-farm unused spectrum to support rural expansion and level the playing field
- Reform and redesign the Universal Access and Service (UAS) Fund to accelerate closing rural connectivity gaps
- Mandate Mobile Termination Rate actions
- Support local caching and restore the Neutral Internet Exchange Point
- Strengthen NICTA's capability and industry engagement as a modern, data driven regulator
- Mandate Mobile Number Portability reforms

Implementation recommendations:

- Establish a Blueprint Steering Committee, constituted as a Committee of the National Executive Council
- Announce that responsibility for telecommunications policy lies with the Minister for ICT, and that this applies to the entire PNG telecommunications industry including SOEs.
- Elevate DICT's departmental status to reflect the breadth of its responsibilities for enabling PNG digitalisation

The Blueprint should be implemented around three horizons of activity, starting now. Each Action is assigned to:

- Horizon 1, undertaken between October and December 2026
- Horizon 2, undertaken between 2027 and 2028 for near-term delivery
- Horizon 3, undertaken between 2029 and 2031 for longer-term implementation.

Horizon 1 should take place as soon as possible to maximise the benefits before the end of 2026, and ideally should include:

- Establishment of the Pukpuk Digital Connectivity Initiative (PDCI) SPV with minority government ownership, based on cost recovery only pricing
- Direction to DataCo to immediately reduce its pricing on the Coral Sea Cable to no more than USD6 Mbps/month, with subsequent engagement with NICTA using its information gathering powers to establish DataCo's actual operating costs, particularly over time as volume grows
- Engagement with the three MNOs to reduce their retail pricing immediately to reflect reductions in international cable pricing along the lines of the price reductions mentioned in the Blueprint
- Direction to NICTA to enable full use of LEO-sat technology, including for direct sales, backhaul and community gateways as described in the Blueprint
- Announcing a LEO Community Wi-Fi sites programme with an announcement of initial eligible villages before the end of 2026
- Announcing that wholesale market competition is being welcomed in PNG so that, as well as DataCo to be refocused on its wholesale market role, others including MNOs are encouraged to build and expand the wholesale network backbone, including through consortia and using a mix of existing and new LEO Sat technologies
- Announcing that PNG Power Limited's infrastructure, poles, ducts and transmission corridors are open to telecommunications investment, partnerships and use by all market participants, and that DICT, NICTA and the NEA will work immediately on a facilities access regime, and that all impediments to this happening will be removed
- Coordination and acceleration of the work to establish tower sharing arrangements between operators, and show support for the work already underway on this
- DICT establishing an independent review of Telikom with a view to determining what is necessary to put the business on a commercially sustainable basis, including financial restructuring and systems improvement, and halting any further major capital investment, with a view to selling a 49 per cent stake to an experienced telecommunications operator
- Implementing the Mobile Terminating Rate regime by end 2026, and commence work on Mobile Number Portability as soon as possible
- Re-farming of unused spectrum as soon as possible
- Pausing the current UAS round and establish an independent review of the program as outlined in the Blueprint
- Announcing trusted vendor principles for critical telecommunications procurement through existing licence and public procurement powers until appropriate legislation is in place
- Passing the Data Governance and Cybersecurity Bills by end 2026
- Providing the Minister for ICT with policy responsibility for telecommunications SOEs as recommended in the Blueprint, while keeping all other oversight with the Minister for SOEs.

About this document

The PNG Telecommunications Blueprint sets out recommendations for reform and investment in PNG's telecommunications sector over the next five years, starting immediately.

The Blueprint draws on workshops and consultations with a wide-range of government agencies, the sector policy arm of Government (DICT), the regulator (NICTA), other sector participants (National Broadcasting Authority) key Mobile Network Operators (MNOs) at the wholesale and retail level (DataCo, Telikom, Digicel and Vodafone), Internet Service Providers (ISP), satellite licensees, the Reset@50 Delivery Unit, private sector Information and Communication Technology (ICT) representative bodies, private sector business representative groups, academics, and development partners, together with independent analysis of the PNG market, its regulatory instruments, information in the public domain, and the experience of peer nations. A full list of consulted parties is provided Annex A.

Reader's guide

This document contains a significant amount of detail. The detail is important to establish an undisputed fact base for the PNG telecommunications sectors current status and challenges, and to be clear on precisely the next steps to be taken forward.

Our guidance is that you read the report based on your specific professional interest in the Blueprint, including that:

- You have a general interest in the Blueprint: start with Executive Summary, Summary of Recommendations and Actions and Chapter 1: Key findings: Case for reform (allow 10-15 minutes)
- You are a telecommunications or ICT industry professional with interest in PNG: work through the entire document, focusing on elements of Chapter 3 that interest you (allow at least one hour)
- You are an ICT or digitally focused policy maker: read the whole document (allow at least one hour)
- You are an international observer with interest in connectivity and digitalisation: read the Executive Summary, Summary of Recommendations and Actions, Chapter 1: Key findings: Case for reform and work through Chapter 3 content that interests you (allow one hour)

Disclaimer

The contents of this report draw upon interviews with industry executives and government officials, publicly available data, regulatory filings and consultation submissions, and original analysis and modelling prepared by the authors. It has been prepared to inform policy discussion and is not a substitute for independent professional, legal, financial or technical advice. Any reliance placed on the contents of this report is strictly at the reader's risk. The authors are not responsible or liable in any way for any loss, damage, or liability arising directly or indirectly from the use of or reliance upon the content.

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Chapter 1.

Key findings: Case for reform

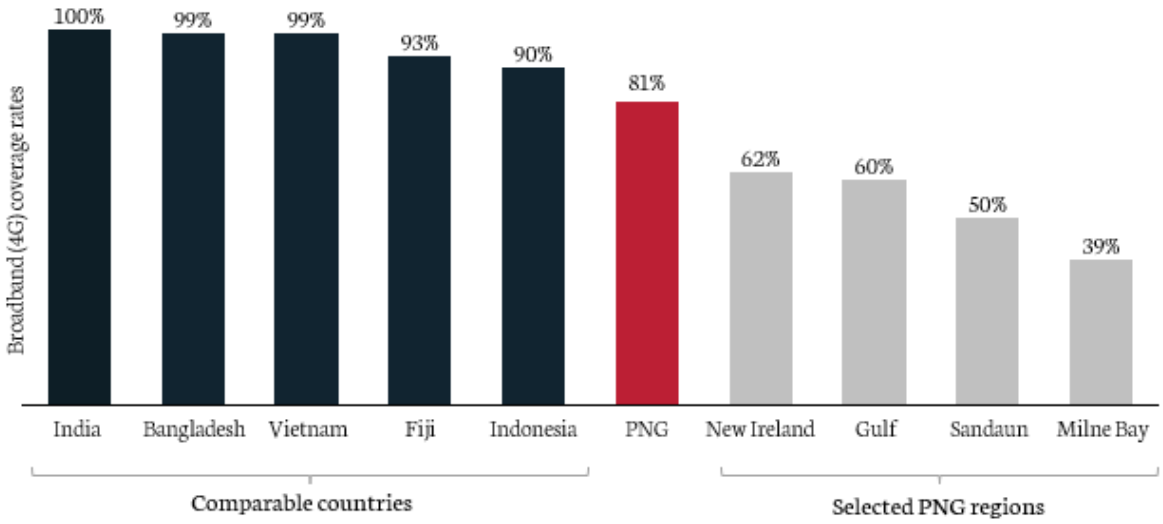
Chapter overview

This chapter sets out the key findings from the Blueprint exercise and the case for addressing PNG's digital connectivity gaps. The chapter examines the factors that have held back adoption and the barriers that continue to affect coverage, affordability and demand. It considers what is possible if those constraints are removed and the safeguards needed to ensure that digitalisation strengthens trust and resilience.

PNG's terrestrial network reaches 81 per cent of the population, but only 60-65 per cent have meaningful coverage at any time.

Due to limited consumer affordability, high engineering costs and difficult conditions to deploy terrestrial networks in PNG, internet connectivity networks have thus far only reached 81 per cent of the population through a broadband, that is 4G, network. This lags most of PNG's peer nations, which have 4G, 5G or fibre-based networks that reach almost all their populations, as shown in Figure 1.

Figure 1: Broadband (4G) coverage rates in comparable countries and PNG regions (figures not adjusted for network downtime)



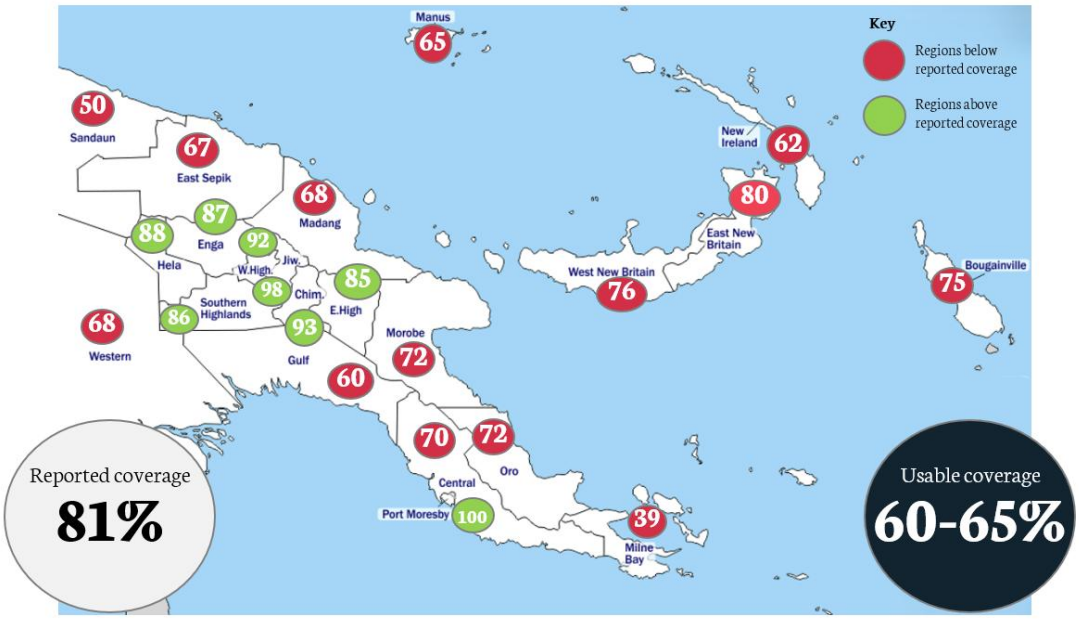
Source: World Bank, GSMA Intelligence, Digital Development, NICTA, Long Street Advisors analysis

The network coverage figure overstates what most Papua New Guineans can rely on. With services regularly interrupted due to power outages, reliability issues and land disputes, only around 60-65 per cent of the population has network coverage at any given time. Even inside the areas nominally covered, the network is frequently unavailable when someone needs it. According to our consultations, a typical network operator may have 10 per cent or more of their tower network not operational at all. In addition, their operational network (i.e. the ratio of towers that is working) may be down 5-10 per cent of the time too. A coverage map showing where towers exist therefore tells only part of the story of where PNG has a working connection on a given day.

There are significant disparities in internet accessibility across PNG's provinces.

Whilst the National Capital District (NCD) boasts 100 per cent broadband network coverage (see Figure 2), a number of provinces in PNG have broadband coverage that is significantly lower than PNG's average.

Figure 2: Percentage of population covered by a high-speed broadband network across PNG provinces

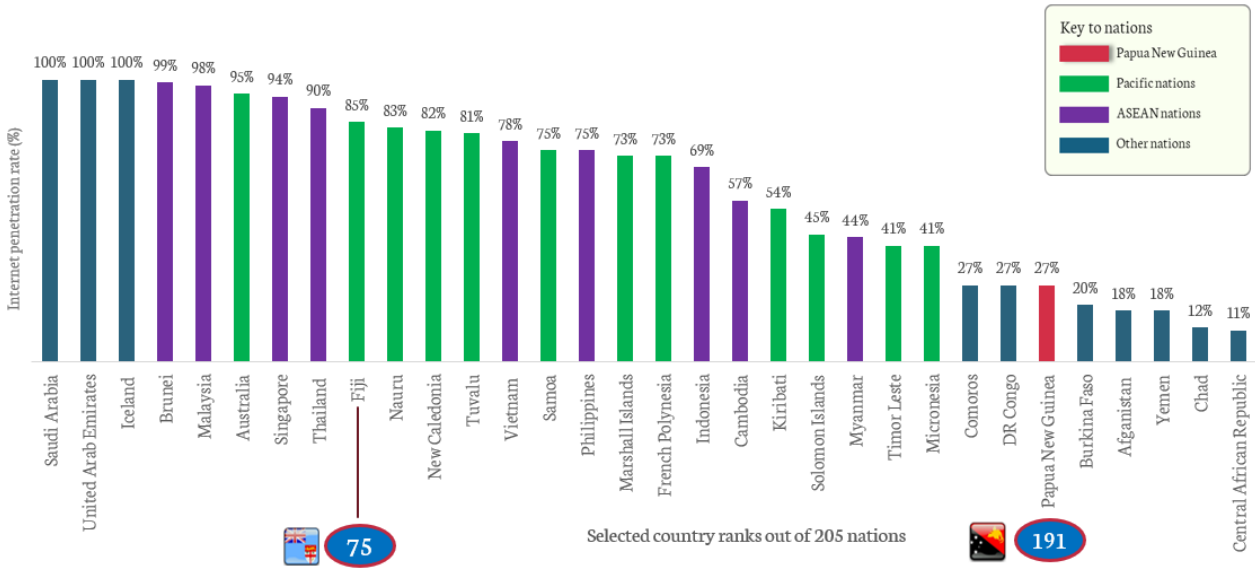


Source: NICTA, mobile operator consultations, Long Street Advisors analysis

PNG's internet adoption lags every nation in Asia and the Pacific.

According to the latest ranking data (compiled in 2023), PNG ranks 191 out of 205 nations in the world in internet access as a percentage of population. As shown in Figure 3, PNG ranks behind every one of its neighbours in Asia and the Pacific in internet penetration. PNG significantly lags Fiji, a regional peer nation ranking 75th.

Figure 3: Internet penetration, selection of 205 countries (data ranges from 2017 to 2023)

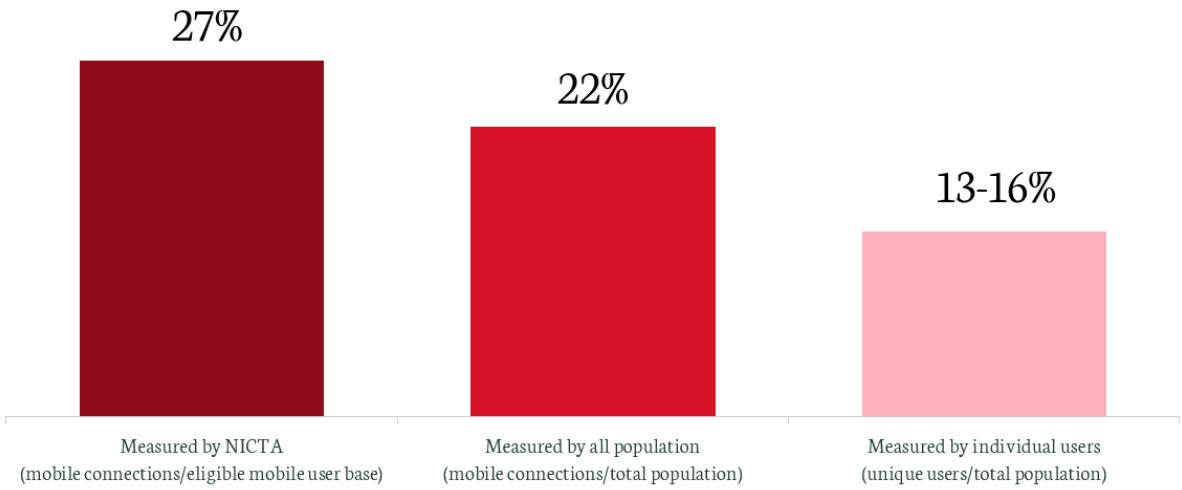


Source: ITU, GSMA, NICTA, Long Street Advisors analysis
Note: Internet penetration is defined as the population engaged in active internet use at least once in the past 90 days.

According to the latest published data from NICTA, the telecommunications sector regulatory authority, PNG has an internet uptake rate of 27 per cent of the population (see Figure 4). This measures internet connections as a percentage of PNG's eligible mobile user base, which NICTA defines as the proportion of the total population with access to mobile network coverage.

There are two reasons why this figure overstates actual penetration. Firstly, the industry in general measures internet penetration as a proportion of all population, not just covered population. Secondly, taking other developing countries as a reference, we estimate that PNG averages roughly 1.4 to 1.7 SIMs per subscriber. Taking this "dual SIM" pattern into account and measuring internet uptake as a proportion of all of PNG's population, PNG's actual internet penetration may be closer to 13-16 per cent.

Figure 4: Internet uptake (three measures for comparison)



Source: NICTA, ME Pacific Islands Report, GSMA Intelligence, Long Street Advisors analysis

Price is the biggest reason why PNG's existing coverage is not converting into greater adoption and usage.

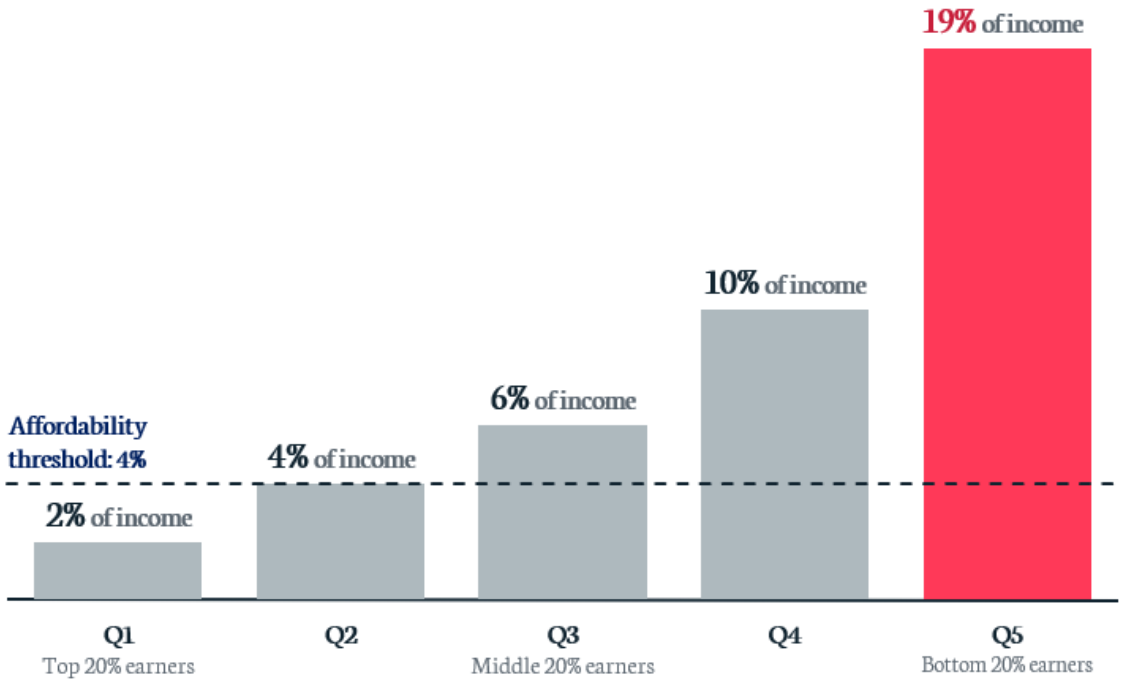
A typical monthly internet package in PNG costs between PGK50 and PGK75, covering 25 to 40 Gigabyte (GB) of data, a voice connection and Short Message Service (SMS). At the cheapest 30-day package price of PGK50 for data only, and against an affordability target of 4 per cent of monthly income, only around 24 per cent of PNG's population can comfortably afford a standard monthly plan.

The affordability gap is most stark when we look at the disparity between the top and bottom earners.

For the top 20 per cent of earners, a standard monthly package costs 2 per cent of income. For the bottom 20 per cent of earners, the same package costs 19 per cent of income, nearly five times the 4 per cent threshold applied in this Blueprint, and ten times the burden faced by the top quintile. This gap reflects how concentrated PNG's income is with the top quintile holding almost a half of national income and earning an average of USD6,859 (around PGK30,000) per capita a year, while the bottom quintile holds just 5.1 per cent of income and earns an average of USD740 (around PGK3,200) per capita a year.

On current pricing, a standard monthly internet package is realistically affordable only for PNG's highest earners; for most of the country, price, not coverage, is what keeps people offline or reliant on the kind of intermittent, top-up-based access that limits what the internet can do for them.

Figure 5: Standard package affordability as a share of monthly income by quintile

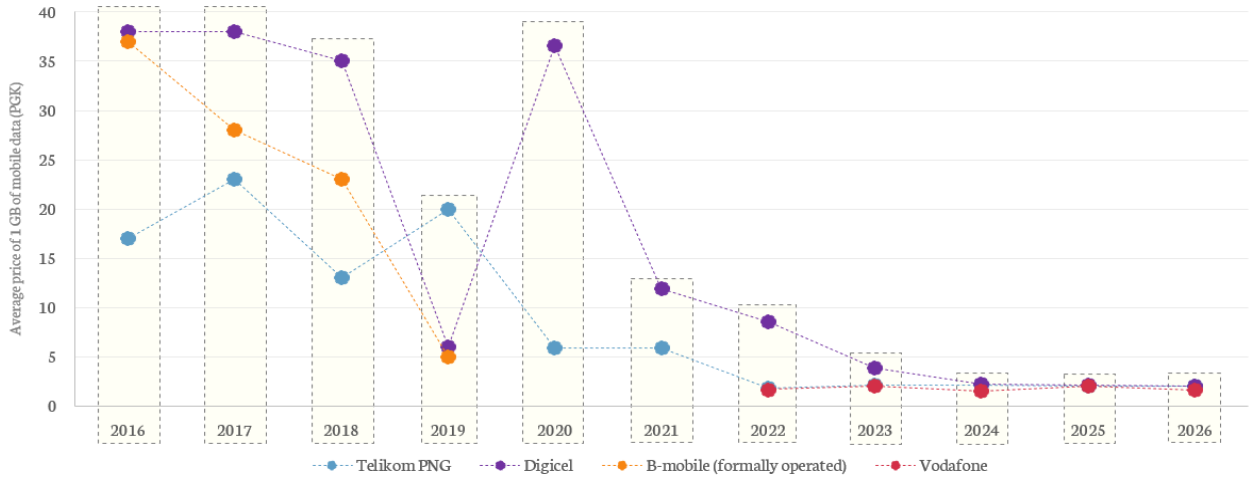


Source: Index Mundi, Broadband Genie mobile data affordability index, Long Street Advisors analysis
Note: The 4% affordability threshold is benchmarked against the Mobile Data Affordability Index, which shows that in the top 50 countries where data is considered affordable, the cost of a 30GB monthly package is consistently below 4% of average monthly income. We therefore adopt 4% of monthly income as PNG's affordability benchmark for a 30GB plan.

Between 2021 and 2024, PNG witnessed sharp drops in mobile data pricing helped by intensified competition and early drops in international bandwidth costs.

Vodafone PNG's entry into the market in 2022 is associated with significant drops in mobile data pricing, spurring intensified competition which resulted in all operators dropping their pricing. These price drops have been supported by drops in international connectivity costs between Sydney and Port Moresby, using the Coral Sea Cable, operated in PNG by DataCo. Figure 6 shows how PNG mobile data prices have dropped since the mid-2010s to today.

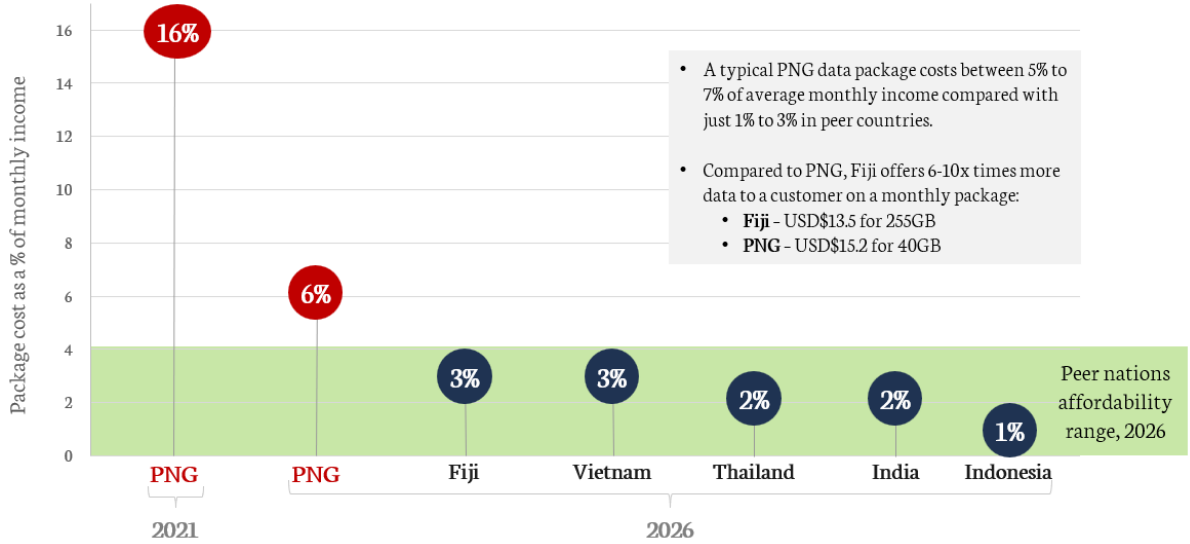
Figure 6: Average mobile data prices in PNG have dropped by over 90 per cent since 2020



Source: websites of operators 15.06.2026, Long Street Advisors analysis

But even after these price drops, PNG remains one of the least affordable internet environments in the world. Against countries with similar GDP per capita, such as India and Indonesia, PNG's internet affordability is 3 to 6 times worse. This is shown in Figure 7. In addition, Fiji offers 6-10x times more data to a customer on a monthly package, providing around 250 GB of data compared to 40-50 GB in PNG. It appears that Fiji's operators are actively giving away large volumes of data to encourage usage, because the marginal cost of supplying an extra gigabyte is low once wholesale capacity is priced to reward volume.

Figure 7: Monthly internet package price as percentage of monthly income – PNG and comparators



Source: websites of operators 15.06.2026, World Bank, Long Street Advisors analysis

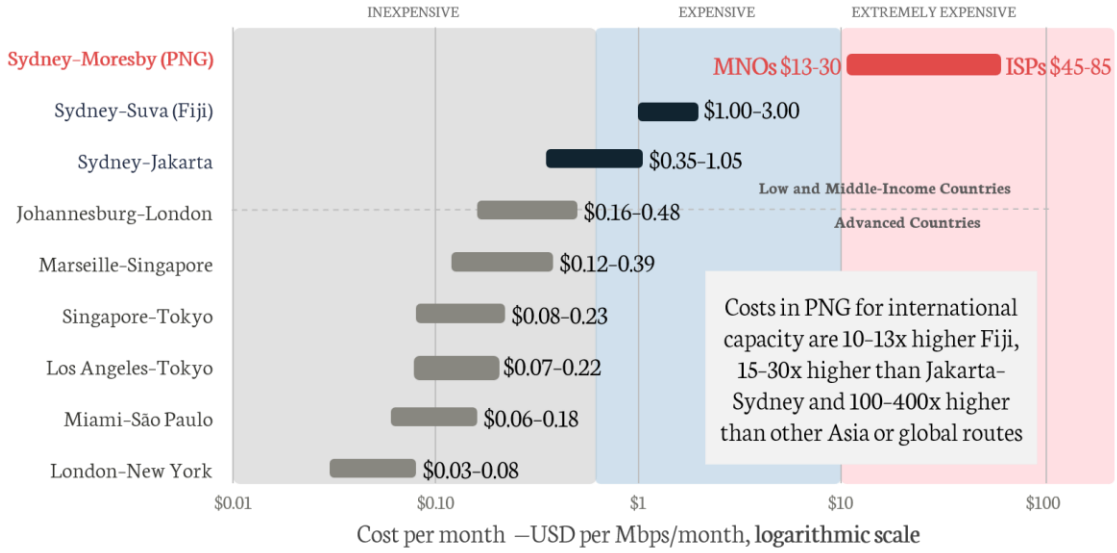
High prices start from expensive international tariffs charged by DataCo.

Sydney to Port Moresby international bandwidth costs PNG's major operators between USD13 (PGK57) and USD30 (PGK130) per Mbps per month. Smaller ISPs consuming less volume are paying higher amounts, up to USD62 (PGK271) for bundled international and domestic, known as Wholesale Internet Services (WIS), and up to USD87 (PGK380) for International Point to Point.[1] This compares to USD1 (PGK4.3) to USD3 (PGK13) for Sydney–Suva and USD0.35 (PGK1.5) to USD1.05 (PGK4.6) for Sydney–Jakarta.

That gap, 30 to 40 times Jakarta–Sydney pricing, and 100 to 400 times established Asian and global routes such as Los Angeles–Tokyo or London–New York, is one important source of several factors that add up to current price levels for connectivity in PNG.

[1] Note: This is based on the 2022 DataCo Reference Interconnection Offer (RIO) which is the latest published RIO

Figure 8: International bandwidth costs (POM to SYD and comparator routes)



Source: TeleGeography, LEKMAK, Coral Sea Cable Company, DataCo 2022 Reference Interconnection Offer, PNG consultations, Long Street Advisors analysis

According to the latest available Coral Sea Cable Company (CSC) report published in 2025, users in PNG pay significantly higher prices for using the same cable as their counterparts in the Solomon Islands. The Port Moresby to Sydney average price per Mbps per month was reported as USD51.9 per Mbps compared to USD31.38 per Mbps for the same service between Honiara and Sydney. This means that prices in PNG are 68 per cent higher than the average price in Solomon Islands.

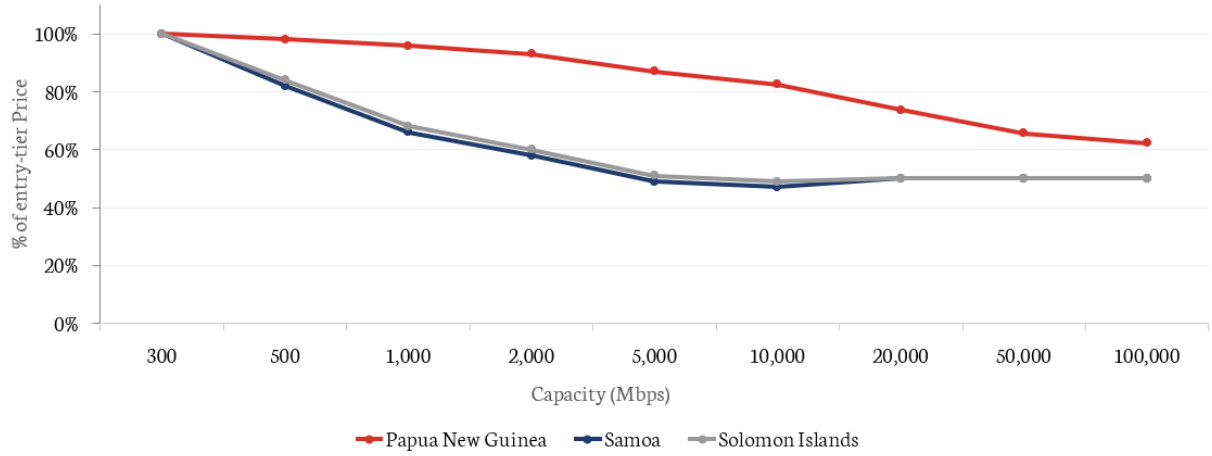
With the backdrop that the current price levels are too high, MNOs and larger ISPs have leverage to negotiate with DataCo where possible to secure more favourable rates. Smaller ISPs, however, have little or no negotiating leverage. These ISPs are consequently exposed to the highest wholesale prices and limited prospect of volume discounts. Smaller ISPs are critical to servicing PNG household and business customers. The impact of DataCo's high prices on them, and their customers, is especially significant.

Tiered pricing for Wholesale Internet Services suppresses data volumes and disadvantages smaller players.

Under DataCo's Reference Interconnection Offer (RIO), the wholesale unit price is fixed at USD62 (PGK270) per Mbps per month for any capacity up to 499 Mbps. An operator buying 10 Mbps and one buying 499 Mbps pay the same rate. The first reduction comes only at the 500 Mbps tier, and the reduction is worth 1.9 per cent. Even at the largest published tier of 100,000 Mbps the unit price is USD38 (PGK166), only 38 per cent below the entry rate. The steepest reductions are concentrated between 10,000 and 50,000 Mbps, beyond what most PNG operators and ISPs currently purchase therefore most buyers see little benefit from taking more capacity.

The volume tier pricing strategy in PNG contrasts to other Pacific nations. Other nations in the Pacific reward buyers of capacity with bigger discounts sooner as volume grows. Samoa, for example, passes through substantially greater unit price reductions at lower, more achievable capacities compared to PNG (see Figure 9).

Figure 9: Wholesale internet service price per Mbps for volume tiers - Samoa, Solomon Islands and PNG comparison



Source: PNG consultations, TSCI, DataCo, Samoa Submarine Cable Company, Long Street Advisors analysis

As shown in Figure 9, Samoan pricing tiers provide an incentive to buyers of between 3 Mbps to 10 Mbps capacity to buy more, leading to an ability to faster reduce retail tariffs and / or offer customers higher data volumes.

By contrast, with DataCo's international cable pricing tiers being flatter, operators buying anything up to 100 Mbps capacity from DataCo are not incentivised to purchase additional capacity.

This price tiering goes towards explaining why:

- Operators in PNG use other cable arrangements for international connectivity (such as International Private Leased Circuits (IPLC) from Sydney)
- Average per head data consumption in PNG is comparatively low, some 3-10x lower than similar income countries in the Pacific or Asia
- Approximately less than 1 per cent of the Coral Sea Cable capacity is being used today
- ISPs are disadvantaged in the market

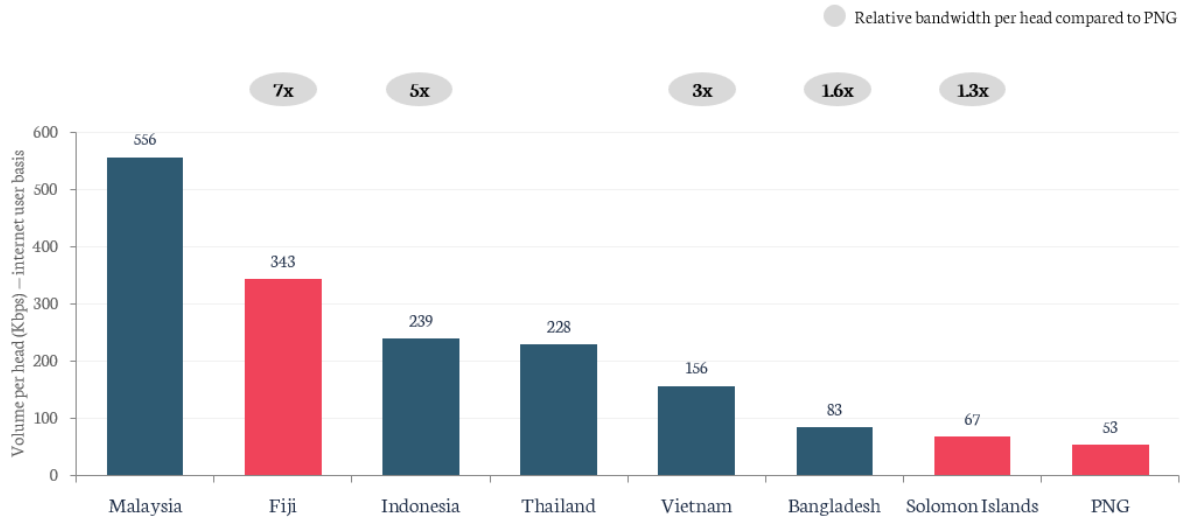
Data use per head in PNG is extremely low compared to peers and in respect of available cable capacity.

Current pricing of PNG's international cable capacity results in extremely low use of the cable capacity available, as shown in Figure 10. This shows that Fiji uses 2x the total amount of international data bandwidth as PNG, despite having less than one tenth of PNG's population.

The figure also shows how PNG has a significant opportunity to substantially increase the volume of data consumed per head:

- Fiji, which has almost twice PNG's GDP per capita, has 7x the per head data
- Indonesia, which has comparable income levels to PNG, has almost 5x the per head data use
- Vietnam, which has comparable income levels to PNG, has 3x the per head data use
- Bangladesh, at an earlier stage of internet adoption than Vietnam or Indonesia with similar income per head to PNG, has 1.6x the per head data use
- Solomon Islands, which is connected to the same Coral Sea Cable system, has 1.3x per head data

Figure 10: International bandwidth use per head, Asia-Pacific nations



Source: World Bank, Coral Sea Cable Company, ITU, Long Street Advisors analysis

It is not clear why DataCo has not tried to mirror patterns seen elsewhere which would reward retailers with greater discounts at lower volume jumps.

Adopting such a pricing strategy could be an effective mechanism to kick-start higher data use in PNG. Doing so would be consistent with two outcomes which the wholesaler should be trying to achieve, namely to:

- Drive higher data volumes given the cable has a vast amount of capacity which is available at no extra cost, and that PNG is at a very early stage of its internet journey
- Recover costs of cable management by charging lower prices and higher volumes, rather than higher prices and lower volumes

Given the price elasticity of demand for mobile data in PNG (as assessed by NICTA) is positive, over time it is likely that price reductions by DataCo in international connectivity would result in higher data uptake, meaning DataCo finds such price reductions revenue positive in the long term. Such a strategy would be in line with DataCo's mission to connect PNG citizens to affordable internet services, a mission that is discussed in detail further on in Chapter 2.

PNG customers' price sensitivity results in limited "meaningful" use of the internet.

Buying and usage patterns for the internet and making calls indicate how price sensitive most users in PNG are. Few consumers in PNG buy a monthly package. This is driven in part by a lack of liquidity as well as a lack of affordability.

Instead of spending PGK50 to 100 to buy a monthly package, 85% of consumers buy PGK3 to 5 top ups instead, sometimes several times a week. In this way, many lower income users end up spending more than PGK100 a month, significantly more than the cost of a monthly package.

Drip-feed connectivity is a poor substitute for a monthly plan. It results in more transactional, short-burst internet use, rather than the kind of sustained access that lets someone browse freely, download applications or stream content. This is why for the purposes of the Blueprint affordability is measured on ability to afford a monthly data plan.

"Sachet" top-ups provide liquidity more than value. In the Philippines, a sachet top up of ₱10 provides 1GB to a user for one day. This compares to ₱999 for 4GB continuously for a month, which works out at ₱8.50 per day per GB. Whilst the daily sachet at ₱10 might look inexpensive, it offers less value than the monthly package.

Multi-SIM behaviour is driven by three factors: on-net and off-net pricing, network coverage and a lack of Mobile Number Portability (MNP).

Many users have more than one connection to cope with the impact of "on net" and "off net" call charges. If a user wants to call their friend on network A, it can be cheaper to call using a SIM card that is connected to network A rather than network B or C, because the "on net" tariff on network A is cheaper, or even free.

Some current pricing plans do not allow a customer to call another network from their originating network at all. A related pattern is also common in rural areas: a household will run one SIM for data and a second SIM from whichever operator has usable coverage at their location, adding a further cost layer on top of the on-net/off-net dynamic.

Multi-SIM acquisition is driven by unreliable network coverage of some operators, including specifically for voice or data connectivity. Users therefore keep "one SIM for data, one for voice," and "one SIM for the city and one for outside the city."

The lack of MNP in PNG also contributes to multi-sim use as switching providers means losing the phone number they use for work, family and everyday life. Instead of giving up their existing number, customers, who can afford too, keep their original SIM and add a second one from a network with better coverage or service.

Multi-SIM behaviour is common across the Asia Pacific, though difficult to capture accurate data on. Based on indicative GSMA data, there are 2.3 SIMs per user in Thailand, 2.0 in Malaysia, 1.8 in Indonesia and 1.6 in the Philippines. Reliable multi-SIM data on the Pacific is difficult to obtain and interpret.

There is another key barrier to internet uptake and this is perception of internet value.

Outside urbanised areas in PNG, where there is a subsistence lifestyle, many families who have access to cash see little reason to spend it on internet connectivity. Firstly, internet is regarded as being unreliable and expensive. Secondly, services available over the internet are also not well understood or valued. Uplifting internet connectivity requires addressing reliability and affordability but also requires showcasing to PNG's people the value of digital services and how they can enhance livelihoods.

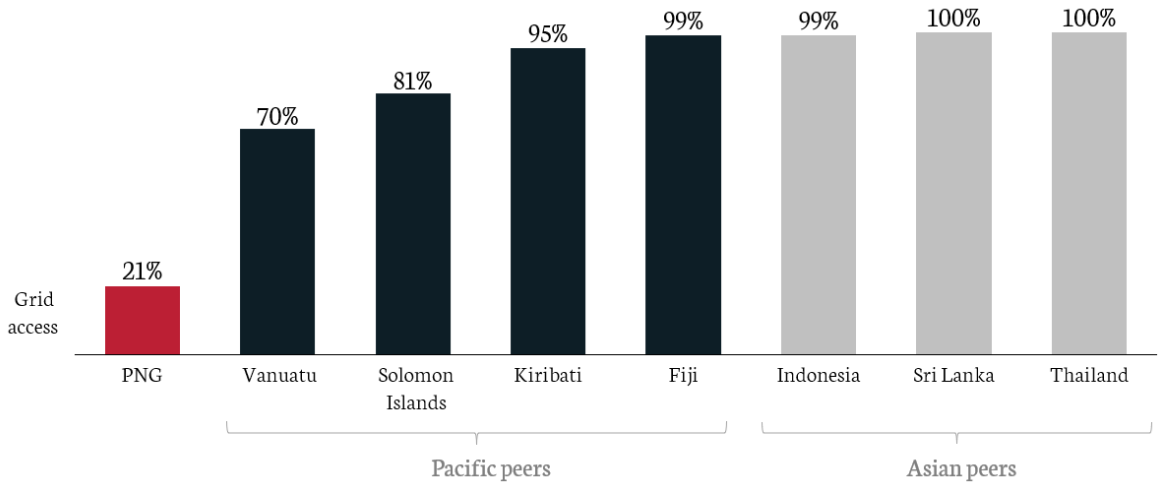
Language accessibility of digital services and content is limited in PNG.

Tok Pisin is widely spoken and is an important language for communicating with users whilst many people are more comfortable reading and writing in English. This means that digital services need to consider both spoken and written language needs. Critical services, including healthcare, education and financial services, have limited content available in Tok Pisin as well as local languages, creating barriers to digital inclusion and adoption. The addition of Tok Pisin to Google Translate in 2024 represents an important step towards improving access to digital information and services in a widely spoken local language. This is particularly relevant as PNG develops inclusive digital platforms such as SevisPass and SevisWallet. The timing of the Blueprint therefore provides an opportunity to ensure that the design and rollout of these services incorporate language accessibility from the outset.

A lack of reliable power is a massive cost burden on the industry.

Only 21 per cent of the population has access to grid electricity, by far the lowest ratio in the region, a consequence of PNG's mountainous terrain and dispersed island geography that PNG Power Limited (PPL), the state utility, has struggled to overcome.

Figure 11: International comparison of grid access, selected countries



Source: PNG consultations, World Bank, Trading Economics, Long Street Advisors analysis

Unreliable grid power poses both a cost burden and a reliability risk to operators.

To maintain services to customers, operators mitigate power risks (or unavailability, when outside the grid) through expensive investments in power self-supply. The workaround differs depending on whether a site has grid access at all.

- Where no grid connection exists, operators self-supply with a minimum of two diesel generators per site, at a capital and ongoing operating cost for fuel and security – a third is used if a backup is required
- Where a grid connection exists, operators run backup generators to cover outages as these happen frequently, even in NCD. This incurs a capital and operating cost whether the grid holds up or not

At any one time, PNG industry executives estimate that 10 to 40 per cent of towers are down because the grid itself has failed and the workaround has failed at a site. Hence both workarounds are a necessity to keep connectivity available and work effectively. These workarounds are extremely expensive.

With generators in remote areas, refuelling, replacing a failed part or getting a technician to site depends on difficult and expensive logistics sometimes requiring a helicopter, boat or on foot travel. In addition, sites are subject to fuel theft, theft or vandalism. This logistics constraint combined with recurring power unreliability issues presents operators with both a cost and a reliability problem due to power.

PNG's domestic network is fault-prone and lacks cost-effective options to reroute traffic when faults occur.

Domestic network faults can be attributed to five key issues: power, vandalism, seismic activity, maintenance and land access challenges. These are discussed below.

Power: Unlike mobile towers where a power backup failure can be isolated to one site, if power is disrupted at a major transmission link in the domestic backbone, dozens or hundreds of downstream sites that depend on it can lose connectivity, impacting thousands or hundreds of thousands of customers.

Vandalism: Towers, fibre cables and other network equipment, including the assets strung on PPL infrastructure, are vulnerable to vandalism and deliberate damage creating both additional repair costs and extended service outages.

Seismic activity, especially on undersea cables: PNG sits in an active seismic zone. Earthquakes have repeatedly caused physical damage to both terrestrial and submarine infrastructure. This is particularly a challenge for PPC-1 which connects the Northern part of PNG and KSCN which provides a loop connecting numerous landing points.

Irregular or delayed maintenance. Connectivity infrastructure that isn't serviced regularly increases the likelihood of a fault occurring in the first place and can take longer to repair than on a well-maintained network.

Land access challenges: Disputes over access to sites and rights of way occur frequently given that 97 per cent of PNG land sits under customary land tenure. This means new site deployment and even routine repairs require negotiating access with individual landowning groups.

These challenges contribute to prolonged outages across the domestic network, covered in detail in Chapter 2 and illustrated in the network outage report below, which shows 12 outages.

Figure 12: Reported outages on the domestic and international network (2019-2024)

Reported outages:

1. KSCN link to Jayapura was non-operational till 2026
2. Highlands cable often out of service
3. Hides to Mendi "missing link"
4. Landing station outages at Vanimo and Daru
5. Exxon fibre link which has been out of service 5 yrs+
6. PPC-1 system impacted by earthquakes
7. Entire northern KSCN-1 taken out by earthquake
8. DataCo central servers in POM and Sydney failed
9. OPGW link from Madang to Lae has regular outages
10. KSCN link into Lae – never been operational
11. Express link (POM-Madang) impacted by earthquakes
12. Reported operational challenges at Coral Sea Cable landing site

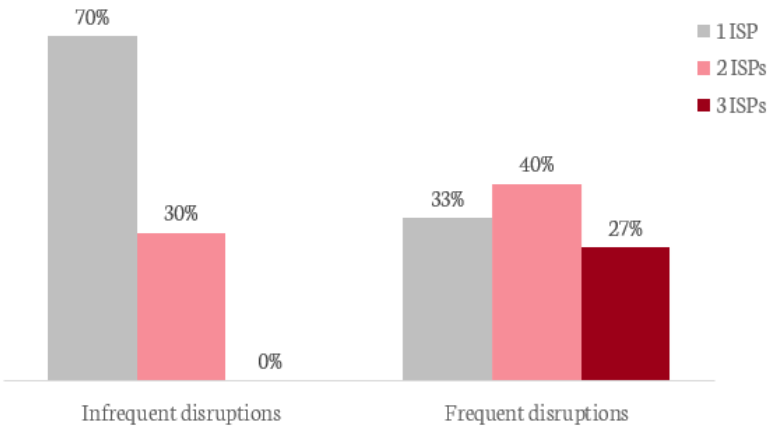
Source: DICT, Long Street Advisors analysis

The consequences of grid power unavailability and network unreliability cascade through the network.

The knock-on effect is that both consumers and businesses are forced to build redundancy into their own lives to stay connected, an extra cost imposed on them because the underlying power infrastructure cannot be trusted. Consumers keep a second SIM card so they can switch networks the moment one goes down, or so they can split usage between two connections to manage costs the network's own unreliability has forced onto them.

Businesses that depend on staying in touch with customers or suppliers often have no choice but to run two, or even three, internet connections simultaneously, paying for redundancy that a reliable power grid would make unnecessary. Every one of these workarounds is a direct, measurable cost passed on to PNG's people and businesses, and every one of them traces back to the same root cause: a power grid that the telecommunications sector cannot depend on.

Figure 13: Surveyed businesses' propensity to have one, two or three internet service providers and frequency experiencing internet disruptions that impact business



Source: Market Survey on Internet Access and Affordability Cost for Businesses in PNG, Long Street Advisors analysis conducted in 2025
Note: Number of responses and responder type: 25 internet users from micro, small, medium and large businesses

To businesses across PNG, there is significant unrealised value from the internet.

Both large and small businesses, including State Owned Enterprises (SOE), recognise the value of internet connectivity but are presented with a painful dichotomy. On the one hand, internet connectivity is seen by PNG business leaders as central to modern ways of doing business – such as to reach markets and customers, and to safeguard data and systems. But due to affordability and reliability challenges, business managers are focused on keeping connectivity up rather than innovation or Artificial Intelligence (AI) uptake. Where peers in the region talk of AI and advanced technology, PNG businesses talk about staying "low tech" in a power and connectivity starved environment.

To state enterprises in PNG, improved connectivity is critical for improved operations and customer services.

PNG has a number of strategic SOEs which serve citizen needs, ranging from transport to communications, water and sanitation, banking and agriculture. All of the SOEs that provide such services are currently hampered by inadequate, unreliable and costly connectivity arrangements. The Blueprint recommendations are designed to benefit SOEs, recognising the important role they play in serving PNG citizens.

Network deployment and operations are hampered by a historical lack of cooperation between mobile operators in sharing infrastructure and by other regulatory circumstances.

Of the 2,600 mobile towers in PNG today, less than 1 per cent are shared. PNG is a significant outlier by international standards with tower companies owning 70 per cent of mobile towers globally. Even in Africa, where tower sharing is less developed, the average is 44 per cent with tower companies owning 100 per cent of towers in countries such as Ghana, Niger, Rwanda and Zambia. By contrast, the World Trade Organisation reports in 2026 that each mobile operator in PNG currently operates its own towers. A low level of tower sharing results in missed opportunities for operators to share on common infrastructure costs, especially in locations where all operators are or have deployed network coverage or in rural areas where towers are often loss making.

There are positive signs that operators may be showing more readiness for tower sharing deals.

The Blueprint notes recent announcements made during the analysis and consultation period which indicate a significantly greater willingness amongst industry players to find infrastructure sharing solutions, including the sharing of towers.

In August 2026, Telikom PNG and Vodafone PNG signed a Co-Location and Network-Sharing Agreement covering towers, fibre and other network assets, with implementation to proceed in phases as technical teams assess which sites and infrastructure can be shared. A month later, in September 2026, Digicel PNG and Vodafone PNG signed a Tower Sharing Licence Agreement, which lets each operator place equipment on the other's tower sites. It is subject to technical, operational, safety and commercial requirements, while both companies continue to run their networks independently. Together, these agreements mark a significant

milestone for PNG and demonstrates that the market is moving toward colocation on its own commercial logic. The Blueprint makes recommendations to build on this momentum and encourage better coordination of sharing arrangements.

A number of other regulatory circumstances make the economics of deploying and running a network more burdensome.

This includes:

- A lack of available spectrum for some operators to achieve better network coverage from the towers they deploy, mirrored by some operators holding spectrum which they have not used effectively
- A lack of MNP which limits customers' choice to switch networks
- Imbalanced Mobile Termination Rates (MTR) which result in skewed calling patterns and SIM use, and make it harder for smaller operators to grow their market share

LEO Satellite technology has faced opposition, but it is a game changer for PNG.

LEO Satellite technology is a new entrant to PNG's telecommunications market and is expected to have profound impacts. Starlink, a US-based LEO service provider, was licensed in April 2026 after a years-long legal battle. It is important that LEO Satellite is embraced now as a transformative technology for PNG given the challenges with deploying reliable, affordable terrestrial infrastructure. Four distinct use cases for LEO Satellite in PNG have been identified so far:

- **Connecting towers (solution: LEO backhaul):** LEO backhaul offers significant cost advantages compared to current technology options for keeping a mobile tower connected where fibre or microwave links aren't available. This is the most straightforward use case: it replaces or supplements existing GEO and MEO satellite backhaul at a lower ongoing cost, without requiring any change to how the tower itself serves its customers. It should be noted that while LEO backhaul is lower cost (on a per Gbps basis) compared to GEO or MEO solutions, it remains significantly higher cost than microwave or fibre.
- **Businesses and metro households (solution: LEO terminal):** LEO enables direct-to-premise satellite internet, where a business or household in an urban or peri-urban area installs its own terminal and connects directly to the satellite network rather than through a mobile or fixed-line provider. For many businesses this is likely to be attractive and affordable compared to the current high spend on terrestrial connectivity, where expenditure is multiplied due to having multiple connections available due to reliability challenges. Metro households which have the spending power to afford a LEO terminal and monthly subscription may also deploy LEO as a reliable, affordable alternative to terrestrial connectivity that is regularly interrupted. At PGK170 per month, a household terminal subscription is unaffordable for most households in PNG and such deployments will likely be limited to households in the top decile of earners.
- **Wards and villages (solution: LEO Community LEO Satellite):** At the community level, LEO enables shared-use terminals which are consumer-scale satellite equipment set up to run a community Wi-Fi hotspot, or stationary Wi-Fi serving a school, clinic or other local institution. Rather than every household needing its own connection, a single terminal can give an entire ward or village shared, low-cost access, providing connectivity in places that have none today, without requiring the capital cost of extending the terrestrial network to reach them. To differentiate this from general use terminals, this solution is referred to as LEO Community Wi-Fi sites for the Blueprint purposes.
- **Domestic network (solution: Community Gateways):** Dedicated Community Gateways are large satellite installations designed to serve major enterprises, including ISPs/MNOs/wholesalers, or wide-area sites, such as a mine, plantation or provincial administrative centre, with capacity and reliability

closer to a terrestrial connection. Unlike the smaller shared-use terminals for wards and villages, a Community Gateway can integrate directly with the domestic network, acting as an additional point of presence rather than a standalone connection. Current Community Gateway offerings will provide upload and download links of 20 Gbps each way.

A fifth possibility, Direct-to-Device (D2D) connectivity, where a standard mobile handset connects to a satellite without any local terminal or hotspot at all, is emerging and relevant to PNG's potential for emergency communications in remote, mountainous and maritime areas. However, D2D remains a premium product still emerging globally so it should be treated as a technology to prepare for rather than one PNG can rely on today.

Figure 14: LEO Satellite use cases

Source: Long Street Advisors

Other LEO providers are expected to enter or scale up services in PNG, beyond Starlink. These include but are not restricted to Amazon LEO, One Web and AST Mobile.

Digital infrastructure is part of PNG's national security posture.

As government services, financial systems and defence communications run over shared and interoperable telecommunications networks, investment should be regarded as contributions to critical national infrastructure. The Blueprint's role is to put in place the infrastructure and regulatory foundations that make PNG's critical national telecommunications infrastructure stronger, an essential element of national security.

Trusted systems are essential to the wider benefits of digitalisation.

Trusted systems span the end-to-end technology ecosystem through which digital services are delivered. In this respect, connectivity infrastructure is to be regarded as part of PNG's critical infrastructure for national resilience and security. Trusted systems include:

- hardware, software and services deployed in networks, including at tower sites, points of presence and interconnect points, radio base stations, switching centres, data centres and network operations centres
- vendors and their supporting supply chains, staff and subcontractors that provide hardware, software and services, extending to the way in which these are sourced, contracted, governed and managed
- the cybersecurity, privacy and data controls and governance in place to manage systems, as well as the ability to detect, respond and recover from incidents

Trust throughout the above is critical because people and businesses expect to trust networks when they use digital services and because nations and governments depend on trusted systems for reasons of national security, resilience and redundancy.

Citizens are less willing to transact online, share personal information or rely on digital government services if they believe their data may be exposed or systems may be compromised. Businesses similarly need confidence that networks and digital platforms are secure before they will shift more transactions and operations online. Cyber incidents can erode this confidence extremely quickly. The 2025 cyber-attack on PNG's Internal Revenue Commission, which disrupted core tax systems and potentially exposed sensitive information belonging to citizens and businesses, illustrates the consequences: the incident affected not only the availability of government services but also raised broader concerns about the security of PNG's increasingly digital economy.

This makes security and trust an economic issue as much as a technical one. The Blueprint aims to deliver cheaper access, greater competition, expanded coverage and greater use of digital services. Those benefits will not be realised if users do not trust the systems being built. Repeated breaches, outages, fraud or poor handling of personal data can quickly undermine confidence and discourage adoption. Security should therefore be treated as a core design principle across the sector, rather than as a separate workstream addressed after networks and services have been deployed.

A trusted telecommunications environment is important to PNG's ability to attract investment and build relationships with trusted technology and infrastructure partners. Clear and predictable security requirements can give international investors and technology providers greater confidence in the operating environment, while enabling PNG to align its infrastructure and security practices more closely with regional partners and allies. This supports not only cybersecurity, but also interoperability, resilience and the long-term credibility of PNG's digital infrastructure.

The need for safety and security underpins the adoption of the internet both by business and citizens, as well as the need to be protected from online harms.

Nations that have passed through a period of rapid internet adoption have sometimes seen a lag in the take-up of practices and safeguards for being on the internet. This is of utmost importance to PNG. Security should be treated as a core design principle across the sector, not a separate workstream, so that cheaper access, greater competition and expanded coverage do not come at the cost of network integrity, trusted procurement or resilience. Detailed safeguards against fraud, harmful content and other online harms are being progressed through a number of dedicated initiatives already underway, which this Blueprint is intended to complement rather than duplicate.

With the Blueprint recommendations, PNG stands to gain an additional PGK87 billion (USD20 billion) in output over the next decade.

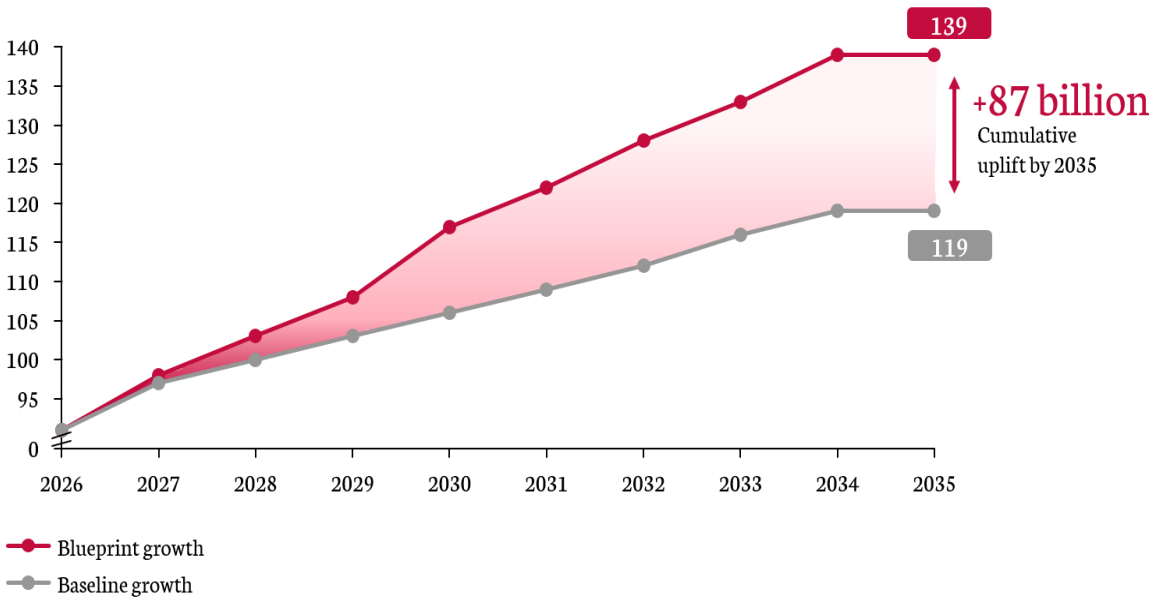
The Blueprint makes six recommendations. These are detailed in Section 3. The paragraphs below foreshadow how these recommendations' impacts might uplift PNG's economy and society at a national level.

Widespread adoption of digital technologies has the potential to lift PNG's forecast GDP growth rate by an additional 1.5 per cent. The additional GDP growth is driven by greater business digitalisation enabled by improved connectivity. As more businesses gain reliable internet access, they are expected to reduce operating costs and increase revenues, generating higher business earnings that translate into additional economic output and GDP growth. Given PNG's very low current level of internet penetration, the potential gains from expanding access and improving the quality and reliability of connectivity are particularly significant.

High-level analysis estimates that implementing the Blueprint could generate PGK87billion (USD20 billion) in additional economic output between now and 2035. This is equivalent to approximately one year of today's non-

mining GDP being added to the economy over the coming decade. The estimate represents the potential economy-wide benefit of better connectivity and digitalisation, rather than a return on a predetermined quantum of investment.

Figure 15: Non-mining economy size projection baseline vs Blueprint scenario (PGK billions)



Source: Long Street Advisors analysis, National Statistics Office

The Blueprint has estimated the investment gap to deliver these outcomes but does not prescribe a specific quantum of investment.

The investment requirement to address gaps in PNG's telecommunications network will depend on how the recommendations are implemented, the response of private investors, input cost developments, the adoption of new technologies such as LEO Sat, and the extent to which existing infrastructure can be better utilised. The recommendations are designed to mobilise private-sector investment wherever commercially viable, while providing government with a framework for targeting intervention towards the areas where market forces alone are unlikely to deliver the outcomes PNG needs.

The objective is therefore not simply to invest more in telecommunications, but to invest more effectively. The Blueprint identifies a pathway for directing investment towards the infrastructure and enabling conditions that matter most for achieving PNG's economic, development and sector objectives. By reducing barriers to private investment, improving the investment environment and targeting public intervention where it can unlock the greatest benefits, the recommendations aim to maximise the economic and social return from connectivity investment. Where possible the Blueprint has estimated the quantum of investment needed in different parts of the network architecture including the domestic backhaul network.

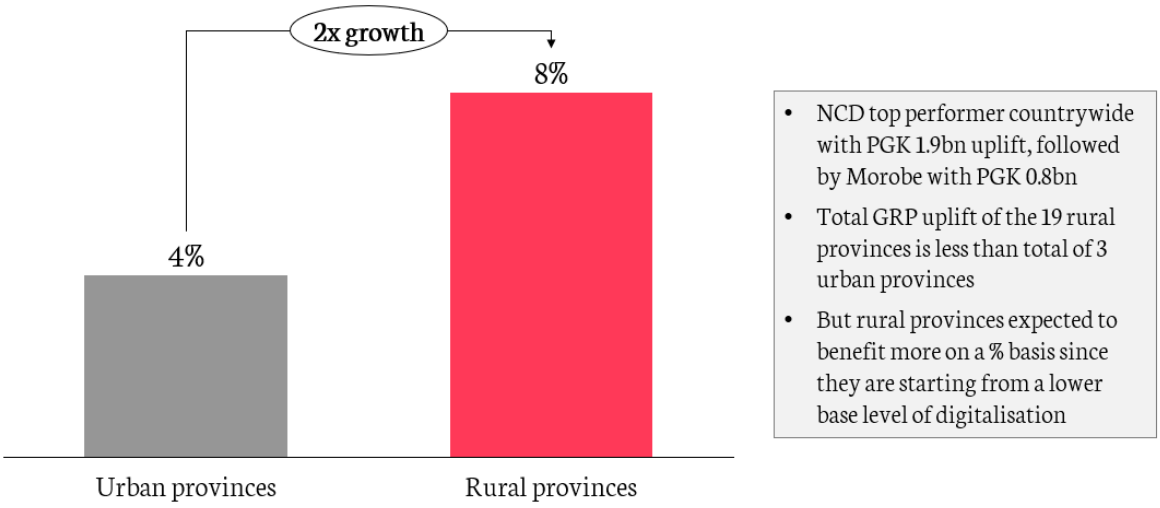
Modern internet connectivity will bring the nation together, transforming isolated communities and unlocking new growth in developed regions alike.

Reliable connectivity does what roads and physical infrastructure cannot, linking communities across all 22 provinces into a single national fabric rather than a collection of isolated areas. By leveraging digital technology, these services, including e-health, e-education, and e-government, can be delivered to a family in a remote region as close a way as possible to a family living in an urban centre.

Improving access to the internet should have a disproportionately higher impact in PNG's least-connected areas.

Connecting the most remote population centres to new markets and to the rest of the country has the potential to revolutionise their livelihoods, opening new income-generating opportunities to millions of Papua New Guineans, including the youth. Better internet connection therefore offers the opportunity to transform the societies and economies of all 22 PNG provinces, as well as unlock new growth in areas like Port Moresby, Mount Hagen and Lae.

Figure 16: Percentage uplift in GRP by growth of connectivity and internet users (2030)



Source: Long Street Advisors analysis, National Statistics Office
Note: Analysis based on Long Street Advisors assumptions and 2025 market survey findings, to each province's baseline Gross Regional Product (GRP). Digitalisation growth rates are applied based on whether a region is designated urban or rural, with rural regions expected to benefit more on a percentage basis from digitalisation since they are starting from a lower base level of digital uptake.

Schools, health and local government facilities all need internet connectivity for social impact.

PNG's roughly 3,000 health centres report through provincial facilities and districts up to the National Health Information System. Only around 800 currently undertake any data reporting. The vast majority of PNG's health centres do not have reliable connectivity. Improving connectivity would enable health facilities to undertake health reporting, referrals, telehealth and communications more effectively, helping ensure that people in remote communities can access better health services without needing to travel long distances.

Education shows a similar pattern. PNG has approximately 14,000 schools, 70,000 teachers and 1.4 million students, yet the majority of schools are not connected to grid power or the internet. Many teachers pay for school internet connectivity out of their own pockets. Connecting schools would enable them to use the internet for administration, teacher development, online learning and access to educational resources, while public access could be made available outside protected teaching periods.

Government posts, District Development Authority and Provincial Health Authority offices face similar connectivity dependencies. Connecting these institutions is not an end in itself; rather, it enables the health, education and government services PNG already runs to reach the people they are intended to serve. Local Level Government (LLG) posts could use connectivity for government systems and citizen services, while providing public access during agreed hours.

Churches are often physically present in communities where formal government infrastructure is limited, and can provide trusted, locally recognised locations for shared connectivity. Their existing community relationships can help drive awareness, support responsible use of the service, and build digital literacy and skills. In many communities, churches also bring together large numbers of people regularly, making them well

placed to provide access beyond the immediate congregation and support digital literacy, training and community information activities.

To be transformational, the Blueprint should address fundamental connectivity challenges.

With new cables being planned to bolster PNG's connection to the world's internet and LEO satellites now available to address PNG's rural and remote customer needs, the nation is presented with a generational opportunity to achieve breakthroughs in democratising internet access to the whole of the population.

Democratising internet to the people requires addressing PNG's telecommunications challenges first. This is because connectivity lies at the foundation of digitalisation, including AI adoption. Achieving democratisation will require harnessing the sustained, and commercially motivated, support of the private sector.

Without private investment into connectivity sufficiently mobilised, change will be difficult to sustain. The Blueprint should be seen not as just a government document but as relevant to telecommunications operators and other investors in digital infrastructure.

The state of PNG's telecommunications today, and what it could look like if there was meaningful reform, is discussed next.

The Blueprint envisions a number of different "futures" for Papua New Guinea in a digitalised scenario. It has the potential to fundamentally change what is possible for a school, a health centre, a young jobseeker or a small business, not by making an existing experience marginally better, but by removing constraints that have shaped what people in PNG can access, learn and earn for generations. The Blueprint envisions both societal and economic benefits from this shift: including better education outcomes and health access, more meaningful pathways into work for a young population, and a more resilient, competitive private sector.

The "futures" below provide illustrative vignettes, grounded in real PNG data, that show what a specific person's or business's experience could look like once the recommendations in this Blueprint are implemented.

Figure 17: Blueprint futures examples

Source: UNICEF PNG, DFAT, WHO, National Department of Health PNG, ILO, World Bank, Long Street Advisors analysis

Note: The scenarios presented in these examples are fictional and illustrative only. The example do not represent real individuals, organisations, or documented experiences in PNG.

Rural education

Only 64% of primary school students in PNG reach secondary school. For the 200,000 who do, reliable connectivity plays a big role in determining what type of learning content they can access.

A typical rural secondary school may have textbooks decades out of date, and teachers with no easy way to research beyond what's on the shelf. Under the Blueprint, a LEO Satellite terminal and a small computer room give teachers access to up-to-date curriculum material and let students reach revision resources they've never had before.

Health

PNG has 15,000 people per doctor. Half are based in NCD. For the hundreds of thousands of people in the most remote provinces served by only a handful of doctors, digital connectivity can turn a days-long journey into a same-day diagnosis.

An unclear diagnosis or a worsening injury usually means a multi-day trip over difficult roads to reach a doctor. With a reliable connection, a local health worker can instead call the provincial hospital directly, describe the symptoms, and get treatment started that same day, avoiding a journey many families can't easily afford.

Youth employment

PNG has 2 million people aged 18–25 and ~28% of them are neither employed nor in education. For young people, connectivity is the difference between a qualification with nowhere to go and a career with no geographic limit.

A graduate with a technical qualification, software, design, bookkeeping, often has no local employer to apply to. With a reliable broadband connection, the same qualification opens the possibility to do remote and freelance work with employers anywhere in the world, without needing to move to Port Moresby or leave PNG.

Business opportunity

80% of PNG businesses in rural areas experience frequent internet outages. Businesses have to pay for multiple internet contracts just to stay online, money that would otherwise go toward reaching new markets and customers.

A medium-size fresh produce retailer in a provincial town relies on a mobile data connection to manage stock, take mobile money payments and order fresh vegetables from suppliers as inventory runs low. The business keeps a second, more expensive line just to stay covered when the first one fails. With more reliable coverage, that backup contract becomes unnecessary, and the money saved goes toward better stock and reaching more customers instead.

Chapter 2.

The sector today and in the future

Chapter overview

This chapter sets out how PNG's telecommunications sector has reached its current position, what the sector delivers today to customers and considers where the current model is failing to keep pace with PNG's needs. The chapter concludes by setting out what would need to change to enable PNG to build a more capable, competitive, secure and resilient telecommunications network by 2031.

2.1 Market context

Since the early 2000s, PNG's telecommunications sector has moved through distinct stages.

A consistent theme across the stages is the important role played by private-sector investment and competition in expanding access and reducing prices. As important context for the Blueprint, the key stages of telecommunications sector development in PNG since 2000 are described below and shown in Figure 18.

Phase 1 — State monopoly (1955–2006)
Telikom PNG, incorporated 1 July 1955, held a statutory monopoly over fixed line, mobile and the international gateway. Its exclusivity ran to 2002, after which a regulatory contract with the Independent Consumer and Competition Commission (ICCC) governed the transition. Its mobile arm (analogue Advanced Mobile Phone System, later Global System for Mobile Communications) traded under the B-Mobile brand while still inside Telikom. Fixed wireless ran under the Citifon Code Division Multiple Access brand. During this period, the telecommunications regulator was PNG Radiocommunications and Telecommunications Technical Authority.

Phase 2 — Liberalisation and the first carve-out (2007–2013)

- 2007: Digicel enters mobile. Telikom was rapidly outpaced by mobile competition from 2007. Digicel's entry was a major turning point for the sector, with private-sector investment helping PNG move rapidly from an analogue mobile environment towards digital services and expanding access to mobile connectivity.
- Mar 2008: Black Dolphin Ltd incorporated as the carve-out vehicle; renamed BMobile Limited on 14 January 2009 and Bemobile Limited on 24 September 2009
- End 2008: Telikom's mobile operations were separated from the rest of the business and partially privatised as BeMobile, with Telikom retaining 50 per cent. The other 50 per cent was sold to various investors. The State's holding in BeMobile went back to 100 per cent later

Phase 3 — Wholesale carve-out (2014–2016)

- 2014: PNG DataCo was created as the state wholesale entity, mandated to build, own and operate the National Transmission Network, absorbing many of Telikom's wholesale assets but leaving Telikom with the debt
- Jul 2014: Bemobile signs a non-equity Partner Market agreement with Vodafone Group, trading as bmobile-Vodafone. Important distinction — this was a brand licence, not the Amalgamated Telecom Holdings Limited-owned Vodafone PNG that arrives in 2022

Phase 4 — Re-consolidation (2017–2021)

- Feb 2017: National Executive Council (NEC)/Kumul Consolidated Holdings (KCH) announced the amalgamation of Telikom PNG, bmobile and DataCo into Kumul Telikom, with Telikom PNG renamed Kumul Telikom Holdings and the other two becoming subsidiaries

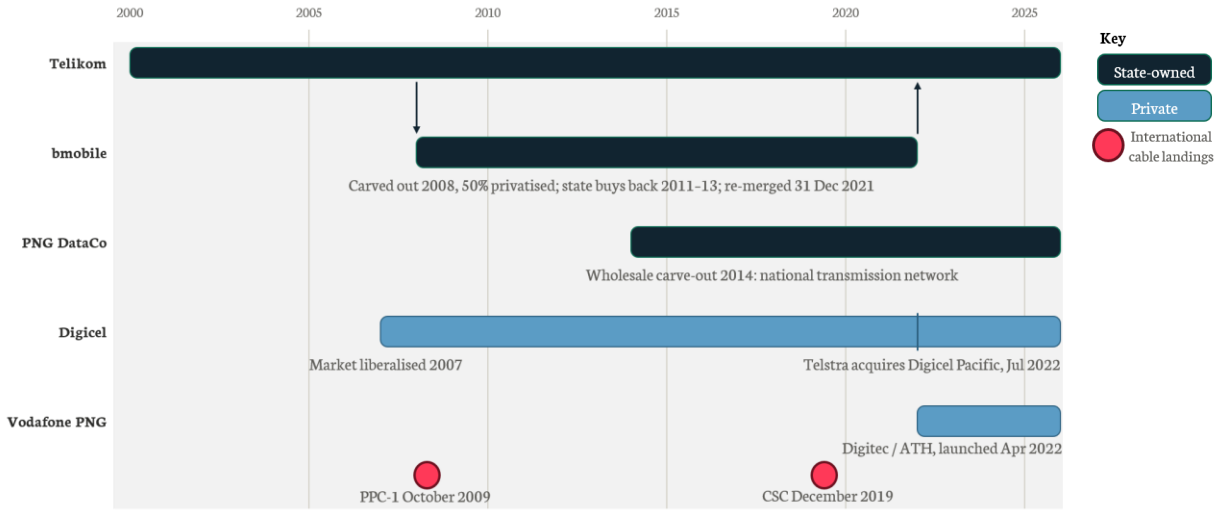
- Apr 2018: bmobile absorbed Telikom's 4G services and around 400 base stations
- Mar 2019: the Vodafone partnership ended. The business traded as bmobile4GLTE. In April 2019 the ICCC approved transfer of bmobile shares to Kumul Telikom Holdings
- 2021: a June 2021 NEC decision abolished Kumul Telikom Holdings Ltd and merged Telikom and bmobile into a single company, Telikom Ltd, effective 31 December 2021. DataCo stayed separate under KCH, holding the international satellite and fibre connections

Phase 5 — Second wave of entry (2022–)

- Apr 2022: Vodafone PNG (Digitec Communications, owned by Fiji's Amalgamated Telecom Holdings) launched as a full-service telco, with PGK3 billion (USD686 million) network investment and USD25 million (PGK110 million) Asian Development Bank equity investment
- Vodafone's entry increased competition in the market and contributed to significant price reductions as seen in Figure 6.
- 14 Jul 2022: Telstra completed the Digicel Pacific acquisition, backed by a USD1.33 billion (PGK5.8 billion) Export Finance Australia financing package
- 2023–26: NICTA was restrained from licensing by an Ombudsman Commission directive to licence Starlink and went to court; SpaceX disabled service to PNG on 16 December 2025. A National Court judgment on 24 April 2026 cleared the way, and OneWeb trials were approved for four companies in Q1 2026. NICTA granted Starlink an operator licence in late April 2026

Taken together, these phases show that private-sector participation has been an important driver of PNG's telecommunications development. Digicel's entry helped accelerate the transition from analogue to digital while Vodafone's entry demonstrated the benefits of greater competition through lower prices. This experience provides an important foundation for the Blueprint's approach to future private-sector investment and competition.

Figure 18: PNG telecommunications sector evolution, 2000 to 2026

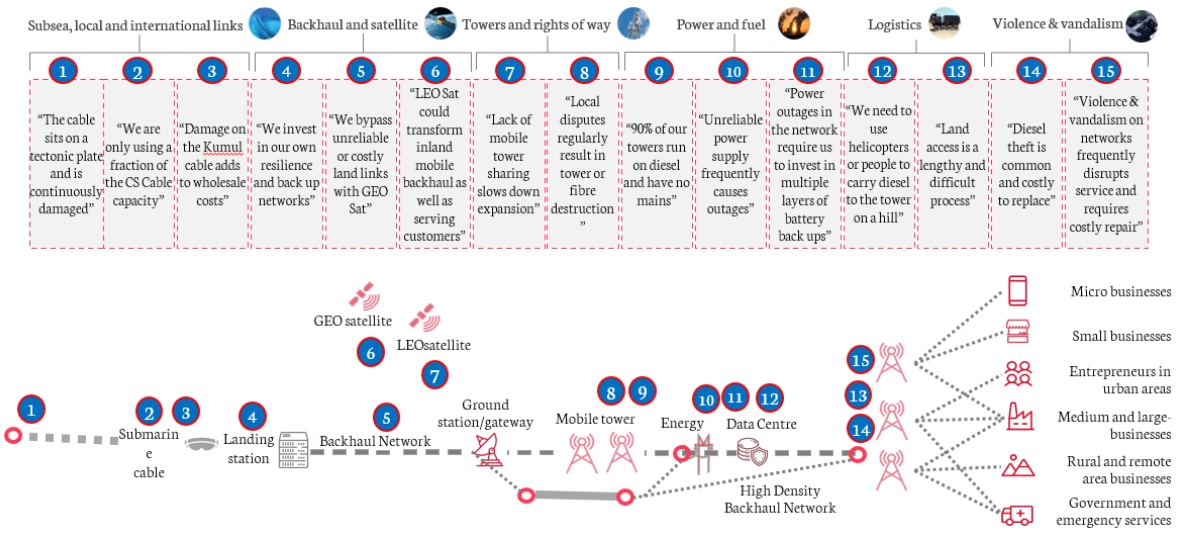


Sources: KCH, NICTA, ICCC, Telstra and Vodafone disclosures, Oxford Business Group, GSMA, ITU, Long Street Advisors

With some of the world's most challenging terrain, infrastructure deployment in PNG is difficult and costly.

The engineering, logistical and social challenges to access land, deploy and operate network equipment in PNG exceed the problems executives have experienced in the hardest conditions known in sub-Saharan Africa jungles, mountain ranges in the Middle East and dense canopied forest in Asia. The range of problems encountered on a regular basis is depicted in Figure 19.

Figure 19: Telcos cite 15 operational problems with deploying and managing reliable connectivity infrastructure



Source: Long Street Advisors analysis, Business Council of Papua New Guinea Internet Access Study

Many of these problems are replicated in other critical infrastructure sectors, including power and roads. Deployment of power grid, available to only some 20-25% of the population today, presents similar challenges to deploying towers and fibre. Where power transmission lines do exist, they invariably have fibre lines alongside them, almost completely unused by telecommunications operators today.

The Blueprint consultations confirm that significantly more can be done to increase multi-sector collaboration in deploying and monetising expensive infrastructure. This is expanded upon in the Recommendations.

2.2 State of the market

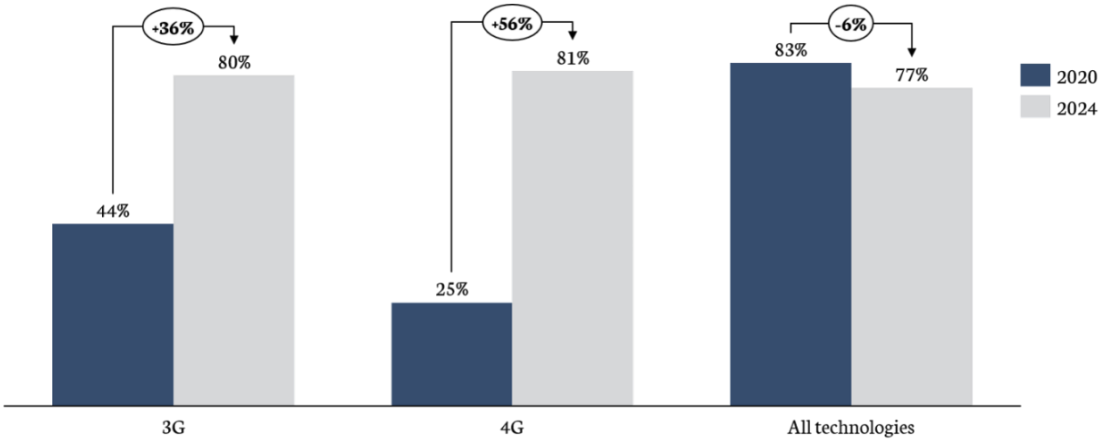
NICTA's National ICT Indicators Report 2025, covering the reporting period 2020 to 2024, provides a record of how PNG's telecommunications sector is performing today.

The report suggests strong growth in that the sector is investing, connecting more Papua New Guineans to mobile networks, and generating more revenue than five years ago. However, growth in inputs has not translated into growth in coverage, quality and affordability at the pace PNG needs.

Mobile subscriptions and penetration have grown strongly, but broadband uptake has not kept pace with either coverage or demand.

Coverage of mobile broadband technologies has grown strongly, with 3G coverage rising from 44 to 80 per cent, and 4G coverage rising from 25 to 81 per cent. However, aggregate coverage across all technologies combined fell slightly, from 83 to 77 per cent.

Figure 20: Mobile network coverage by technology (2020 vs 2024) showing percentage of population covered by a single, or all, technologies



Source: NICTA ICT Indicators Report; Long Street Advisors analysis

Mobile broadband subscriptions, however, grew only modestly to 27 per cent in 2024, up from 21 per cent in 2020. The gap between 4G coverage, at 81 per cent, and broadband penetration, at 27 per cent, indicates PNG's constraint is not only network reach but uptake by population already covered by a network.

Mobile data consumption rose nearly eightfold, from 22,450 million Mb in 2020 to 175,703 million Mb in 2024, while the subscriber base grew only modestly. This indicates that while existing users are gradually consuming more data, growth in people connecting to broadband networks is slow.

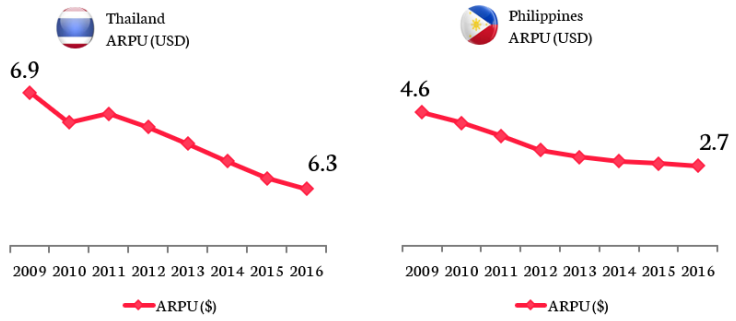
Total industry revenue is growing, driven by mobile data, while average revenue per user is declining.

Total industry revenue across mobile, fixed, ISP and broadcast services grew from PGK1.7 billion (USD389 million) in 2020 to PGK2.1 billion (USD480 million) in 2024. Mobile data's share of mobile revenue climbed from 35 to 41 per cent as voice and SMS shares declined.

Average revenue per user (ARPU) fell across every mobile service line. Falling ARPU indicates subscriber growth and is consistent with the experience of all countries, which is that as new users come onto the network, they tend to spend less per head.

Figure 21: Fall of ARPU in Thailand and Philippines from 2009 to 2016

Average Revenue Per User (ARPU) is expected to fall in markets experiencing connections growth. For example, Thailand saw ARPUs fall by 10% and Philippines by 40% during the early 2010s when penetration in both markets was growing rapidly.



Source: GSMA Intelligence, Long Street Advisors analysis

PNG is likely to experience the same pattern as connectivity expands, with ARPU continuing to decline as adoption reaches lower-spending users. However, falling ARPU does not mean that overall industry revenue needs to fall. As the Blueprint will articulate later, the opportunity is to significantly expand the number of users and increase demand for data and digital services. With the right measures, this growth in the overall customer base and usage can drive the telecommunications sector's total revenue growth to significantly higher levels than experienced in recent years, even as ARPU declines.

NICTA's affordability study confirms that PNG's mobile data prices remain well above the affordable range.

NICTA's 2023 to 2025 affordability study proposed a benchmark of PGK30 for 30GB of data over 30 days, based on actual PNG consumer purchasing patterns and average national income. As of August 2025, no plan in the PNG market meets that benchmark: the cheapest available 30-day plans from Telikom and Vodafone price 40GB at PGK50, equivalent to PGK1.25 per GB per day. This is consistent with the Blueprint findings.

In PNG's principal population centres network availability is below licence conditions, and this worsens in the rural and remote areas.

Mobile operators have generally stayed within licensed thresholds for call drop-out and call failure rates, averaging 1.28 and 1.07 per cent respectively over five years, below the 2 per cent ceiling.

Network availability, which measures the amount of time that a network may not be usable because it is down, presents a more concerning picture. In PNG's main urban centres and mid-sized towns, average network availability was only 93.2%, compared with a licensed requirement of 99.99%. In more sparsely populated and harder-to-reach areas, average availability fell to approximately 69%, against a lower licensed requirement of 98%.

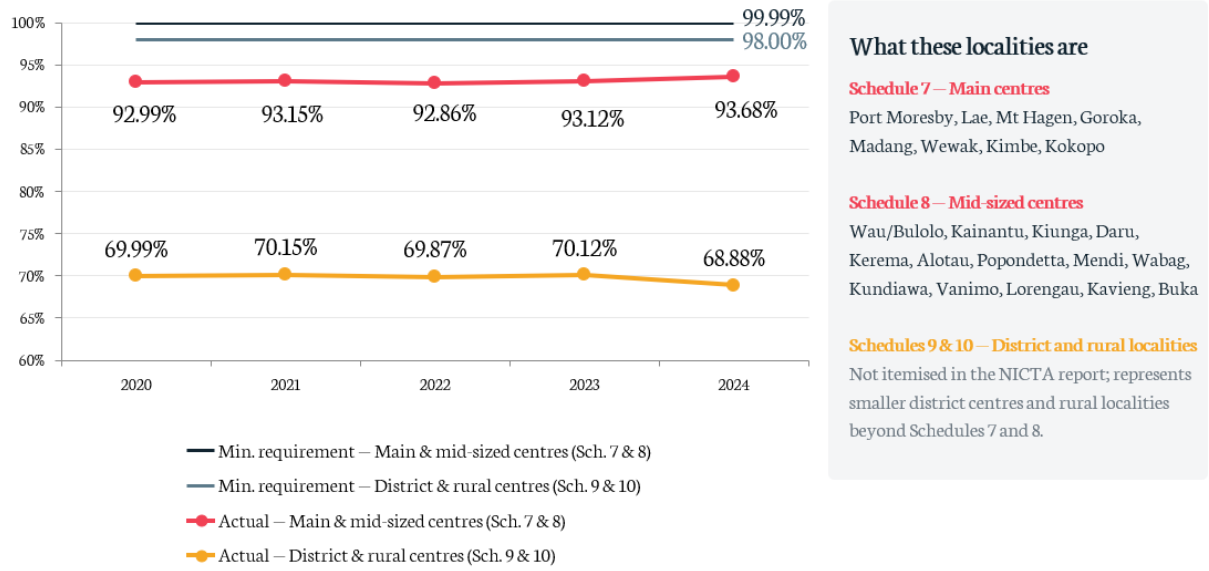
NICTA's availability measures do not reflect the lived experience of end users.

A network that meets quality thresholds can still have customers who have an unsatisfactory experience typified by intermittent connectivity, degraded data speeds, localised outages and periods in which services are effectively unusable. Critically, this extends to customers *expecting* connectivity to be unstable and therefore not relying on it and is part of the reason internet uptake is so low. In Port Moresby and other major centres, customers and businesses continue to experience these problems despite operators making significant efforts to maintain network uptime.

As discussed, prolonged and widespread outages can arise from failures in shared infrastructure rather than from the mobile access network. Damage or disruption to international submarine cables and elements of the national transmission backbone can affect multiple operators and large numbers of customers simultaneously. These events highlight the systemic nature of PNG's reliability challenge: individual operators may maintain their own networks effectively but still be unable to provide continuous service when critical infrastructure on which the sector depends is unavailable.

The cost of maintaining backup power at every site, and land access issues, pose challenges for network operators that do not appear to be picked up in the NICTA network availability data. Both are materially important to understanding PNG's challenge with practical network availability.

Figure 22: Mobile Services – Network Availability 2020-2024



Source: NICTA ICT Indicators Report, Long Street Advisors analysis

Recent investment has concentrated on mobile roll out while the wholesale network has been neglected.

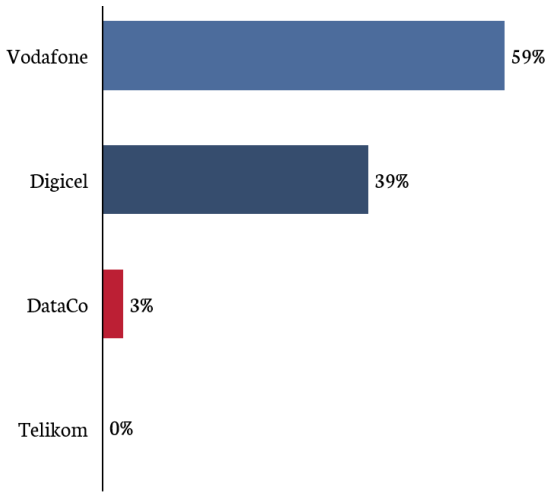
Total ICT sector investment reached PGK1.635 billion (USD374 million) over the five years to 2024. 97 per cent of this was invested by mobile network operators. Vodafone accounts for 59 per cent of that investment since its 2022 entry, and Digicel for a further 38 per cent. DataCo, focused on building the domestic backbone network, invested 3 per cent. Telikom, ISPs, broadcasters and others made negligible investment.

Investment peaked in 2022 at PGK0.67 billion (USD153 million), around 1 per cent of GDP, before easing to PGK0.53 billion (USD121 million) in 2023 and PGK0.27 billion (USD62 million) in 2024.

Investment patterns indicate the following trends:

- Minimal investment is happening in the domestic wholesale network, which desperately needs investment to address major bottlenecks. Over the past four years DataCo, the wholesale network operator, has invested PGK40million, less than 5% of what is needed according to Blueprint estimates
- Significant investment has taken place in building new towers, mainly by Vodafone, to establish its customer access footprint
- Digicel has invested in new towers, as well as fibre links in cities to handle backhaul traffic
- Telikom indicates it has no capability to invest due to its debt and cashflow challenges
- CSC represents a major investment in PNG's international communications capability, but does not show here due to it being a grant

Figure 23: Share of total ICT sector capex (2020-2024)



Source: NICTA ICT Indicators Report, Long Street Advisors analysis

The investment figures above should be read in the context of DataCo's earlier major capital programme, not captured in the 2020–2024 data. The Kumul Submarine Cable Network (KSCN) represented a significant investment of approximately PGK879 million (USD200 million), completed in 2020. This investment is material relative to the scale of subsequent DataCo investment: the PGK40 million invested by DataCo over the past four years represents a small fraction of the capital previously committed to the network.

The KSCN investment highlights that the challenge is not simply one of insufficient capital expenditure. Despite the scale of the investment, the network has experienced repeated disruptions and based on Blueprint consultations, significant periods of unavailability. The experience suggests that future investment needs to be judged not by the amount of capital committed, but by whether this delivers the reliability, resilience, route diversity and service performance that the wholesale market requires. Future investment into wholesale networks should also include transparent consultation with MNOs and ISPs to ensure that planned wholesale investments meet retailers' needs. These are important considerations when assessing proposals for further large-scale investment by DataCo or others.

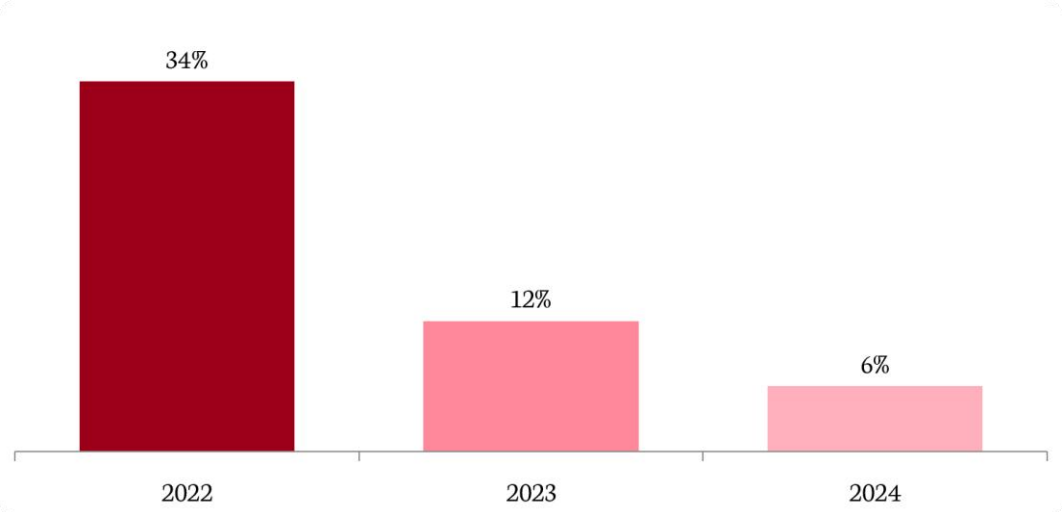
Telco operators account for 71 per cent of ICT employment, indicating the opportunity for IT services to emerge.

Sector employment growth slowed sharply from 34 per cent in 2021 to 6 per cent in 2024. Telco operators account for 71 per cent of ICT sector employment. As digitalisation scales across PNG, the demand for skilled ICT workers can be expected to grow well beyond the traditional telecommunications workforce.

Expanding networks, cloud services, cybersecurity, software development, data services, digital government and digitally enabled businesses will require a much larger pool of people with specialised technical and managerial skills. This creates an opportunity for IT and digital services to become a much larger source of employment and economic activity, but only if PNG can develop the skills base needed to support that growth.

Consultations revealed that that PNG's economy currently demands approximately 2,000 skilled ICT graduates annually to meet the needs of the existing economy, yet the country produces only around 200 a year—a tenfold shortfall.

Figure 24: ICT Sector employment growth year-on-year percentage (2022- 2024)



Source: NICTA ICT Indicators Report; Long Street Advisors analysis

2.3 Policy and regulation

Telecommunications policy and regulation is led by Department of Information and Communication Technology (DICT), the sector ministry, and NICTA, the sector regulatory authority.

DICT has led an ambitious digital transformation agenda for PNG.

DICT's remit spans digital government, digital identity, artificial intelligence and national development planning. The Blueprint sits within the policy landscape DICT has built over several years, summarised below.

Figure 25: DICT policy frameworks (not exhaustive)

Policy or instrument	What it sets out	Where this Blueprint connects
Digital Transformation Policy 2020	Six digital pillars: infrastructure, e-government, cybersecurity, skills, innovation and financial inclusion.	This Blueprint delivers the infrastructure pillar and underpins the skills and financial inclusion pillars.
Draft AI and Digital Transformation Policy	Emerging framework for AI and the next phase of digital transformation: governance, ethics and emerging technology.	AI-enabled services are only usable at the pace citizens can reliably reach the network.
Digital Government Plan 2023 to 2027	Digitise government services and reach 90 per cent population coverage by 2027, built around SevisPass digital identity.	SevisPass and every digitised service depend on the coverage and affordability this Blueprint addresses.

Source: DICT website

The PNG Digital Transformation Policy 2020 set out six digital pillars for the country: infrastructure, e-government, cybersecurity, skills, innovation and financial inclusion.

This Blueprint's recommendations align with, and enable, infrastructure, skills and financial inclusion pillars. DICT is developing a Draft AI and Digital Transformation Policy as the next phase of that agenda, setting out an emerging framework for AI governance, ethics and emerging technology adoption across government and the economy.

Digital government and digital identity are DICT's most visible current programs.

The *Digital Government Plan 2023 to 2027* and the *Digital Government Act 2022* set out a funded agenda to digitise government services. The Digital Government Plan 2023 to 2027 sets out the Government's roadmap for transforming public service delivery, with the aim of making government services faster, simpler, more transparent and more accessible. The Plan is supported by the Digital Government Act 2022, which provides the legislative framework for digital government and the use of digital systems across government. SevisPass is PNG's national digital identity credential, enabling citizens to prove their identity digitally and securely access public and private services. SevisPass builds on foundational identity documents such as the National Identification (NID) card, passport and driver's licence by bringing these credentials into a digital, verifiable form. SevisPass forms part of the wider SevisPNG digital public infrastructure ecosystem, alongside SevisDEx for secure data exchange and SevisPay for digital payments. Following a 2024 pilot, DICT has been progressing a nationwide data integration exercise connecting SevisPass with the Civil Registry, banks, superannuation funds and telecommunications operators.

The success of these initiatives now depends on citizens being able to access the internet reliably and affordably.

Without broad and reliable connectivity, the reach and impact of digital government, digital identity and other digital services will be constrained, limiting their ability to deliver the outcomes envisaged in DICT's broader digital transformation agenda. This makes the Blueprint an important enabler of DICT's digital transformation agenda. By improving coverage, affordability and reliability, it helps ensure that the digital platforms and

services being developed by government can reach the people they are intended to serve. At the same time, these applications and platforms can strengthen the value proposition of being connected, creating greater incentives for people to adopt and use the internet.

PNG's national development planning refers to connectivity as critical to the country's growth strategy.

PNG's Medium Term Development Plan (MTDP) IV, 2023 to 2027, positions ICT and connectivity within strategic priorities SP2 and SP8. PNG Reset@50, the government's 20-year reform roadmap for 2025 to 2045, names delivery, implementation and inclusive growth as its core themes and treats connectivity as a cross-cutting enabler. This Blueprint's estimate of an additional PGK87 billion (USD20 billion) added to the economy by 2035, across all 22 provinces, is the telecommunications sector's contribution to that Reset@50 and MTDP IV ambition. A detailed mapping of Reset@50's Big Bets against this Blueprint's recommendations is in Chapter 3.

DICT has not provided leadership in developing PNG's telecommunications sector policy.

PNG has not formulated a formal telecommunications sector Masterplan or Blueprint before or since the reforms that took place in the late 2000s.

The stages of reform that the industry has passed through, looked at in hindsight, present piecemeal reforms undertaken to address known and experienced problems, as opposed to the gradual implementation of a long-term plan for the sector.

The Blueprint presents an immense opportunity for PNG to adopt a long-term policy for the industry that should serve as the basis for sector development for the next decade. This also presents an opportunity for DICT to establish its policy-making credibility in telecommunications in the way that it has done in digital government and digital ID.

Nations focused on connectivity development to support digitalisation and publish masterplans and blueprints. For example, the following nations have done so over the past few years:

- Malaysia's Jalinan Digital Negara (2020) is a national digitalisation plan that lays out specific outcomes for connectivity enablement including for fibre to premises, 4G coverage and mobile broadband speeds
- Vanuatu's Universal Access Policy sets out strict undertakings for achieving universal connectivity service outcomes, verified by an external reviewer who publishes the results

NICTA has been endowed with regulatory instruments but has not used them with sufficient vigor.

There are a number of areas where NICTA could have done more to address the structural issues facing the sector and support better outcomes for consumers and industry, including:

- Safeguarding PNG citizens' reasonable rights to affordable telecommunication services, the primary role of any telecommunications regulator, by tackling industry inefficiencies which inflate costs
- Addressing the discrepancy between DataCo's mandate as national wholesale operator, and its practice to retail services to organisations that have ISP licences but are actually enterprises or organisations
- Updating the telecommunications licensing framework to make it more difficult for any organisation to apply for an ISP licence
- Seeing important reforms underway through to completion, presently including Mobile Number Portability and Mobile Termination Rate reform
- Mandating that Telikom use its allocated spectrum, or confiscate or reallocate it for better use elsewhere
- Positively encouraging the industry to share commonly usable infrastructure, and where it hasn't happened, to proactively understand the reasons why and seek to remove obstacles

- Highlighting DataCo's elevated pricing of international services from a cable that has been granted to PNG at no capital cost, and seeking to address how this can be reversed
- Restructuring the UAS, which sits under NICTA (see below), to tackle PNG's chronic problems of low internet uptake

Taken together, these are opportunities for NICTA to make fuller use of its existing regulatory mandate and play a more active role in addressing the barriers that are limiting competition, affordability and connectivity in PNG. The Blueprint's recommendations are intended to support NICTA in doing so.

The UAS Fund draws levies from operators to extend digital access into uneconomic areas.

Under the National Information and Communications Technology Act 2009, NICTA may levy charges on operator licensees, with the levy calculated as a percentage of their net revenues. The definition of an operator licence is broad and includes network, applications and content licences; however, the legislation does not establish a separate levy specifically on broadcasters. The fund reports delivering projects to deploy coverage and services in areas where commercial rollout is unattractive across four key programmes:

- **Mobile broadband**
    - Greenfield 4G towers (and one 2G/3G round back in 2017) in unserved districts
    - Upgrades of existing 2G sites to 3G/4G
    - Blackspot resolution at existing sites
    - Backhaul links connecting new towers to the core network
    - Delivered by licensed mobile network operators (Digicel PNG, Vodafone, Telikom) via competitive tender
- **Fixed/community Broadband**
    - Wired or fixed-wireless internet connections to institutions: schools, health centres, MSMEs, farmers, local government offices, airstrips
    - Community network pilots (e.g. the 2021 Gabagaba trial with the Internet Society) — small-scale, locally-run wireless mesh/LEO Satellite networks rather than telco infrastructure
    - Delivered by licensed operators, local ISPs, and NGO/development partners
- **Broadcasting**
    - Digital terrestrial TV transmitters in provincial towns (analogue-to-digital switchover)
    - Radio transmitters/repeaters extending FM coverage to unserved districts
    - DRM (Digital Radio Mondiale) pilots introduced in the 2026 report
    - Delivered in partnership with broadcasters (NBC, PNGFM, FM100/Kalang Advertising)
- **Digital literacy / meaningful connectivity**
    - Training programs and digital skills workshops
    - Affordable smart device distribution/subsidy (introduced 2023, expanded 2026 with a target of 1,000 devices)
    - Delivered with training institutes, universities, and the Department of ICT

The core assumptions the UAS was built on no longer reflect the environment in PNG.
There are many locations in PNG where the commercial incentive to invest is insufficient. However, the traditional UAS model treated universal access as a geographic infrastructure problem, funding rural towers, mobile coverage and terrestrial backhaul as compensation for serving non-commercial regions. This has changed for two reasons:

- LEO Satellite connectivity changes that environment fundamentally as it creates the potential for rapid connectivity in locations previously considered commercially or geographically inaccessible and reduces dependence on traditional terrestrial backhaul

- Where the "A" in UAS is access, much can now be done to incentivise remote and rural connectivity through allocating funds to strengthen the backbone network, which is not an access network

There is therefore a timely opportunity to shift the fund's purpose from how PNG technically connects remote areas to how it ensures meaningful, affordable, secure, resilient and sustainable digital participation, since coverage alone does not resolve digital inclusion and drive adoption.

To increase its effectiveness, there is considerable scope for the UAS to be administered, measured, governed and implemented with greater effectiveness, steps for which are discussed in Recommendation 6.

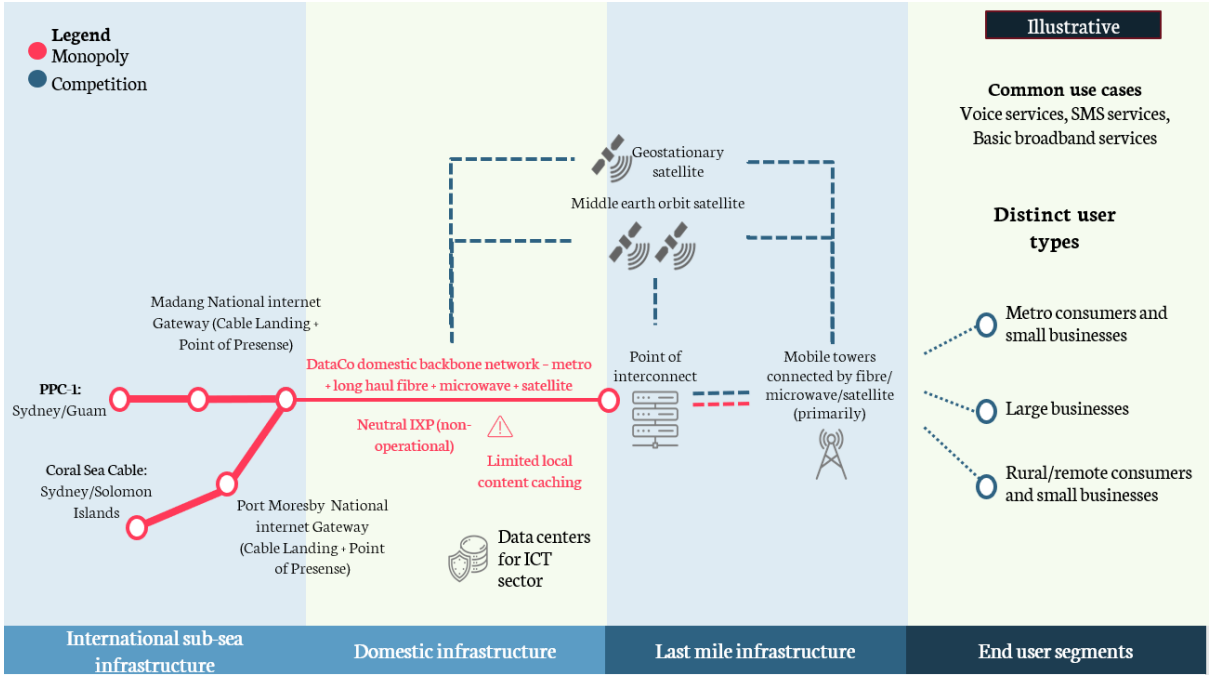
2.4 Structural distortions and challenges within the PNG market

PNG's network configuration and market structure are subject to monopolistic behaviour in international connectivity and domestic wholesale.

PNG has a competitive market for retail telecommunications services, including fixed, mobile and internet. However, international connectivity through cables, the primary and most cost-effective medium for this, is monopolised by DataCo, shown in the red lines in Figure 26. As discussed in detail in this chapter below, this results in extremely elevated price levels for international connectivity in PNG.

The red lines extend into de facto monopolistic behaviour in the domestic wholesale network, also served by DataCo. DataCo is by far the major deployer of domestic wholesale connectivity in PNG. Whilst other operators are permitted by law to deploy their own wholesale or private backhaul infrastructure, little is done by others to deploy fibre, the key connectivity technology needed for a growing sector's trunk and transit needs.

Figure 26: PNG 2026: Current digital network configuration and market structure

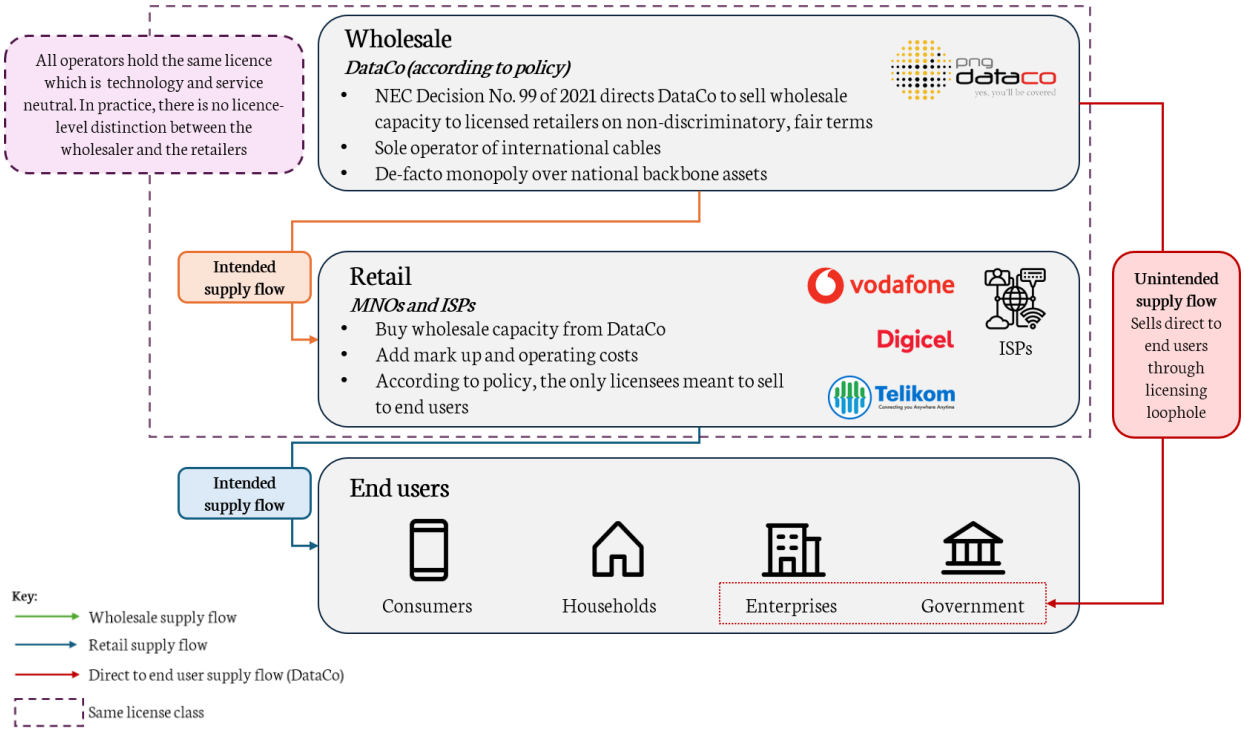


Source: Long Street Advisors

Market structure distorts investment and pricing, perpetuating suboptimal customer outcomes for PNG citizens and businesses.

The network configuration depicted in Figure 26 describes a market structure that it not only monopolistic, but where the wholesale de facto monopolist is also retailing services to businesses and civil organisations which have registered as ISPs. Figure 27 demonstrates how the wholesale vs retail market is structured and why there are now problems in the market.

Figure 27: Intended wholesale-to-retail supply structure, and DataCo's unintended direct supply to end users



Source: Long Street Advisors

The impact of this structure is:

- **De-facto monopoly control:** DataCo controls the essential wholesale network infrastructure assets (international submarine cables and national backbone network)
- **Vertical integration advantage:** DataCo competes against retailers using wholesale infrastructure and at prices which put retailers at an unfair disadvantage
- **Cross subsidisation:** DataCo cross-subsidises cheap domestic services by charging extremely elevated international prices, discouraging investment in domestic networks and exploiting cable users
- **Regulatory gap:** NICTA has not taken action to implement a disciplined wholesale access regime and neither has it adjusted the licensing loophole that enables DataCo to justify direct retail sales

Corrective action is needed to put the market structure right so that the sector can mobilise investment, expand coverage, drop prices and create a more competitive and sustainable market.

The full details of how this market structure has emerged, and its impacts across the industry, are described below across the different network layers. Each issue is linked to the relevant Recommendation that is intended to address these problems.

2.4a International

Refer to Rec 1

Access to PNG's international cable connectivity is controlled by a monopoly service provider.

PNG's international connectivity is currently provided through two subsea cables, the PIPE Pacific Cable 1 (PPC-1) and the Coral Sea Cable System (CSC), with a recent cross-border link into Jayapura, Indonesia. Both cables are accessed wholesale through a single intermediary, DataCo. This means that every retail operator and

ISP in the country depends on the same two physical assets and the same single wholesale monopoly counterparty for its international connection.

The Coral Sea Cable System was intended to provide an impetus for PNG's international prices to fall. Provided as a grant from the Australian Government, the cable landed with no deployment cost to the beneficiaries (PNG and Solomon Islands) and no build cost to be recovered. The CSC entered service carrying the explicit expectation that it would bring international prices down. That expectation has not been met. This is not a consequence of how the cable was funded or delivered, but of a decision made within PNG to route wholesale access to CSC exclusively through DataCo.

Rather than using the grant-funded asset to drive down the marginal cost of international bandwidth and grow volumes, DataCo is effectively overcharging due to its monopoly position over international bandwidth. Prices remain high because volumes are low, while volumes remain low because prices are high. The result is a 20 Terabits per second (Tbps) asset that is reported to be operating at around 1 per cent utilisation in 2026, leaving substantial capacity unused.

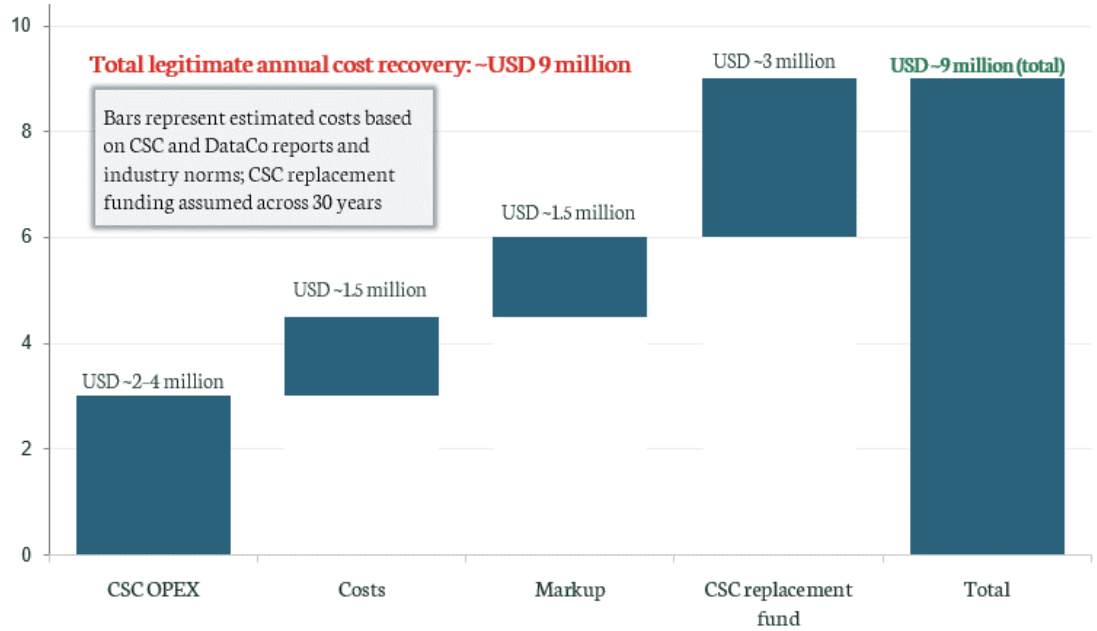
CSC's documented operating model, according to the Global Infrastructure Hub, was built around affordable, non-discriminatory access and greater uptake through retail providers. The Australian Department of Foreign Affairs and Trade (DFAT) also supported measures intended to reduce wholesale prices and increase transparency and competition. Current pricing of CSC therefore presents a policy issue, not simply a commercial matter to be left to the decisions of a licensed wholesale provider.

International bandwidth is priced significantly above the cost of operating the cable.

Analysis shows that international bandwidth, charged on an efficient, cost-recovery basis covering only operations, maintenance and other reasonable costs (including a replacement fund), might be expected to cost in the range of USD4.2-10.2 per Mbps per month. This range reflects the key uncertainties in estimating the efficient cost of the cable, including operating and maintenance costs and the treatment of a future cable replacement fund.

The lower end of the range (USD 4.2/Mbps/month) reflects the lower OPEX assumption and excludes the CSC replacement fund. The upper end (USD 10.2/Mbps/month) reflects the higher OPEX assumption and includes a contribution to a replacement fund. Actual international bandwidth prices are materially higher. Lower-volume users, such as ISPs, are reported to pay up to USD 87 (PGK 380) per Mbps per month, while higher-volume users such as MNOs pay approximately USD 13–30 (PGK 57–131) per Mbps per month. Even the lowest of these observed prices is above the upper end of the estimated efficient cost range, while ISP prices can be more than 20 times the low-end estimated cost. This gap is particularly significant given that higher utilisation should reduce the unit cost of the cable further. As international capacity volumes increase, the fixed costs of operating and maintaining the cable are spread across more Mbps, meaning the efficient cost per unit of capacity should fall rather than remain at current price levels.

Figure 28: Estimation of Coral Sea Cable costs and recovery



Note: CSC replacement fund estimated from USD 144 M construction cost (shared with Solomon Islands, 25-year life). OPEX assumed at 3–5% of CAPEX per industry standard, with PNG bearing 50–60 % of total cost. Retail costs estimated from DataCo 2022–23 reports assuming 30% retail expenses plus 30% assumed as markup. Total annual costs divided by CSC capacity to estimate unit cost.

Source: DataCo 2023 financial report, ITU, The National, KCH Annual Review, Long Street Advisors analysis

NICTA's research shows PNG's mobile data demand is elastic, with a 10 per cent fall in price associated with an 18 to 23 per cent rise in demand. Priced at much lower prices in line with other markets, we would expect that CSC would be making better use of its existing capacity. PNG customers are paying for multiples of what the infrastructure costs to run and consuming a fraction of the volume the cable has been built to carry.

Even where an operator buys international capacity on the Coral Sea Cable System, that capacity does not by itself provide connectivity to the operator's network or customers. The capacity terminates at the Cable Landing Station and must then be carried over terrestrial infrastructure to the operator's Point of Presence and to the location where the capacity is used.

DataCo's product offering includes domestic and long-haul Point-to-Point services that provide this end-to-end terrestrial connectivity. As a result, an operator seeking to use CSC capacity may face a second layer of dependence on DataCo, first for access to international capacity, and then for the domestic transport required to bring that capacity from the cable landing station to its own network or customer premises. Where alternative terrestrial routes or wholesale providers are limited, this creates a potential bottleneck that can constrain competition and reduce the extent to which PNG captures the benefits of its international cable investment.

NEC Decision 251/2025 removed the exclusivity of DataCo's sole provider position.

The NEC Decision removed the earlier decision for DataCo to have exclusive rights to landing international cables into PNG. As a result, the legal barrier to alternative routes to international capacity has been removed. The opportunity now is twofold: first, immediate price reform on the existing Coral Sea Cable to lower prices and drive volume and second, to enable new international cable capacity to be landed on open-access terms where this can strengthen competition and resilience over time.

The Coral Sea Cable is a strategically important national asset with a strong future role to play in PNG. The opportunity now is to optimise the governance, pricing and utilisation settings that determine how much of its capacity actually reaches PNG consumers and businesses competitively priced.

PNG's international connectivity lacks sufficient redundancy and diverse landing options.

PPC-1 carries around 30 per cent of PNG's international traffic. At 17 years old, the cable is already approximately two-thirds through a conventional 25-year design life. The Coral Sea Cable System carries the remaining 70 per cent and is only around five years into its life.

The cables land at two locations, Port Moresby and Madang, meaning a fault at either landing site has no domestic alternative to fall back on. Neither cable connects a remote province directly. The cables are not connected together by a fibre link meaning they cannot provide backup to one another. Effectively, PNG is connected by one cable to the North and a separate one to the South, while the major island clusters are currently not connected directly to an international cable.

Adding international capacity into the same two gateways does not address this underlying resilience problem. If international capacity continues to enter PNG through the same locations and then depends on Kumul Submarine Cable Network (KSCN) and DataCo's domestic backbone to reach other parts of the country, a failure in a landing point or critical domestic link can still disrupt connectivity well beyond the location of the fault.

New cable capacity to connect PNG has an opportunity to address this underlying resilience problem through landing at a diverse range of points as well as with fibre links being joined over land to connect the north and south of PNG's main landmass.

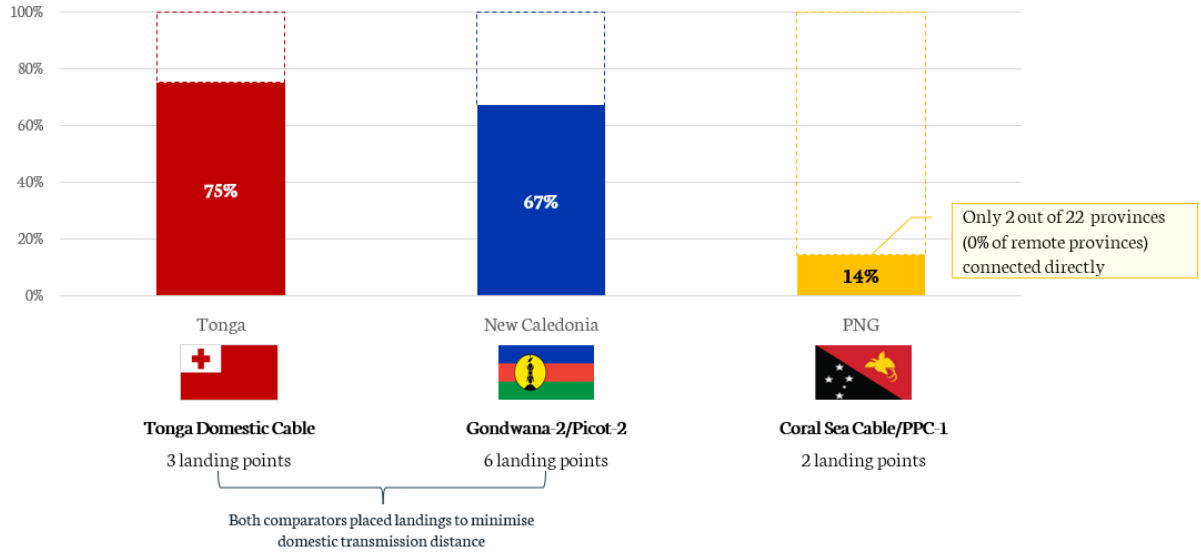
Pacific nations have been adding redundancy to cable landing options.

Multiple cables, diverse landing points and alternative routes can ensure that connectivity is maintained when a cable or landing point fails. Building diverse international routes and ensuring that key population centres have access to alternative paths would reduce the risk that a single cable fault or landing-point failure causes a major national connectivity disruption.

PNG's geography, dispersed population and difficult terrain mean that cable redundancy is critical to ensuring connectivity is resilient and continuous in times of natural or man-made events which disrupt cables coming into PNG. PNG has fewer landing points than neighbouring Pacific nations, including Tonga, New Caledonia and Fiji. This is despite the nation having a fragmented geography comprising a northern and southern region which are not yet connected by terrestrial fibre, and remote and outer islands with large populations.

Tonga and New Caledonia's cable landing points are described in Figure 29. Fiji operates nine cables across six landing points, connecting 67 per cent of its provinces directly. This demonstrates the value of deliberate redundancy in international connectivity. Fiji benefits from its geographic position in the Pacific Ocean, as a natural landing point for cables crossing the ocean between Asia and North America.

Figure 29: Cable landing points and share of provinces or island groups connected directly, PNG and Pacific comparators



Source: PNG consultations, Submarine Cable Networks, World Bank Group, Long Street Advisors analysis

2.4b Domestic

Refer to Rec 4

The existing domestic backbone presents a "daisy chain" of links rather than a resilient end to end network.

PNG's domestic backbone moves traffic inland from two international landing points using three principal physical technologies: the Kumul Submarine Cable Network (KSCN), domestic submarine and terrestrial fibre, including fibre deployed along electricity transmission infrastructure, and microwave links. Geostationary Earth Orbit (GEO) or Medium Earth Orbit (MEO) satellite provide backup where these terrestrial and submarine routes are unavailable, but at substantially higher cost and latency and generally lower speeds.

The fundamental problem is not simply the reliability of any individual technology. Much of the domestic network is structured as a chain of point-to-point links rather than a looped or meshed network with physically diverse alternative routes. Where a network has sufficient redundancy, a fault can be isolated while traffic continues over another path; across much of PNG, a fault at one point can instead disconnect all sites and customers downstream until the affected link is restored. This structural weakness compounds the reliability challenges introduced in Chapter 1 including power, vandalism, land disputes, seismic activity and deferred maintenance.

Challenges with reliability due to the backhaul network itself present a significant cost burden to telecommunications operators. To keep their networks up, operators (this includes mobile operators and DataCo) rely on expensive GEO and MEO satellite links to keep a site online when the terrestrial network can't be trusted. MEO backup can cost up to USD200 per Mbps per month. This cost is due to the poor quality of the underlying network, not by demand for a backup service. These costs inflate operators' cost stacks, leaving less capacity to invest in network expansion. In the case of SOEs this reduces the revenue that could otherwise flow to the GoPNG and instead, this money is absorbed simply by the cost of insuring against power outages.

Because DataCo's domestic network carries a significant fault profile, several operators have invested in their own parallel sections of fibre infrastructure to secure higher levels of service to meet customer expectations rather than rely on the DataCo backbone. DataCo's fibre and wholesale monopoly creates a single point of failure specifically for the operators who can't afford to build around it, including smaller ISPs.

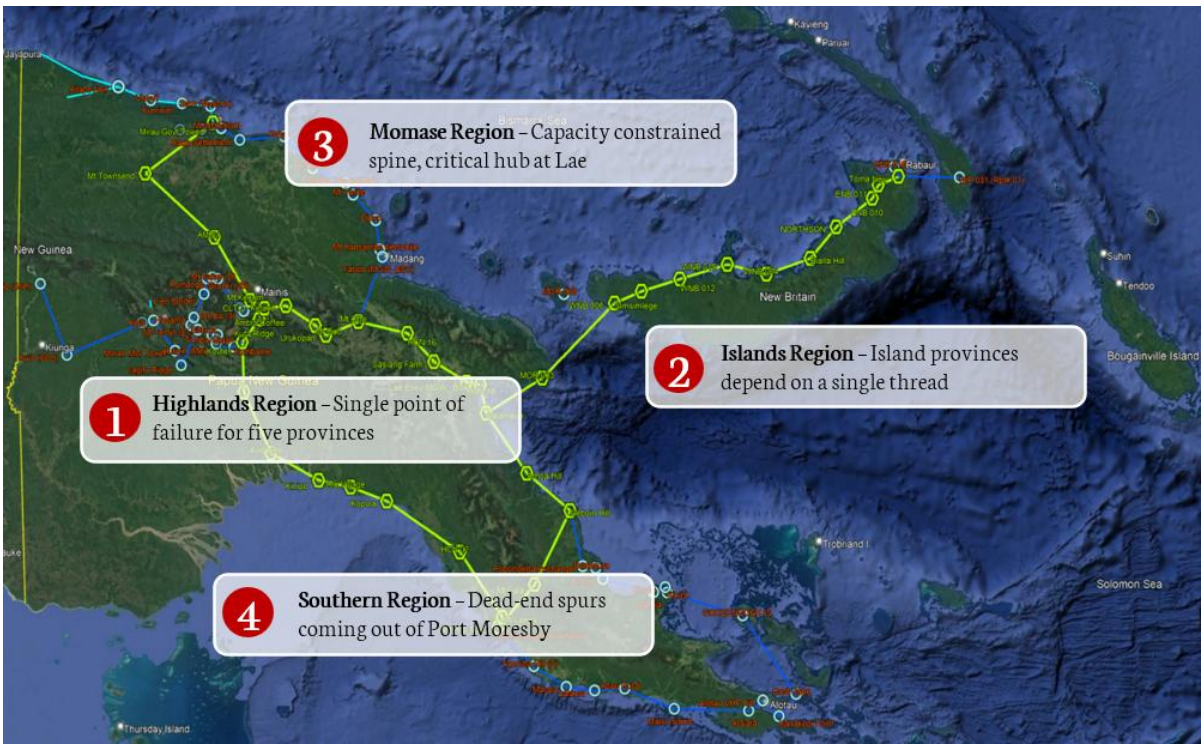
The debt behind DataCo's KSCN network appears to compound the problem. KSCN carries an estimated debt service cost of around USD24 million (PGK105 million) a year. The Blueprint consultations have not confirmed how this debt and its repayment are being treated. It is possible, though not confirmed, that the debt burden has contributed to cross-subsidisation practices and high pricing.

The implication for the Blueprint is clear: improving reliability cannot be achieved simply by repairing individual assets faster or adding capacity to existing routes. It requires investment in network architecture and the creation of physically diverse alternative paths so that critical locations and regions remain connected when individual links fail. This would improve resilience while reducing the need for costly satellite backup and the duplication of infrastructure by individual operators.

Relying on a single technology or provider will not be sufficient to close the backbone gaps.

The map of the domestic network below shows that the challenge is no longer simply a lack of backbone infrastructure. It is a network of uneven coverage, limited-capacity links and persistent connectivity gaps across much of the country. Large parts of PNG remain dependent on microwave-only links or limited-capacity combinations of microwave and fibre, while several areas have identified connectivity problems and limited alternative routes.

Figure 30: Domestic transmission backbone current status across four regions



Source: DICT

Addressing these gaps requires investment of an estimated PGK750-950 million (USD170-220 million).

PNG is now in a stronger position to address these gaps because the technology mix available is much broader than it was previously. If PNG can mobilise investment from multiple sources, it will be able to significantly improve domestic network which is a bottleneck on growth of the whole industry, and the economy, today.

Four technologies are relevant to closing PNG's backbone gaps. It is worth being explicit about the trade-offs between the technologies.

LEO Satellite technologies are a game changer for PNG, but all technologies have a role to play in connecting the nation and its people. Figure 31 illustrates the role each technology is understood to play and how the technology is positioned to contribute to a multi-technology solution. Industry players will be best placed to determine the precise technology and investment mix needed within each.

Figure 31: Comparison between domestic backbone technologies in the PNG context

	Fibre	Microwave	LEO Satellite (tower backhaul)	LEO Satellite (Community Gateway)
What it does	Carries traffic point to point over buried or strung cable	Carries traffic point to point over line-of-sight radio hops	Connects an existing mobile tower to the network via satellite, replacing or supplementing its terrestrial backhaul	Injects capacity directly into the domestic network at a single site, which local fibre, fixed wireless or mobile then distributes onward
Capacity	Effectively unlimited; the right technology for PNG's highest-traffic corridors	Meaningful but finite; each hop has a capacity ceiling	Growing quickly as new satellites launch; sufficient for most towers today, not yet a substitute for fibre on the busiest routes	Bonded configurations of four or more antennas reach up to 20 Gbps symmetric
Cost profile	High upfront capital cost (USD30,000 per KM of trenched fibre); low ongoing cost once built; the cheapest technology per Mbps at real scale	Moderate capital cost per hop (tower, dish, backup power at each site); moderate ongoing cost	Low upfront cost (USD8,000), a terminal rather than civil works; ongoing subscription cost	High upfront cost (USD1.25 million) and high ongoing cost (from USD75,000 per Gbps per month)
Deployment time	Slowest: months to years, depending on land access, terrain and permitting	Faster than fibre, but still needs towers, line of sight and, for long routes, multiple hops	Fastest: a terminal can be installed and live within days to weeks	Requires site preparation, power, installation and network integration
Resilience	Highly reliable once built, but a single cut anywhere along an unlooped route takes out everything behind it	The same daisy-chain exposure as fibre: each hop is a link with no alternative route unless deliberately designed with one	Removes the daisy-chain problem entirely for that site: a satellite-connected tower does not depend on any other tower staying up	Avoids dependence on one terrestrial route, but still depends on gateway power, local distribution and satellite-network availability

	Fibre	Microwave	LEO Satellite (tower backhaul)	LEO Satellite (Community Gateway)
PNG-specific challenge	PNG's terrain, mountains, rainforest, water crossings and dispersed islands, makes fibre expensive and slow to build and repair, and routes are exposed to vandalism and land access disputes across the 97 per cent of PNG under customary land tenure	Needs clear line of sight, which PNG's mountainous terrain often breaks up, forcing more hops, more towers and more points of exposure	Needs no ground infrastructure between sites at all, which suits PNG's terrain better than either terrestrial alternative; dependency risk and capacity risk over time	Needs reliable power, a secure site and enough aggregated demand to carry the monthly fee
Where it fits in PNG	The highest-traffic, highest-population corridors, where the investment case clears the bar against the LEO Satellite alternative that would otherwise serve the site	Filling gaps between fibre spans, and hardening and sharing existing links rather than duplicating them	Any site where fibre is not commercially justified today: immediately for exposed or isolated towers, and durably for towers that will never carry enough traffic to justify fibre	High-capacity satellite access point can serve multiple nearby communities, towers, schools, health facilities, businesses or government sites through local fibre, fixed wireless or mobile distribution.

What currently exists, what the gap is, and the technology options available differ for each of PNG's regions.

1. **Highlands: The Highlands Corridor is a single point of failure for five of PNG's most populous provinces**

   What is there today: A single chain runs from the Hela and Southern Highlands area through Mount Hagen, Mount Otto and Goroka, down into Lae. This corridor is the sole connectivity link for Enga, Western Highlands, Jiwaka, Southern Highlands and Eastern Highlands, provinces that together hold a substantial share of PNG's population outside the coastal centres

   The gap: There is no second route in or out. A fault at any point along this single path does not degrade service for the provinces behind it, it isolates them entirely until the fault is repaired. The Hides to Mendi segment is the specific gap operators describe as a "missing link."

   Technology to consider: LEO Satellite can deliver resilience at the most exposed points of this corridor immediately, at a fraction of the time and cost of a new fibre build. The Highlands has also been identified as an area of priority for Community Gateways to be integrated into.

   Fibre is likely a good long-term investment here given the population and traffic this corridor carries, ideally built as a second, geographically separate path rather than simply reinforcing the existing route. Where a fibre build does proceed, PPL's transmission corridors through this region should be assessed for shared use before committing to an entirely new route.

2. **Islands: connectivity is fragmented and highly dependent on single links**

   What is there today: The island provinces have limited terrestrial connectivity, with parts of New Britain connected through a long microwave chain that extends towards the eastern islands. Other island

provinces, including New Ireland and Manus, have little or no strong terrestrial connection back to the mainland.

The gap: Active fault points are flagged near Rabaul, and on the long open water hop toward Bougainville, exactly where a single over-water microwave link is least reliable. A fault at any of these points can cut connectivity to the provinces behind it, and because New Ireland and Manus have no link into this chain at all, they are not a resilience problem so much as an absence of a reliable terrestrial route.

Technology to consider: LEO Satellite and Community Gateways are very well suited to these regions, particularly for locations dependent on exposed or single microwave links.

Submarine cable spurs could be assessed for provinces with a large enough population to justify one, but only once tested against what LEO Satellite can already deliver. Progressive fibre hardening of the existing New Britain microwave network, including using existing power infrastructure where available, should be considered where traffic justifies it.

3. **Momase: Largely microwave coastal corridor with a critical convergence point at Lae**

What is there today: Connectivity across the Momase region is provided primarily through a terrestrial microwave corridor running along the coast from the north-east towards Madang and Lae. Some sections have been identified as suitable for future fibre deployment using existing power infrastructure, but this hardening has not yet been implemented. Lae is a particularly important node because it is the main connectivity hub between the Momase and Highlands corridors.

The gap: The coastal corridor remains heavily dependent on microwave infrastructure, with limited route diversity. Faults along the corridor can therefore disrupt connectivity for communities and centres further along the network. Lae is also a critical point of concentration: because multiple regional routes converge there, an outage at or around Lae could have consequences well beyond the city itself. The region's exposure to seismic activity further increases the importance of network resilience.

Technology to consider: LEO Satellite and upgraded microwave links can provide resilience along the more exposed sections of this coastal corridor immediately. At Lae specifically, the case for fibre is strong on its own terms: the volume of traffic converging there from multiple regional routes, combined with the city's seismic exposure, justifies investment in diverse fibre routes and a ring or mesh topology.

4. **Southern region: Long, vulnerable spurs feed into Port Moresby**

What is there today: The Southern region is served by two main terrestrial spurs extending from the Port Moresby area towards the Western/Gulf direction and towards Oro and Milne Bay. These routes provide connectivity to communities and centres along the respective corridors but ultimately terminate at Port Moresby, which is the region's main connectivity hub and PNG's principal international gateway.

The gap: Both routes are effectively dead-end spurs, with limited ability to reroute traffic if a fault occurs. This means that an outage anywhere along a spur can disconnect the locations beyond the fault. The Oro–Milne Bay corridor is particularly exposed, with multiple fault points identified along the route. Port Moresby itself is also a critical point of concentration: an outage at the hub could affect connectivity across both southern corridors and potentially wider national and international traffic.

Technology to consider: The Oro–Milne Bay corridor, the more exposed of the two southern spurs, is a strong candidate for LEO Satellite and Community Gateways, given the multiple fault points already identified along the route and the cost of building redundant fibre across this terrain. The Western/Gulf corridor includes sections already identified as suitable for fibre hardening, and these should be prioritised, tested against the LEO Satellite alternative, given the corridor carries greater traffic toward Port Moresby.

Port Moresby itself, as both a regional hub and PNG's principal international gateway, justifies investment in route diversity, diverse fibre paths and potentially a ring or mesh architecture.

The backbone layer presents a monopoly, characterised by policy and practice rather than by law.

PNG law does not prevent another wholesale supplier providing services for domestic backbone. NICTA's Wholesale Service Declaration No. 2 of 2025 models DataCo as the reference operator holding effectively 100 per cent of the declared wholesale market, a reflection of DataCo's current commercial position, not a legal barrier to entry by others. The result is a backbone that functions as a monopoly in practice, sustained by the absence of a clear signal that other wholesale suppliers are welcome, rather than by any rule that prevents one. Consultations for the Blueprint confirm that there are no legal obstacles to licensees other than DataCo investing in and providing such services.

Governments around the world have supplemented the activities of national wholesale providers through competition or additional uptake mechanisms

For example, KT Rwanda Networks held a wholesale-only license with exclusive rights over all 4G spectrum. Rwanda Utilities Regulatory Authority withdrew that exclusivity in 2023 after KTRN declined to accept a modified license. MTN and Airtel moved from reselling KTRN capacity to building and operating their own networks. Once competition was permitted, 4G penetration rose from 2% to 30% within two years.

2.4c DataCo

Refer to Rec 4

DataCo was formed with a mandate to build PNG's domestic wholesale network.

Recognising the need for a commonly usable infrastructure solution for PNG's backbone needs, DataCo was established in 2014 to provide wholesale services to PNG's information and communication industry and mandated to build, own and operate the National Transmission Network (NTN). This encompassed the following responsibilities:

- **Build the national backbone.** DataCo was tasked with building and operating the NTN, with the primary goal of providing nationwide high-speed internet through fibre-optic cabling assets
- **Operate wholesale-only, on a non-discriminatory basis.** The NTN was intended to provide wholesale, non-discriminatory telecoms transmission services — the same logic as Australia's NBN Co, New Zealand's Chorus or Brunei's Unified National Network.
- **Reduce wholesale prices.** DataCo was listed as a wholesale service provider by the government focused on wholesale infrastructure assets — terrestrial, submarine and satellite fibre — selling to licensed retailers including Telikom, Digicel, Vodafone and ISPs

NEC Decision No. 99 of 2021, referenced in DataCo's 2020 Audited Financial Statements, reinforces that:

"All assets, trading, operating and licensing functions for the Government telecommunication companies remain with PNG DataCo limited (as a separate wholesale company) and Telikom and Bemobile (as merged retail called Telikom Ltd)"

DataCo has drifted from its original mandate over time.

From 2014 onwards, major assets were transferred from Telikom to DataCo as part of the split, including the Gerehu Earth Station, satellite infrastructure, international gateway facilities, PIPE Pacific Cable 1 (PPC-1) submarine cable assets, and associated national transmission infrastructure. The split did not extend to Telikom's tower and microwave infrastructure and these assets remained with Telikom. The intention was to separate wholesale infrastructure from retail competition, with DataCo focused on providing wholesale connectivity and Telikom continuing to compete for retail and enterprise customers.

The intent to ensure wholesale and retail separation and keep DataCo focused on the former has not operated as intended, illustrated by the examples below:

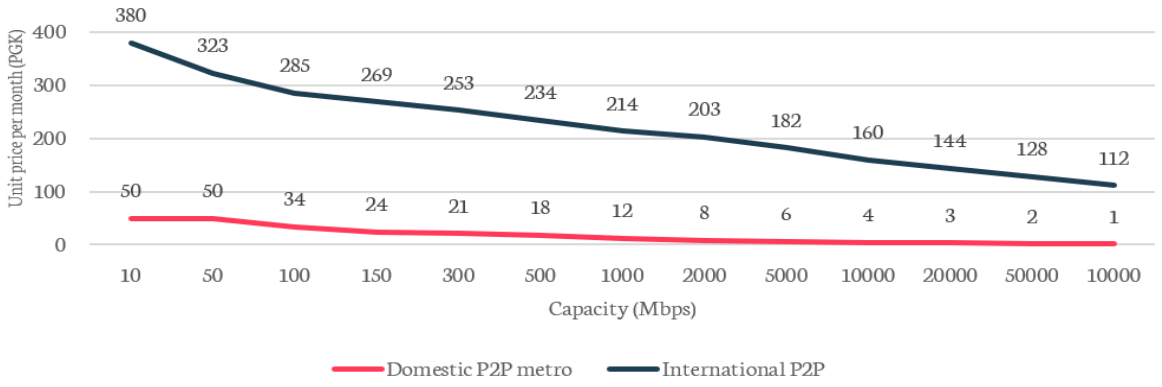
- DataCo has expanded beyond a strict wholesale role to supply services directly to end-user organisations, including enterprise customers. Such services are provided to organisations who possess an Operator Class Licence (OCL), within the bounds of a wholesaler's sales remit. Such licences, however, have been distributed to a range of organisations of which many might not be regarded as operators, such as churches and schools. This practice has allowed DataCo to compete for business that would otherwise sit within retail operators' consumer and enterprise market.
- Very Small Aperture Terminal (VSAT) customers have moved to direct supply by DataCo rather than through Telikom, Digicel, Vodafone or another retailer. This includes government entities and many private sector businesses, including banks and other large corporates who buy VSAT service directly from DataCo, rather than through a retail contract with Telikom, Digicel, Vodafone or an ISP.
- DataCo directing selected ISPs to deploy fibre-to-the-home (FTTH) in apartment blocks and densely populated urban areas so that such premises can purchase fixed broadband services. The behaviour to selectively encourage ISPs to connect premises risks future distortion of the retail fixed broadband market, which could ultimately become monopolised by a small number of ISPs.
- DataCo's proposed investment in additional data centres and other downstream digital infrastructure does not represent immediate priorities for PNG's retail telecommunications operators and ISPs for reliable wholesale connectivity where they need it
- DataCo's proposed investment of 500 carrier-neutral towers does not appear to be backed by a compelling investment case or evidenced support from the retailers who would be expected to use the capability. There is no evidence-based business case demonstrating demand for 500 new towers, nor is it clear that MNOs are willing to co-locate on the proposed infrastructure at prices and locations that would make the investment commercially sustainable. Without mobile operators formally agreeing to the proposal, it would be extremely risky for a wholesaler to proceed. The advent of LEO satellite technology also offers competing, potentially more effective solutions, such as through backhaul. This changes the economics of tower deployment options particularly for rural and remote areas where the economics of terrestrial infrastructure are weakest. DataCo's more important role is to provide the open, reliable wholesale backbone and backhaul on which those private-sector networks depend. Expanding into a large-scale tower programme before addressing gaps in national transmission, domestic backhaul and wholesale access distracts DataCo from its priorities.

Pricing points to conflict between DataCo's wholesale mandate and its commercial incentives.

As discussed, international bandwidth appears to be significantly overcharged given the CSC was a grant-funded asset. The pricing of domestic fibre products presents the opposite pattern: some domestic services appear to be priced unusually low, while others—particularly for smaller customers—are priced well above regulated benchmarks. Taken together, these differences suggest that DataCo's pricing is not consistently aligned with the underlying cost of providing each service.

- **Domestic metro fibre**
    - Consultations revealed metro fibre is charged at approximately PGK1 per Mbps per month
    - PNG's domestic transmission prices for this product are around 0.2 times Fiji's for a comparable service. This large difference suggests that PNG's low domestic prices do not reflect costs
    - A possible explanation is that domestic services are being supported by revenues from higher-priced international capacity though this cannot be confirmed

Figure 32: Domestic metro fibre cost vs International Point-to-Point (P2P) cost



Source: DataCo Reference Interconnection Offer 2022 (most recent published RIO), Long Street Advisors analysis

- **Fibre long haul**
  - According to DataCo's Reference Interconnect Offer, smaller, lower-volume customers pay PGK400 per Mbps per month for domestic long-haul fibre, more than three times NICTA's allowable ceiling of PGK124 for this service
  - DataCo's largest-volume customers pay as little as PGK118 per Mbps, at or below that ceiling, while a separate 2025 pricing analysis puts the actual average price paid across all customers lower still, at around PGK30
  - The published rate therefore varies by more than three times depending on customer size, and a representative price is difficult to discern from the data available. What is clear from both the Reference Interconnect Offer and Blueprint consultations is that smaller customers are being charged well above the regulated ceiling, and that there is a real opportunity to bring these prices down through a structured glide path

Under-pricing is not likely to be sustainable if the submarine cable pricing reforms recommended by the Blueprint are adopted.

The industry view is also that some domestic fibre services may currently be underpriced. There may be commercial or policy reasons for this, and the Blueprint does not seek to determine DataCo's intent. The market effect is nevertheless the same, a domestic price set below sustainable cost can deter competing investment because a new entrant cannot economically match a price supported by revenues from another part of the business.

This is particularly important given the Blueprint's proposed reforms to submarine cable pricing and the introduction of greater competition through the PDCI. If Coral Sea Cable prices are brought into an appropriate range and competition is subsequently introduced through the PDCI, the high international margins that may currently support low domestic prices would be reduced. The existing pricing structure would therefore become increasingly difficult to sustain. Over time, this would require prices for individual services to move closer to their underlying costs.

The objective should not be to ensure that every individual product becomes cheaper. Rather, the objective is to reduce the overall cost of connectivity and establish prices that allow the market to function efficiently. International bandwidth represents a significant component of connectivity costs and is likely to experience downward price pressure as competition reduces DataCo's current mark-up and brings PNG closer to pricing levels in comparable Pacific markets. Some domestic transmission prices may, in contrast, need to rise from today's artificially low levels as they move towards cost-reflective pricing.

For most consumers and businesses, however, the reduction in international bandwidth costs is expected to outweigh any increase in domestic transmission charges. The result should therefore be a lower overall cost of connectivity, even where the price of some domestic products increases in isolation.

Crucially, correcting these pricing distortions would also improve the conditions for private investment. Operators would be able to invest in domestic transmission and compete on commercial terms, rather than competing against wholesale prices that may be sustained by revenues from a separate monopoly service. This would reduce the reliance on cross-subsidisation, improve transparency around the cost of individual services, and create a more sustainable basis for competition and investment across PNG's telecommunications market.

DataCo's investment in major infrastructure has not translated into the backbone reliability the sector needs.

The KSCN represented a significant capital commitment of approximately PGK879 million (USD200 million). However, that investment has not translated into the reliable, resilient and sufficiently diverse domestic backbone the network now requires. KSCN regularly suffers from breakages undersea, and based on Blueprint consultations, is regularly out of service. A review of the Kumul Submarine Cable Network's business case in 2019 found that its revenue projections had been highly optimistic and were unlikely to be realised, partly because many of the project's cable landing stations were built some distance from the provincial towns they were meant to serve. The review also raised concerns about the quality of the project's design and delivery, after the cable was severed in three separate places during the earthquake that struck Morobe on 7 May 2019.

DataCo faces structural constraints that would put an operational and cost burden on any wholesaler.

The challenges DataCo faces in fulfilling its responsibilities are significant and reflect the reasons why the network is unreliable. Many of the challenges are outside its own control, as below:

- Reported vandalism presents a major challenge across the network, and places a recurring operational and cost burden on DataCo to manage it
- Fibre maintenance is technically difficult and expensive given PNG's mountainous and fragmented topography, and the major share of handling such challenges falls on DataCo
- Some of the submarine cable which DataCo uses lie on a volatile sea floor at several points, as per the KSCN points described above
- Power, the precondition for keeping the network running, is itself unreliable, with 40 blackouts a month reported on PPL even where grid exists and DataCo is burdened by costs to manage this
- Land access adds a further layer of difficulty specific to PNG in that 97 per cent sits under customary land tenure, meaning DataCo has to negotiate access and wayleave with individual landowning groups for new builds and repairs

These complications make it harder for DataCo to do its work. They also reinforce the need for DataCo to be solely focused on its intended role to build PNG's domestic backbone.

The Blueprint offers an opportunity to clarify government's role in service provision to ensure it is effective and not distorting the market.

The Government plays an important role in providing PNG's telecommunications infrastructure. This includes DataCo, Telikom, and their subsidiaries.

Most nations clarify roles of state enterprises through one of four steps, each with a different authority level:

- Statutory or legal provisions which define market activity and its limits, the strongest way to enforce behaviour but requiring legislation which can be time-consuming and complicated to pass

- Licence conditions, the next strongest way to enforce behaviour but which can also take time to amend and involve a longer process to align the licence with the law
- Directives, such as NEC directive, which compel action but to be effective should be drafted as thoroughly and clearly as possible in the absence of statutory provisions
- Board directives, which rely on a board ensuring management is complying with the defined market activity, weaker than the above measures and difficult to enforce

There is complexity to clarifying the role of DataCo's wholesale focus due to the lack of a clear legal framework that obliges DataCo to be wholesale focused. There is no statutory provision for this under PNG law today. DataCo's licence also does not stipulate a wholesale focus. DataCo's wholesale focus is currently obliged by an NEC directive and subject to Board oversight by KCH. The Blueprint identifies opportunities to address this lack of clarity in the short term, covered in Chapter 5.

2.4d Access

Refer to Rec 4 and 6

Tower sharing between operators is extremely limited.

PNG's terrain and power constraints make towers more expensive to deploy and operate than other nations. Last-mile network runs on a mix of technologies chosen by what the terrain and power situation at each site allows, rather than a single national standard. Where fibre can physically reach a tower, this is the preferred connection for cost, quality and performance. Where it cannot, most commonly across PNG's mountainous interior, operators fall back on microwave, a point-to-point radio link that requires clear line of sight between two dishes mounted on towers or masts at both ends. Every microwave hop needs its own elevated structure, adding to the cost of deploying a tower in PNG relative to peer countries, while lower population density means each tower connects fewer people.

Figure 33: Tower tenancy ratio (PNG and international) comparators

Region/country	Tenancy ratio
USA	2.3x
Europe	1.4x
India	1.4x - 2.4x
Myanmar	1.35x
Vietnam	1.5x
PNG	1.0x

Source: PNG consultations, Kearney, DGTL Infra, Towerxchange, Long Street Advisors analysis

Tower sharing has not been used as a means to offset this cost. PNG's tower tenancy ratio, a measure of the average number of operators per tower, sits at 1.0, the lowest possible value.

There is a lack of regulatory clarity as to whether operators generating their own power at a site are not permitted to sell surplus capacity into the surrounding community. As a result of this, powered towers in unpowered communities are not seen as a power supply asset. Most operators are unlikely to have the appetite for selling surplus power of their sites however there may be a small opportunity. Where surplus capacity exists, some operators could recover part of that cost by supplying nearby households or businesses. Giving communities a direct benefit from a tower also gives them a reason to protect it, reducing vandalism.

New Zealand provides an example of how low density, high-cost deployment can be made more economically justifiable through infrastructure sharing. The Rural Connectivity Group, established in 2017 as a jointly owned vehicle of three NZ operators (Spark, One NZ and 2degrees) was appointed by the government as infrastructure provider for the Rural Broadband Initiative. It was funded through NZ's USO scheme (Telecommunications Development Levy) and around NZD75 million (USD 44 million) was added by the three operators. The operators share spectrum, radio access equipment and a single set of antennae on each tower, making it the world's first multi-operator cellular network. Retail competition between operators is preserved above this. RCG built over 570 cell sites and exceeded the original targets of 30,000 rural homes, 1,000 km of state highway and 100 tourist sites.

The lesson for other high-cost, low-density markets is that sharing the most expensive layer made otherwise uneconomic sites viable without eroding competition where it matters.

Power compounds the problem at every site, not only remote ones.

PPL's grid logs around 40 blackouts a month even where it reaches a site, so operators run diesel generators in parallel even in metro areas to keep towers online. In rural areas, the constraint is most acute. Fuel, logistics and transport to keep a site powered account for roughly half of an operator's total rural cost stack, worsened by fuel theft running at around 15 per cent of fuel supplied to rural sites and by many rural and Universal Access sites being reachable only by helicopter, boat or on foot.

ISP traffic makes up a small share of network volume but form a critical retail layer connecting the backbone to corporate PNG and underserved communities.

PNG's ISPs occupy a relatively small but important niche in the telecommunications market. While ISP traffic represents only a small share of total retail data volumes, ISPs provide a critical retail layer between the national transmission backbone and customers that are poorly served by mass-market mobile networks. Most recent reporting suggests that around 30 ISPs are currently active and selling connectivity and solutions in PNG and the volume ISPs carry is a small share of the total, around 3 per cent of total retail data volume.

Their core business is household, corporate and institutional connectivity through dedicated fibre, microwave and VSAT links with the service levels commercial customers require. Many offer managed services, network design, IT support and monitoring beyond reselling bandwidth. Their core role is to turn wholesale transmission capacity into tailored connectivity for end users. This includes dedicated fibre, microwave, fixed wireless and VSAT services, often bundled with managed networks, network design, IT support, monitoring and other services required by commercial and institutional customers.

ISPs are able to operate profitably in segments that are less attractive to MNOs because their business models are different. MNOs are optimised for high-volume, standardised services delivered across a large customer base and therefore tend to prioritise areas where population density and demand can support the cost of network deployment and operation. ISPs, by contrast, can build viable businesses around smaller numbers of higher-value customers, tailoring the network, service level and technology to the requirements of each site. A corporate customer, government agency, school, health facility or remote enterprise may therefore be commercially viable for an ISP even where the same location does not generate sufficient mass-market demand.

This makes ISPs particularly important in extending connectivity beyond the areas served by mainstream mobile networks. They connect district administrations, rural schools, health posts, mission stations and remote enterprise sites using whatever combination of fibre, fixed wireless, microwave and satellite is appropriate to the location.

Rural PNG presents cost challenges that market mechanisms for terrestrial deployment cannot solve alone.

As with other markets, rural connectivity sits on fundamentally different economics to the rest of the market. With PNG's topography being mountainous and forested, and population spread evenly across terrain (as opposed to being clustered in larger towns or cities), rural telecommunications economics requires making money from expensive towers serving a thinly spread customer base: i.e. extremely difficult. Industry consultations reveal that rural Average Revenue Per User (ARPU) sits at around PGK15 (USD3.4), against an estimated rural cost to serve of around PGK70 (USD16), a gap of roughly PGK55 (USD12.6) per user per month.

Challenging rural telecommunications economics spans a range of topics including expensive physical land access for deploying networks in jungles and mountain ranges, lack of grid power supply forcing the use of diesel-powered generators at each site, land access disputes with local landholders, lack of roads connecting population centres making it difficult to move telecommunications equipment around the country.

These economics mean that rural coverage cannot be approached simply as a question of building more towers. Given the high cost and operational difficulty of operating rural sites, deployment decisions need to be targeted towards locations where they deliver the greatest revenue for the investment required. The Blueprint does not prescribe the number or configuration of commercial towers required, as these are commercial decisions best made by operators. The Blueprint does, however, advocate for smarter deployment of towers, including tower deployment and maintenance sharing and better design of UAS programmes.

2.4e Retail

Refer to Rec 6

The retail layer is characterised by high and imbalanced termination rates and a lack of portability that blunts the competitive pressure three mobile operators should provide each other.

PNG's retail mobile market has three network operators, with active connections of approximately 2.4 million, 2.1 million and 0.5 million. Two features blunt the competitive pressure that the number of operators should be capable of generating.

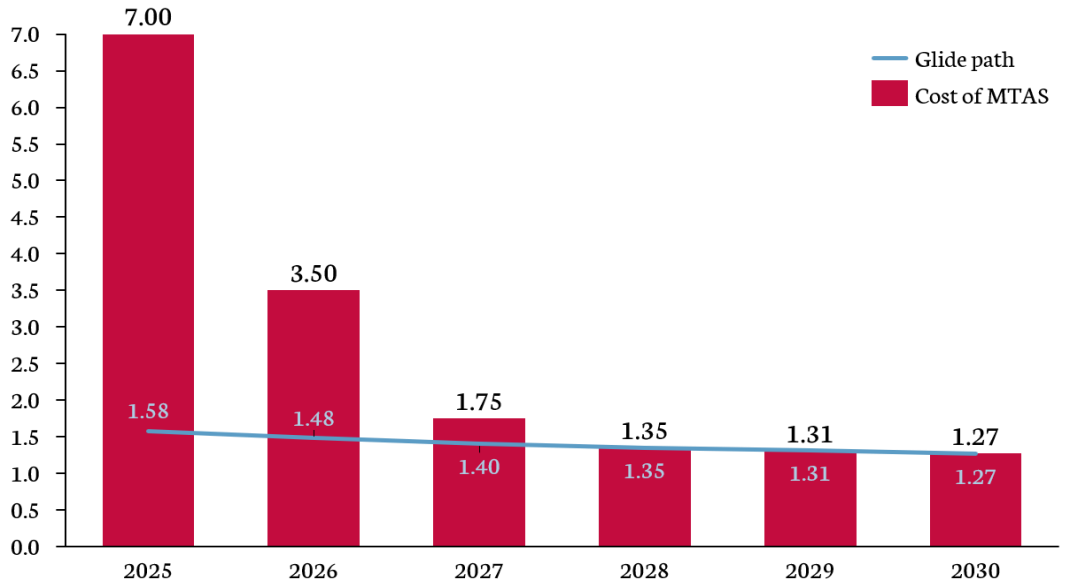
First, PNG has no MNP, so a customer cannot switch operators without losing the phone number tied to their business contacts, family and daily life. NICTA's cost-benefit modelling estimates MNP could generate market benefits of USD80 million (PGK350 million) to USD150 million (PGK655 million) over five years, against implementation and operating costs of USD14 million (PGK61 million) to USD17 million (PGK74 million). Such benefits would be generated by more citizens making more calls and lower mobile package pricing arising from operators making their pricing more competitive for fear of losing customers who can port their numbers to another service provider.

Second, high mobile termination rates entrench on-net calling patterns, penalising customers for calling a friend or family member on a different network regardless of which operator offers the better price or service. A mobile termination rate refers to the charge applied by one operator to another when the first is "terminating" a call on their network that originated from a customer on another network.

NICTA's November 2025 Draft Determination on Service-Specific Pricing Principles finds PNG's current Mobile Terminating Access Service (MTAS) price at approximately 7 toea per minute against a modelled efficient cost of 1.58 toea per minute in 2025, falling to 1.35 toea by 2028, evidence of a termination rate set well above cost.

Together, a lack of portability and elevated termination rates mean the presence of three operators generates materially less competitive discipline on price than three operators would in a market where customers could act freely on the differences between them.

Figure 34: NICTA MTAS glide path vs calculated cost-based price (PNG toea per minute)



Source: Draft Determination: Service Specific Pricing Principles for Mobile and Fixed Terminating Access Services

Limiting termination rates can improve affordability by reducing operators' costs and reducing the amount they need to recover from consumers through retail prices.

NICTA has completed a public inquiry recommending that the Minister cap the price difference between on-net and off-net mobile calls on Digicel's network. NICTA found that customers on smaller networks are likely to make most of their calls to customers on the dominant network. Where off-net calls are significantly more expensive than on-net calls, customers have less incentive to join a smaller network because they face higher costs when calling friends, family and other users on the larger network.

This creates a disadvantage for smaller operators, and Telikom is the clearest example. As the smallest of PNG's mobile networks, Telikom is disproportionately exposed to this dynamic as most calls its customers make are to friends and family on Digicel's larger network, so Telikom customers absorb higher off-net costs more often than customers on any other network. This can reduce Telikom's customer growth, revenue and profitability, which in turn limits its ability to invest and compete, compounding the financial pressures Telikom already faces elsewhere. It also means consumers can face higher prices simply because the person they are calling uses a different network.

Capping the difference between on-net and off-net prices would remove this penalty and make it easier for customers to choose a network based on service and value rather than the network used by their contacts. The measure should apply across all network operators to ensure the benefit is passed through to consumers, while also supporting stronger competition and investment across the mobile market.

2.4f Telikom

Refer to Rec 4

Telikom was established as PNG's national telecommunications provider but has lost its early momentum.

Telikom has played a foundational role in PNG's telecommunications development, pioneering the expansion of fixed-line and analogue technologies, undertaking the initial rollout of connectivity and establishing the

first national backbone. New operators, including Digicel and Vodafone in mobile and DataCo in the national backbone, have subsequently taken these capabilities forward.

While the industry has grown rapidly over the past decade, Telikom has steadily lost market share and momentum. It has fallen behind in introducing new products, services and marketing approaches; accumulated an unsustainable debt burden; reduced its ability to invest in its network; and made insufficient use of valuable assets such as spectrum and land.

Telikom's network and market position face specific structural challenges.

Ever since PNG introduced modern telecommunications, Telikom has planted the national flag on most initial accomplishments in the industry. Telikom pioneered the expansion of fixed line technologies in PNG, undertook the initial roll out of mobile connectivity, and established the first national backbone. Subsequently new operators, including Digicel and Vodafone in mobile and DataCo in national backbone, have taken forward these achievements.

While the industry has grown rapidly in the past decade, Telikom has lost its initial momentum. With the advent of competition, the company has experienced a steady decline in its share of industry revenue and active customers. It has fallen behind in introducing the latest products, services and marketing techniques, built up an unsustainable debt burden, diminished its ability to invest in its network and not properly put to use its valuable assets such as spectrum holdings and land.

Originally designed to also serve PNG's backhaul objectives, Telikom's tower architecture is not optimised for reaching population bases as some of its towers are sited on hilltops more to propel microwave signals between and across populated areas and less into them. Many of its 3G towers, it is understood, are also not 4G-ready and upgrading them will require further capital investment. 5G deployment, likely to only be done in cities or built-up areas, is likely to need more investment as additional 5G sites will be needed to add to existing 4G ones. Without network modernisation, it is going to be difficult for Telikom to grow its revenue base once internet uptake advances in PNG in future.

At this point in time, given Telikom's current financial position, the company should not consider taking on more debt to build more towers to extend the network. A large number of Telikom's towers are struggling financially to break even against the revenue generated for that tower.

An alternative, more commercially viable, option to bolster Telikom could include recapitalisation and investment in the current business, focus on tower sharing (Action 4.8) and taking advantage of LEO technology to extend the network (Action 2 and 3).

With the wholesaler DataCo selling direct to enterprises and institutions through a regulatory loophole, Telikom has also lost a portion of its enterprise retail revenue base and growth opportunity. The company continues to leak customers to competitors, has a relatively small share of new customer growth, and may lose more customers when Mobile Number Portability is implemented.

Telikom nevertheless retains a number of assets that could provide the foundation for a stronger third player.

- A spectrum allocation which, unless refarmed by NICTA, could provide a competitive advantage for future network deployment or network sharing arrangements (e.g. MOCN)
- A nationally recognised, valued and loved brand which PNG citizens feel rightly proud of and wish to support along with a base of loyal customers
- A successful and growing solutions ICT and solutions subsidiary, Datec, which is scaling its enterprise footprint and has just launched the Kumul Cloud Infinity data centre in Port Moresby
- Physical assets, such as land and buildings, which are of commercial value

To sustain itself, Telikom needs to undertake a transformation of its business, staged over several years. Transformation should seek to maximise opportunity given the trajectory of the market as foreshadowed in this Blueprint. At this time, Telikom should also avoid commercially and financially risky new actions, such as major loans to expand its network footprint for example through building new towers. The Blueprint recommendations on how this might be done are under Action 4.7.

A stronger Telikom would benefit every major stakeholder in the market.

- Customers, both business and consumer, would benefit from a strong third player alongside Digicel and Vodafone. In three-player markets, stronger competitive dynamics can support lower prices, better service and greater innovation than markets with only two major players.
- GoPNG would benefit from a stronger Telikom because it is a significant State enterprise, employer and national telecommunications asset with an important role in serving PNG's population.
- DICT and NICTA would benefit from a healthier Telikom because both agencies have an interest in a sustainable, competitive telecommunications market.
- LEO Satellite providers could benefit from Telikom's retail reach into government enterprises, LLGs and wards—markets they may find difficult to reach efficiently on their own.
- Digicel, Vodafone, DataCo and ISPs could also benefit from an additional industry player with which to share capabilities such as towers, spectrum and fibre and to collaborate on industry-wide initiatives.

2.4g LEO Sat

Refer to Rec 2 and 3

PNG's remote and rural topography makes current terrestrial deployment unfeasible, but LEO sat will make a significant difference.

PNG's current mobile broadband coverage sits at around 81 per cent of the population, with 60-65 percent of usable coverage at any one time. The Blueprint's recommendations, including the reform of the Universal Access and Service (UAS) Fund and infrastructure sharing, encourage progress through new mobile towers which move network coverage forward from its current coverage envelope. However, the most remote sites and communities are unlikely to be reached in the near term. Rural and remote communities are often located well outside the coverage envelope, in areas which are not contiguous to an existing telecommunications network capability.

LEO technologies offer a new technology solution to addressing such connectivity problems. For the first time in connectivity history, LEO technologies offer high-speed, broadband-like connectivity speeds from space without the need for a terrestrial conduit at the location. This enables networks to pop up without the need for being connected to already deployed network capability.

GEO and MEO satellite plays an important but costly redundancy role, but the landscape is shifting with the entrance of LEO Satellite technology.

Satellite plays an important role in PNG, particularly for backup connectivity and for sites that are too remote to justify a terrestrial connection. GEO satellite services provide expensive backup capacity that operators switch traffic onto when land-based connections fail. Medium earth orbit (MEO) services, principally O3B, sitting at roughly 8,000km altitude compared to a GEO satellite's 36,000km, serve as the primary backhaul option for the most remote towers no fibre or microwave path can reach, trading some of GEO's coverage for lower latency and cost.

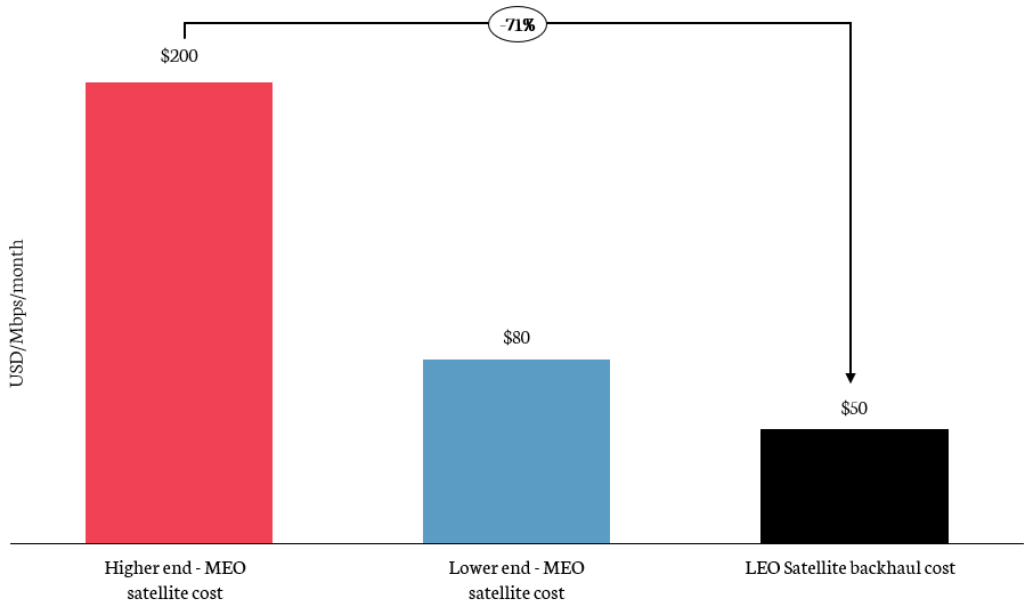
The landscape is shifting with the introduction of LEO satellite services. LEO provides a lower-cost, higher-capacity and lower-latency alternative to both GEO and MEO, while also offering rapid deployment and lower upfront equipment costs.

MEO backhaul costs local operators between USD80–200 per Mbps per month, with the difference reflecting different contract terms and volume commitments rather than a different technology. Starlink, currently the available LEO provider, is priced at around USD50 (PGK218.5) per Mbps per month, representing a saving of up to around 75 per cent at the upper end of the MEO range.

LEO also has a clear advantage in performance and deployment. A LEO satellite sits at around 550km altitude, compared with approximately 8,000km for MEO, providing meaningfully lower latency. A Starlink enterprise terminal costs approximately PGK8,000 (around USD1,800) and can be deployed quickly, compared with the greater cost and lead time associated with establishing O3B infrastructure. A LEO satellite terminal sits at the tower site and connects directly to a satellite passing overhead. The tower itself and its coverage footprint do not change; only the method used to carry the tower's traffic back to the rest of the network changes. The terminal requires only a clear view of the sky, with no physical path back to a fibre trunk or line-of-sight to another structure. This is a particular advantage in PNG's terrain. For a tower where fibre is expensive to reach and microwave has nothing to link to, LEO backhaul provides an attractive option.

Operators in PNG have expressed an interest in converting sites currently backhauled with MEO or other technologies onto LEO satellite. Reducing reliance on MEO for suitable sites could lower operators' cost base and, in turn, create scope for lower prices and greater affordability for end users. However, the economics still depend on the traffic profile of each site. O3B/MEO and Starlink use fundamentally different pricing models, with MEO generally structured around committed capacity while Starlink is more usage-based. LEO is therefore generally more attractive for lower-traffic sites, while MEO can be more competitive for higher-traffic sites where unlimited capacity is valuable. The choice between MEO and LEO should therefore be assessed site by site, taking into account traffic volumes, latency requirements, reliability and deployment timelines, rather than government prescribing a preferred technology.

Figure 35: MEO vs LEO pricing



Source: PNG consultations, Long Street Advisors analysis

2.4h Secure and resilient networks

Refer to Rec 5

It is vital that PNG's telecommunications systems are secure and resilient.

Network security and resilience spans protecting the network itself, the data that moves across it and the trust of the people and institutions that depend on it. The threat environment for network security is evolving rapidly and includes cyber related security as well as non-trusted equipment resulting in surveilling of traffic.

PNG has made significant progress in strengthening its cybersecurity capabilities. On the ITU's Global Cybersecurity Index, PNG moved from Tier 5 in 2020 to Tier 3 in 2024, more than doubling its score from 26 to over 58. This advance has been driven by the National Cybersecurity Policy 2021, the Cybersecurity Operations Centre established in 2023, and the National Cybersecurity Strategy 2024.

However, the rapid expansion of connectivity also increases PNG's exposure to cyber, supply-chain and network-security risks. Government systems, financial institutions and businesses are facing a rising rate of cyberattacks as services move online. The World Bank estimates that cybercrime costs countries in the East Asia & Pacific region approximately 0.7 per cent of GDP on average each year. Applied to PNG's current GDP of USD 34 billion or PGK 148.6 billion, this equates to roughly USD 238 million or PGK 1.04 billion a year.

Some existing network elements use equipment from vendors that could be subject to foreign state direction to intercept traffic, meaning end-to-end network security cannot always be relied.

Some existing network elements use equipment from vendors that could be subject to foreign state direction to intercept traffic, meaning end-to-end network security cannot always be relied upon. Commercial decisions about network equipment and investment have implications for the security of national infrastructure and PNG's ability to maintain trusted connections with its international partners.

The issue is particularly important as PNG moves towards 5G. Each advance in network technology introduces new capabilities and vulnerabilities, while equipment selected today can remain embedded in national infrastructure for many years. Decisions about vendors therefore need to consider not only cost and technical performance, but also ownership, governance, supply-chain exposure, foreign government influence, data access and the ability to maintain secure and trusted networks over the life of the equipment.

The Pukpuk Treaty's goal of strengthened and expanded defence cooperation through enhanced capability, interoperability and integration will be supported by secure, interoperable communications between the PNG Defence Force and the Australian Defence Force. This includes operational communications, information sharing and command-and-control systems. This makes trusted vendor policy an enabler of Defence engagement as well as a network standard. With 5G networks on the horizon for PNG, each advance in network technology introduces new vulnerabilities that should be understood and managed if PNG's systems are to remain strong, sustainable and resilient.

This creates a need to ensure that commercial arrangements in PNG's telecommunications sector do not inadvertently undermine the strategic objectives of the country or its allies or the requirements of the Pukpuk Treaty. Network investment and procurement decisions should be capable of supporting trusted, secure and interoperable infrastructure, particularly where telecommunications systems are shared with or connected to government and defence networks.

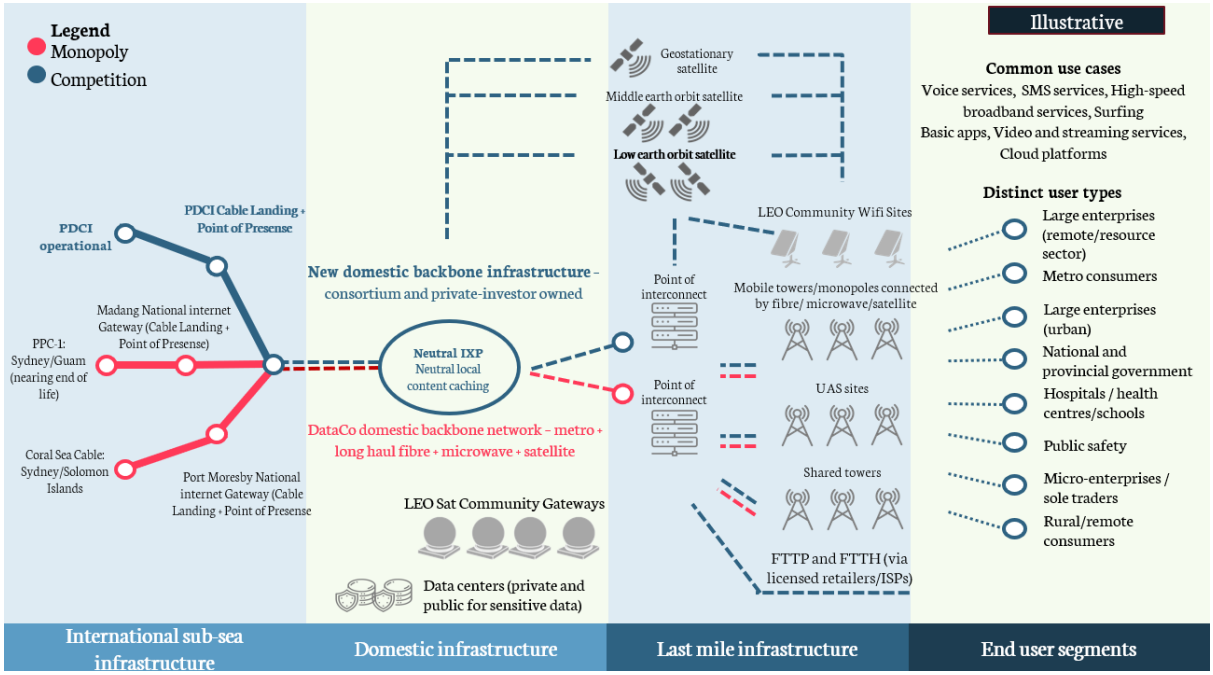
2.5 Target network configuration and technology mix

There is an opportunity to transform how PNG's telecommunications industry delivers affordable and accessible services to the population by 2031.

Capturing that opportunity means transitioning to a modernised network configuration across PNG's network value chain, from the international gateway through to the end user, in step with the market structure reforms set out in the chapters that follow.

The configuration in Figure 26 represents what the industry's network architecture looks like today and Figure 36 demonstrates what the network could look like by 2031. The figure reflects the likely implications of reforms that are already in motion or already designed, most notably the PDCI, the wholesale pricing glide path under consultation, and the arrival of LEO Satellite services. In addition, the figure reflects how the configuration and delivery of telecommunications might evolve in PNG with new arrangements put in place through the Blueprint, as well as reflects the evolution of PNG customer cohorts to a more varied and differentiated group.

Figure 36: PNG 2031: Future digital network configuration and market structure



Source: Long Street Advisors

The recommendations in this Blueprint set out the actions needed to move PNG's telecommunications sector towards a network capable of serving the nation's needs over the coming decades.

The following section describes the future state PNG should aspire to across each layer of the telecommunications network, addressing the challenges and structural distortions identified in Section 2.4.

2.5.a International

International connectivity has the potential to move PNG from dependency on two cables and monopolistic wholesale gateway to a more competitive, open-access international connectivity market, with new and existing cables landing at multiple locations. Open-access terms will be key to lowering international costs directly, giving operators a choice of supplier and allowing new capacity to translate into greater competition rather than simply increasing the amount of capacity available to the existing market.

The next phase of international connectivity should therefore focus not only on adding capacity, but on creating diversity, redundancy and competition across the entire international connectivity chain. Additional cable systems and landing points would reduce PNG's reliance on the existing Port Moresby and Madang gateways, while providing alternative routes if a cable, landing station or domestic backbone link fails. This is particularly important given PNG's geography: international connectivity that lands in only one or two locations still requires traffic to travel over the domestic backbone to reach much of the country, leaving users exposed to failures further along the network. The proposed PDCI provides an important opportunity to address a number of these constraints.

2.5b Domestic infrastructure

PNG has the opportunity to transform its domestic backbone from a concentrated, single-provider network into a competitive, resilient and shared national infrastructure platform.

Over time, the Blueprint has estimated through a high-level desktop exercise that **PGK750–950 million (USD170–220 million)** of private and development capital is needed to extend and strengthen PNG's domestic backbone. This covers new fibre and microwave deployment, upgrades to existing routes, the development of alternative and redundant paths across priority corridors and the first five years of backbone operating costs, assumed at 30% of capital expenditure annually.

The estimate does not include LEO satellite investment or operating costs. If used strategically, LEO satellite-supported Community Gateway installations to optimise traffic routing could reduce overall capex costs significantly. LEO satellite should be treated as a core component of the future domestic network as it can provide backhaul at a fraction of the cost of extending fibre to some remote and difficult-to-reach locations and can be deployed much more quickly. In some locations, LEO may be the most economically efficient permanent connectivity solution and in others, it can provide a resilient backup layer alongside fibre or microwave.

The future network should be multi-operator and multi-technology, combining fibre, microwave and satellite where each is most effective. Operators and infrastructure investors should be able to build, own and wholesale capacity, with DataCo operating alongside new private investment rather than being the default provider.

The result would be a looped, diverse national backbone rather than a series of single links, allowing traffic to be rerouted when infrastructure fails, improving reliability and resilience while creating greater choice and lower costs for operators and consumers.

The capital to close this gap will need to come from several distinct sources, not one. PGK750-950 million (around USD170-220 million) is too large a sum to expect from any single investor. In practice, four distinct pools of capital are realistically available to PNG's domestic backbone, each suited to a different type of route.

- **MNOs** are the most immediate source of capital, particularly for routes that directly support their own network coverage and reliability. They should also be encouraged to wholesale spare capacity to other operators, improving the commercial case for investment
- **Private infrastructure investors**, including specialist fibre and tower companies, can fund routes where no single operator has enough traffic to justify the investment alone. This will depend on correcting DataCo's pricing distortions and establishing fair, open-access conditions that give investors' confidence in future wholesale demand
- **Development finance institutions and partners** are best suited to routes with strong social and economic value but weaker standalone commercial returns. Blended finance can help make these routes investable by reducing the upfront risk for private partners
- **DataCo** should be focused on its role in building the backhaul network, particularly in areas where it has existing capability, experience and infrastructure that can be leveraged efficiently, and in locations where commercial investment is unlikely to occur because the economics do not support it

2.5c Access and last mile infrastructure

Last mile infrastructure has the potential to move from largely single-technology towers to an interoperable mix of network elements that maximise reach and minimise disruption when one element is unavailable, through new technologies and shared fixed and mobile infrastructure. This would include a richer mix of technologies than today; with LEO terminals and LEO backhaul playing a significant role. New approaches to tower deployment, including lower-cost structures such as monopoles, could also improve the economics of extending coverage into lower-density areas.

By 2031, metro and connector-route towers would have the opportunity to be more fiberised and shared. Rural and remote towers would likely remain connected primarily by microwave and satellite, but with LEO improving tower economics in many locations by offering a cheaper alternative or backup to GEO and MEO.

A reformed UAS Fund can complement these developments by reaching uneconomic locations. Funding should be technology-neutral and competitively allocated, allowing operators to use the most appropriate combination of fibre, microwave, LEO, monopoles and other technologies to deliver sustainable connectivity at the lowest effective cost. This would ensure that commercial investment and new technologies are used wherever they can make the economics work, while public funding is focused on the remaining communities where a commercial return is unlikely.

LEO Sat-enabled Community Wi-Fi Sites should be rolled out to as many wards as possible, providing a reliable and affordable stationary Wi-Fi access point that anyone in the surrounding community can use. These sites would give people a practical way to connect to essential services, including health, education and government services.

The result should be a more flexible and resilient last-mile network, where infrastructure sharing and new technologies make more locations commercially viable, commercial investment drives the majority of expansion, and a reformed UAS Fund ensures that the remaining uneconomic communities are not left behind.

2.5d End user segments

End user segments are likely to expand from the limited range served today to users with varied requirements: high-bandwidth video, reliable voice, low-latency time-sensitive functions, and differing security needs. National and provincial government, hospitals, health centres, schools and public safety agencies benefit directly from the diversity built upstream: more international routes, a competitive backbone, and a stronger, more resilient access mix.

Moving towards a modernised, interoperable and trusted telecommunications network of this kind is necessary for PNG to prepare itself for a connected future, one where digital service are widely available, reliable, affordable and trusted. How this transformation is to be achieved is explained in Chapter 3.

2.5e Trusted vendors and network security

In future, all technology should be procured, deployed and managed in a way that aligns with a trusted vendor regime to prevent vendors that pose a security risk. This should mean that PNG's digital backbone is secured by trusted vendors, protecting sovereignty and national decision-making. 5G is likely to come in shortly and will introduce cloud-based telecommunications network architecture into PNG for the first time. Having a trusted vendor regime in place before core network control features move to the cloud is critical. Future systems should be built to ensure interoperability with partners, including Australia under the Pukpuk mutual defence treaty. This should also bring PNG into step with regional security developments across the Pacific region.

Network security in future should be robust enough to provide the minimum performance levels associated with cloud-based networks and multi-technology mix of terrestrial and satellite connectivity. Attaining the necessary performance levels in security requires work to be done in cyber security and in building human capabilities in network management.

Chapter 3.

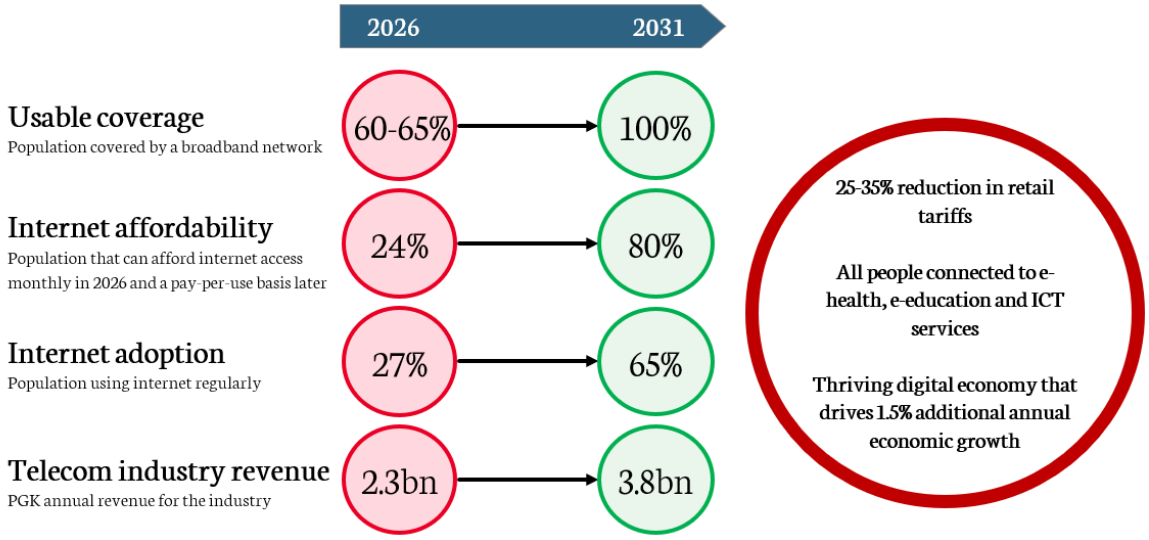
Outcomes, Recommendations and Actions

Chapter overview

This chapter sets out the four headline outcomes for the Blueprint and the Recommendations and Actions required to achieve them. It explains how the Recommendations and detailed Actions are designed to improve connectivity, affordability, adoption and industry sustainability, positioning PNG to catch up with Asian and Pacific Island peers by 2031.

The Blueprint is built around four headline outcomes pictured below in Figure 37. These outcomes matter because achieving them results in better and more affordable connectivity services to Papua New Guineans, generating economic benefits for the country, and supporting a safe, secure and trusted internet communications system that people and institutions can rely on. The outcomes laid out here can be converted into a set of formal Blueprint outcomes to be adopted by the nation, administered and monitored by DICT.

Figure 37: 5-year outcomes for Blueprint, to be attained by 2031



Source: NICTA, Long Street Advisors analysis

Note: The 65% adoption projection is indicative and carries uncertainty, as uptake will depend on the reach and use of Community Wi-Fi sites, access to terminals and devices, and factors such as digital literacy and first time-user trust. Actual adoption may therefore differ from the projection. Usable coverage is assumed to reach 100% because LEO satellite technology is technically capable of providing coverage across the entirety of PNG. This represents geographic availability of a connectivity signal rather than universal access or adoption. See Annex D for the detailed methodology.

Network security is a cross-cutting priority across the four outcomes.

As set out earlier in this Blueprint, security is a core design requirement across every recommendation. Unlike the other four outcomes, security cannot be captured by a single metric or defined as "secure enough."

Instead, security needs to be considered in every decision and investment across the sector. The Blueprint therefore adopts a principles-based approach to security. The table below sets out what this means in practice for coverage, affordability, adoption and industry sustainability:

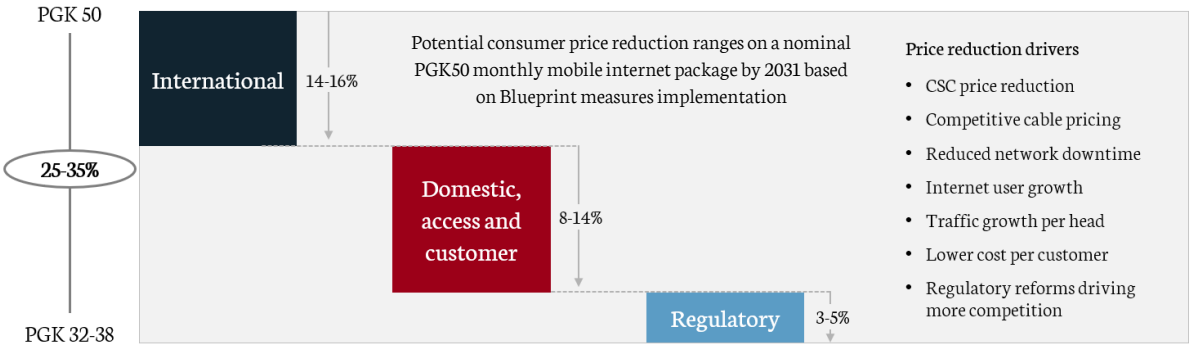
Figure 38: Blueprint outcomes and how security and resilience principles apply across each outcome

Target	Principle	What this looks like in practice
Usable coverage	Expand network reach without increasing exposure to threats	• Trusted vendor requirements apply to all network equipment including towers, base station and core network • New infrastructure is deployed with interoperability, security and resilience in design • Redundancy and resilience are treated as integral to what "coverage" means
Affordability	Lower prices without compromising network integrity	• Cost efficiency in network deployment should not come at the expense of security or substituting trusted vendor with non-trusted vendor equipment • Reasonable steps should be taken to encourage trusted vendors to present more competitive proposals on a total cost of operation (TCO) basis • Affordable services should still meet minimum security and resilience standards – extending to handsets and devices
Adoption	Bring more people online without leaving them vulnerable	• Growth in adoption considers the risks that come with more people getting online from a cyber, online safety and scams perspective • Cyber safety and online safety initiatives are developed and delivered alongside internet expansion • Particular attention is paid to first-time and low-literacy users
Industry sustainability	Build a thriving, competitive sector without compromising security or resilience	• The industry invests in equipment and systems that are safe, secure and trusted, in line with the Government's security posture • Industry practices align with relevant regional and international security standards • As digital dependence grows, security expectations rise alongside it, particularly as more government, financial and business activity moves online

Blueprint analysis indicates that retail tariffs could fall by 25–35 per cent, reducing the nominal 30-day package price from around PGK50 today to approximately PGK32–38 by 2031.

How affordability is expected to be improved through implementing the Blueprint recommendations is shown in Figure 39 and explained below.

Figure 39: Forecast of price improvement through Blueprint recommendations implementation



Source: Long Street Advisors analysis
Note: Full methodology and assumptions included in Annex D

Affordability improvements will arise from impacts across the network.

Individual operator internet packages are priced uniquely and composed of different product bundles. The nominal 30-day package construct used in the Blueprint provide a common baseline for comparison. Comparisons are *before to after* change, and not between operators or competing packages.

Price falls as indicated in Figure 39 would come from a number of mutually reinforcing changes, and not achieved by any single intervention:

- **International** bandwidth costs would be expected to drop sharply as a result of the recommendations, contributing around 14–16 percentage points fall to a nominal package price level. This is based on two core assumptions, that CSC pricing drops significantly, and that PNG experiences competition for cable access in the near future. The fall refers to the potential impact on overall prices, not international prices. Individual operator changes could be higher or lower, based on operator cost and traffic volume conditions
- **Domestic** network costs, growth in users and traffic contribute a further 8–14 percentage points fall to current price levels, driven by reduced network downtime and higher usage. This is based on core assumptions of improved domestic network performance, more people coming online and showing higher usage, spreading fixed network costs across a larger customer and traffic base and reducing the cost per user
- **Regulatory** reform contributes around 3–5 percentage points fall to current price levels, by strengthening competition and improving market efficiency. This is based on core assumptions of lower mobile termination rates and the introduction of number portability driving price competition seen from these changes in other emerging markets

To be clear: the Blueprint is <u>not</u> mandating or prescribing price falls. It is estimating how material price falls may be.

Blueprint does not seek to prescribe what operators should charge or advise what should be the market's price level for connectivity. Instead, the analysis provides a reasonable estimate of how retail prices could evolve if the market conditions and outcomes as set out in the Blueprint are achieved. The analysis draws on the experience of other markets and provides a view on potential price falls based on established industry experience.

The price falls forecast, independently, lands slightly above NICTA's computation of an affordable price and package level for PNG, which is PGK30 for a 30-day package and 30Gb data inclusion.

Market competition should be enabled to drive better affordability.

The healthier the competition in the market, the more likely PNG is to achieve the affordability improvements foreshadowed in this Blueprint. Competitive intensity will be drawn from the elements below, all of which are enabled by Blueprint recommendations:

- **Sustaining a healthy three player retail market for mobile services**: Digicel, Vodafone and Telikom have a critical role to play in this next phase, as players who will compete hard for a fair share of new and existing customers, as well as the growth in their data consumption. Digicel and Vodafone can be expected to compete and fight hard for a reasonable share of a growing market. Telikom has a declining share of the market. Telikom's ability to compete harder requires investment in its customer, product and marketing capabilities to do so. Blueprint recommendations for Telikom are described under Recommendation 4
- **LEO will both complement and compete with mobile at the edge of the terrestrial network footprint:** LEO satellite services can extend connectivity into areas where terrestrial expansion is commercially challenging. This creates a two-way relationship with MNOs:
    - LEO can compete with mobile for some customers, particularly lower-spend or occasional users who may find satellite-enabled connectivity more affordable for internet use
    - LEO can also expand the mobile market by bringing previously unconnected people online and increasing the number of customers who subsequently start using mobile services
- **MNOs can use LEO as a cost saver on their own networks**, including for backhaul to connect towers in locations where fibre or microwave is uneconomic, and by reselling LEO services directly to customers. This enables MNOs to extend their reach beyond their existing terrestrial footprint without necessarily requiring a new tower or terrestrial backhaul connection
- **Tower sharing can further support affordability through cost reduction**. Where operators can share towers, power and other passive infrastructure, the economics of extending terrestrial coverage can improve materially. In some locations, this may make the business case for a new shared tower viable sooner than if each operator were assessing the investment independently, while LEO can provide backhaul or complementary coverage where a terrestrial solution remains uneconomic
- **More effective distribution of UAS funds is likely to result in smarter expansion of terrestrial coverage.** The UAS requires fundamental reform and the actions required are covered in Recommendation 6
- **Retail competition for the market depends on dependable and reliable domestic backbone**: Stronger retail market competition depends on all retail operators, including ISPS, being able to offer their customers a better, more reliable and dependable service. Investment into better domestic wholesale connectivity is critical to enabling this, which is why wholesale operators, led by DataCo, have a crucial role to play. Recommendations to encourage a more dependable and reliable domestic backbone are covered in Recommendation 4
- **ISPs have a critical role to play in expanding affordable internet access**. ISPs which serve residential and enterprise customers have a critical role to play going forward and have much to gain from price falls in international and domestic wholesale connectivity. ISPs are particularly sensitive to wholesale network economics given DataCo's current price levels. ISPs are often paying significantly higher prices for international connectivity than mobile operators. As LEO services experience more uptake, ISPs (and mobile operators) may also find new opportunities for expanding customer uptake through commercialising LEO terminals in rural and remote areas. Each of the six recommendations contain measures which will support ISPs

Lower international prices are the starting point.

International bandwidth is the largest individual driver of the price reduction. Recommendation 1 is critical to enabling this. Progress could be made on this in the near term, through a reduction in current per Mbps pricing of international bandwidth by DataCo. This might result in an immediate revenue drop for DataCo. Such a revenue drop could be reversed as data traffic volumes rise over time.

More than half of the overall expected price fall depends on the market responding to lower prices: more people connecting, using more data and allowing operators to spread fixed costs across a much larger market.

More people should be connected and using the internet.

Lower prices should translate into a substantial change in internet connectivity by 2031.

- Coverage is modelled to increase from 81 per cent (actual coverage 60-65 per cent) to effectively 100 per cent of the population having access to a broadband network. The remaining coverage gap is expected to be addressed largely through the rural connectivity and LEO Satellite measures in this Blueprint
- Affordability is expected to increase from 24 per cent to around 80 per cent of the population being able to afford a monthly internet package. This is the largest percentage-point improvement across the Blueprint's headline outcomes and is directly linked to the reduction in retail tariffs and the integration of LEO Satellite technology into the market
- Adoption is expected to increase from 27 per cent to around 65 per cent of the population actually using the internet. Adoption is expected to follow affordability and coverage with a lag: making a network available and affordable does not mean that everyone starts using it immediately. The modelling therefore assumes that PNG's adoption follows the experience of comparable emerging economies, with the transition taking several years in some areas

A larger market with room for all players to grow, not a static one where players fight for the spoils

- Blueprint analysis finds that lower prices will expand the market sufficiently to increase total industry revenue. This is because PNG's current internet uptake is low, demand for services is assumed to be elastic, and therefore price falls will result in a manifold increase in new users plus a substantial increase in volume use. Such usage increase is found to exceed the impacts of price falls
- Industry revenue is modelled to increase from approximately PGK2.3 billion (USD526 million) today to PGK3.8 billion (USD870 million) by 2031. This is equivalent to around 11 per cent annual compound growth, more than double the current growth rate which is 4 per cent. Lower prices reduce revenue per user, but this is more than offset by many more users, higher usage per person and substantially greater overall traffic
- PNG does not need to choose between affordable connectivity and a sustainable telecommunications industry. If prices fall, coverage expands and competition remains healthy, the market can grow sufficiently for operators to earn more from a much larger volume of users and traffic

It is critical that the growth point is appreciated by all industry players, including the mobile operators and DataCo. The Blueprint analysis indicates that ALL operators are likely to experience improved revenue growth from the changes introduced through the recommendations.

These modelled gains assume PNG's power reliability remains a challenge.

Power sits upstream of almost every Recommendation in this Blueprint. If grid reliability and availability improve materially over the Blueprint period, the gains from these reforms are likely to be greater. As with many sectors of PNG's economy, unreliable and limited access to power remains a major constraint on growth. Any progress in the power sector would therefore amplify the impact of the Blueprint across the digital economy.

The Blueprint is organised around six detailed and accompanying implementation recommendations as shown below.

1. Enhance international cable redundancy, reduce prices and drive volume

- Design the Pukpuk Digital Connectivity Initiative (PDCI) to meet PNG goals
  - Keep reducing international prices and driving increased volumes
  - Define cost recovery principles and safeguards
  - Drive performance through a multi-stakeholder SPV and a minority GoPNG stake
- Take immediate steps to cut Coral Sea Cable prices and restore original intent of grant to provide low-cost international connectivity to PNG's population

2. Embrace LEO satellite technology as a game changer for PNG

- Embrace LEO technology across all its use cases:
  - Bring high-speed internet to unconnected wards
  - Better internet for households and enterprises
  - Optimise mobile tower backhaul arrangements
  - Optimise domestic traffic routing and back-up
- Publish LEO Sat licensing framework and make clear the expectation on deploying earth stations
- Ensure direct enterprise satellite sales are regulated on level terms to local service providers

3. Drive rural connectivity in wards which don't have the internet today

- Create a bilateral programme to deploy 2,000 LEO Community Wi-Fi sites to connect schools, health centres and communities in unconnected wards
- Offer an immediate kick start to getting PNG's rural and remote population online
- Deliver practical digital literacy and e-safety training to communities alongside the deployment of the LEO Community Wi-Fi sites

4. Build the domestic network through investment, competition and shared infrastructure

- Instruct DataCo to focus on its mandate to be a wholesale-only provider
- Unlock wholesale network competition and mobilise new sources of investment
- Access PPL's infrastructure to speed up and facilitate domestic network deployment
- Agree a "dig once" policy for national infrastructure building through Connect PNG
- Aggregate and optimise domestic traffic routing using LEO Sat Community Gateways
- Strictly enforce wholesale service-specific pricing to correct current monopolistic behaviour
- Transform Telikom to be sustainable, competitive and ready for private investment
- Encourage infrastructure sharing to cut duplicated infrastructure cost and accelerate expansion

5. Strengthen cybersecurity and network resilience to protect PNG's national interest

- Put in place trusted vendor and responsible procurement principles for all network activities and to support a safe and secure connectivity system in PNG
- Build a digital trust ecosystem through cybersecurity and data governance legislation
- Create a clear hosting protocol for PNG's most sensitive data

6. Implement delayed telecommunications policy and regulatory reforms

- Adjust the Operator Class License framework to limit future retail-bypass licensing
- Re-farm unused spectrum to support rural expansion and level the playing field
- Reform and redesign the Universal Access and Service (UAS) Fund to accelerate closing rural connectivity gaps
- Mandate Mobile Termination Rate actions
- Support local caching and restore the Neutral Internet Exchange Point
- Strengthen NICTA's capability and industry engagement as a modern, data driven regulator
- Mandate Mobile Number Portability reforms

Implementation recommendations:

- Establish a Blueprint Steering Committee, constituted as a Committee of the National Executive Council
- Announce that responsibility for telecommunications policy lies with the Minister for ICT, and that this applies to the entire PNG telecommunications industry including SOEs.
- Elevate DICT's departmental status to reflect the breadth of its responsibilities for enabling PNG digitalisation

Each Recommendation has detailed Actions with indicative sub-actions sitting beneath each Action. In total, there are 25 Actions that elaborate the six Recommendations. Each of these Actions is presented for consideration by the Government of Papua New Guinea, its regulators and state entities, PNG's development partners, and to telecommunications industry service providers themselves. Applicability to telecommunications service providers encompasses local and foreign service providers, as well as privately owned and state-owned operators.

Each Action below is assigned to a Horizon, indicating when it should be delivered.

1. **Horizon 1** runs from October to the end of 2026, including announcement of government decisions
2. **Horizon 2** covers Actions to be delivered from 2027 to the end of 2028.
3. **Horizon 3** covers Actions to be delivered from 2029 to the end of 2031.

Chapter 4 provides the detailed sequencing of Actions and their dependencies.

Each Action is also assessed based on its expected contribution to the headline outcomes.

4. **High impact** means the Action is expected to make a significant and direct contribution to achieving the target
5. **Indirect impact** means the Action is expected to support progress towards the target, but its contribution is less direct.
6. **Low impact** means the Action is expected to make a limited contribution to the target

The Blueprint Recommendations support Reset@50

The recommendations have been closely aligned with the Reset@50 agenda, translating its priorities and commitments into practical reforms for PNG's digital and telecommunications sector. Together, they support the Reset@50 ambition of broader access to infrastructure, stronger private-sector participation, stronger market competition, more effective regulation and a more trusted digital economy. The Blueprint's recommendations are designed to reinforce the Reset@50 Big Bets. A number of recommendations are relevant to the PNG-Australia bilateral relationship and some of the measures recommended may need to be considered by the Government of Australia.

Figure 40: Recommendations mapped to Reset@50 Big Bets

1 **Ensure all international cable arrangements cut prices and improve reliability and redundancy**

BIG BET #4: Bring Power & Internet Accessibility to All

Reliable, affordable international cable capacity is the foundation for expanding internet access across PNG.

2 **Embrace LEO satellite technology as a game changer for PNG**

BIG BET #4: Bring Power & Internet Accessibility to All

LEO provides a practical way to extend connectivity to communities and locations that are difficult or expensive to reach with terrestrial infrastructure.

3 **Drive rural connectivity in wards which don't have the internet today**

BIG BET #4: Bring Power & Internet Accessibility to All

Community satellite connectivity delivers internet access to schools, health facilities and communities that are currently unconnected.

4 **Build the domestic network through investment, competition and shared infrastructure**

BIG BET #4: Bring Power & Internet Accessibility to All

BIG BET #7: Enshrine Private-Sector-Led, Government-Facilitated Growth

Opening access, improving wholesale pricing and enabling private investment expands the domestic network and reduces reliance on a single provider.

5 **Strengthen cybersecurity and network resilience to protect PNG's national interest**

BIG BET #6: Build a Universal and Trusted National Identity System

BIG BET #9: Reform Government Bureaucracy

Secure networks underpin trusted digital government services and digital identity, with stronger procurement and trusted-vendor requirements supporting transparent, accountable government.

6 **Implement delayed telecommunications policy and regulatory reforms**

BIG BET #4: Bring Power & Internet Accessibility to All

Effective regulation supports lower prices, mobile number portability, tower sharing and fair access to infrastructure, expanding affordable connectivity for all.

Recommendation 1. Ensure all international cable arrangements cut prices and improve reliability and redundancy

Action 1.1: Progress development of Pukpuk Digital Connectivity Initiative and structure the SPV to provide services on a non-discriminatory basis and cost-recovery terms

Action description: Ensure that the PDCI is landed and operated by a Special Purpose Vehicle (SPV) that provides services to licensees on cost-recovery terms. Cost recovery should take place with the principle of low-price, high volume, and not high-price, low volume which is the case today.

This Action directly addresses the current situation in which PNG's ISPs and MNOs pay materially inflated rates for wholesale international bandwidth. Establishing these terms is critical to ensuring that international bandwidth prices reduce significantly. In addition to applying to PDCI, the Action applies to all future initiatives beyond PDCI to land submarine cables in PNG.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	High	High	High

Lead	Horizon
Department of ICT, with the PDCI Joint Project Team	Horizon 1 → Horizon 2

International bandwidth charges should be recovering, at most, a third of what operators are being asked to pay.

Charges for access to international cable capacity should recover only reasonable operating and maintenance costs associated with maintaining the connectivity. Based on independent analysis, international bandwidth should only be charged in the range of USD4.2 to 10.2 per Mbps per month based on current volumes (See Figure 28). Current prices of USD13 to 30 are therefore around two to four times higher than a reasonable cost-recovery level at current traffic volumes. This reduction should be seen as a starting point, not the end point. The USD4.2 to 10.2 range reflects costs at today's relatively low traffic volumes. As prices fall, demand is expected to increase. Higher traffic volumes would spread the fixed costs of the cable infrastructure across more traffic, further reducing the cost per Mbps.

PDCI presents a timely opportunity to reset the pricing of one of PNG's most expensive network input by introducing competition and reducing prices.

It is essential that the SPV is established with principles that ensure it delivers the expected outcomes of significantly lower pricing and higher volume growth. The SPV should be structured and operated in accordance with the following principles:

- **Multi-stakeholder ownership**: The vehicle should be owned by industry participants, including MNOs and ISPs, creating a shared incentive to keep pricing as low as possible rather than placing control with a single party whose pricing might be motivated by wider objectives
- **Private sector majority:** The GoPNG should hold a non-controlling share, with private sector participants retaining ownership and management control of the vehicle
- **Minimum committed pre-purchase:** Operators should be expected to commit to purchasing a minimum volume of capacity ahead of the cable's launch, sufficient to cover the SPV's initial operating costs from day one. In line with major shared infrastructure investments in telecommunications, these

commitments should be secured so that there is full confidence in covering costs for the investment before it is deployed

- **An airtight constitution to secure cost-recovery pricing:** The SPV's constitution should establish cost recovery as a binding purpose. It should avoid any ambiguity that could allow the company to reinterpret its mandate or pursue profit-maximising pricing. Wholesale prices should be explicitly tied to the efficient costs of operating, maintaining and financing the cable and a reasonable return on invested capital, rather than to the maximisation of commercial margins. The drafting should be sufficiently precise that this obligation cannot be diluted through changes in management, board interpretation or future ownership arrangements, with any amendment to the SPV's pricing purpose subject to a suitably high approval threshold. This should reflect the lessons from Coral Sea Cable, where less prescriptive arrangements have allowed greater scope for commercial interpretation and margin-seeking behaviour
- **Maximise volume**: Prices should be set with the explicit objective of maximising adoption and traffic volumes, following a low-price-high-volume approach, and not a high-price-low-volume one. Cost recovery should not be pursued through tolerating high prices and accepting low utilisation; the objective should be to establish the lowest sustainable price that enables the SPV to recover its reasonable costs through increased volumes
- **Industry-led management:** The SPV should be run by professionals with industry knowledge, an appreciation of the economics of driving internet growth and experience in operating cable infrastructure
- **Direct purchase rights:** Licensed operators and ISPs should be able to purchase capacity directly from the SPV, without having to use an intermediary, supported by reliable systems for ordering, provisioning and managing capacity
- **Open, competitive procurement:** Equipment and systems should be procured openly and competitively from trusted vendors, consistent with the principles set out in Action 5.1

The following considerations should be included in structuring the SPV:

1. Joint ownership of an essential input by competitors carries its own competition law and governance risk, including coordination between shareholders, information exchange and foreclosure of licensees who are not shareholders in the vehicle. SPV capacity should therefore be declared a service under the NICT Act, with NICTA overseeing access terms. The SPV's governance should include information barriers between shareholders and guaranteed access rights for licensees who are not shareholders. Reliance on shareholder goodwill is unlikely to be sufficient over the life of the asset

2. A pure cost-recovery pricing objective, with no return permitted on capital, is only workable if the underlying construction capital itself does not require a commercial return, which points toward grant or concessional development financing as the intended funding source for PDCI's construction. If any part of construction is instead debt funded on commercial terms, lenders will typically require covenants, minimum revenue coverage or a return pathway that sit uneasily with a strict no-return cost-recovery mandate, and the financing structure would need to be reconciled with this pricing principle before the SPV is finalised

Sub-actions:

1. Structure ownership as a multi-stakeholder operator/ISP model with private sector participants holding a majority and the Government of PNG retaining a non-controlling share
2. Set pricing on a cost-recovery basis, with no commercial return or upside sought from the operation of the cable
3. Set pricing on a minimise price and maximise volume objective, offering volume tiers which incentivise more usage from small increments in volume in return for lower prices
4. Require a minimum committed pre-purchase of capacity from participating operators ahead of launch, sufficient to cover the vehicle's initial operating costs from day one
5. Include only reasonable costs attributable to operating the vehicle, excluding commercial and superannuation capital ownership entirely
6. Appoint industry-led management with the experience to operate, administer and maintain a cable network system
7. Grant rights and terms to retail operators and ISPs so that they can purchase capacity directly
8. Publish a sequencing plan showing which landing points and services activate first
9. Procure equipment and systems through open and competitive processes
10. Resource NICTA to administer the enabling regulatory regime and monitor compliance with the SPV's pricing and access principles over the course of the cable (See Action 6.6)

Action 1.2: Mitigate single points of failure by extending cable reach to multiple landing sites

Action description: Ensure PDCI is landed in a way that provides direct international connectivity to the North and South of the country in a way that reduces points of failure.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	Indirect	Indirect	High

Lead	Horizon
Department of ICT, with the PDCI Joint Project Team	Horizon 3

PDCI creates an opportunity to take a different approach by landing international capacity at multiple locations and bringing international connectivity closer to where it is needed.

PDCI, by landing at different places, could be part of a future cable arrangement that allows traffic to enter and exit the country through different geographic gateways and, where the domestic network is appropriately interconnected, provide alternative routes when an individual landing point, cable or domestic link fails.

This is particularly important given DataCo's wholesale position across both the international gateways and domestic backbone. Today, operators and ISPs that depend on DataCo's network can inherit the same underlying points of failure. PDCI and other new cables should seek to provide a path to network diversity by creating an architecture that can route around failures when they occur.

Landing points should be selected to reduce dependence on long and vulnerable domestic transmission routes and to provide direct international connectivity to the North, South and Islands regions wherever this is technically and economically justified. PDCI should therefore be designed around the principle of eliminating single points of failure. This does not necessarily mean specifying a fixed number of cable systems or landing sites in advance. The appropriate number and location should instead be determined by where additional landing points and routes provide the greatest improvement in resilience, coverage and value for money.

Such a design outcome would be better than having separate North and South international systems that depend on constrained domestic links to connect them. Any such design choice would need to be supported by a formal cost-benefit analysis from a PDCI and a domestic network perspective.

Sub-actions:

1. Select landing points strategically to provide direct international connectivity to priority locations across PNG's North, South and Islands regions and reduce reliance on vulnerable domestic transmission routes.
2. Design the Pukpuk architecture around route diversity, ensuring that individual cables, landing stations and domestic transmission links do not create common points of failure.
3. Physically and logically integrate the international cable systems through the domestic network, ensuring that connectivity can be rerouted between landing points and regions when individual systems or links fail.
4. Prioritise resilience over a fixed cable-count target, with the number and location of landing points determined by their ability to eliminate identified single points of failure and provide meaningful alternative routes.

Action 1.3: Restore Coral Sea Cable to original intent that prices reflects the cable being grant funded

Action description: Bring Coral Sea Cable (CSC) pricing back into line with its grant funded origin, so that DataCo recovers only the efficient cost of operating and maintaining the cable rather than a commercial return on an asset PNG did not pay to build. Given the scale of the pricing gap and the current impacts prices have on mobile operators and ISPs, the Blueprint recommends the GoPNG and KCH direct DataCo to bring forward price reductions immediately, ahead of the broader wholesale reforms under Recommendation 4.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	High	High	High

Lead	Horizon
DataCo, with the Department of ICT and NICTA	Horizon 1 → Horizon 2

There is an immediate opportunity for GoPNG to reset CSC pricing before PDCI comes into operation.

The Blueprint recommends that GoPNG, represented by an appropriate authority to make the request binding, issue an instruction to DataCo to reduce wholesale international bandwidth prices. The objective should be to move DataCo international pricing immediately toward a high-volume, low-margin model that maximises

utilisation of an asset that was grant funded. DataCo's price adjustment announced as soon as it is done. The instruction should request DataCo to reduce prices immediately to the range cited in Section 2.4a of this report, that is to a level at or below USD6 per Mbps per month, noting that the Blueprint has applied a level of USD6 as a proxy for modelling the impacts of lower prices initially. According to the Blueprint analysis, such a reduction should be consistent with an overall retail price fall for a typical monthly internet package of around 15%. Whilst prescriptive pricing interference is not advised as a general practice, in this case waiting for a pricing review would result in delay.

DICT set the expectation in the industry that the impact of international price drops will be passed on fully to customers.

The Blueprint recommends that DICT inform telecommunications service providers of GoPNG's intention to instruct a reduction in international prices and set a clear expectation that it expects consumer retail prices to fully reflect the impact of lower international prices as an input to operators. DICT should request NICTA to provide technical input to ensure that the industry understands how such flow through of cost savings in international should be reflected in retail prices, and that the industry has reflected this once retail prices are adjusted.

NICTA should use its powers to compel DataCo to provide underlying cost information.

NICTA should use its existing information-gathering powers to compel DataCo to provide the underlying commercial and operational information required to establish the efficient cost of operating and maintaining CSC. In case of non-compliance, there should be consequences on DataCo applied by NICTA. NICTA should use this information, together with the principles and methodology applying to other declared wholesale services, to determine subsequent needed adjustments to maintain a specific cost-reflective CSC price. This NICTA action is independent of the recommended instructed price reduction, which should happen immediately.

NICTA should ensure that the pricing approach does not undermine incentives to invest in PDCI or future domestic backbone infrastructure. Prices should not be set below the efficient cost of providing CSC, as this could make competing infrastructure commercially unattractive and discourage new investment.

NICTA should review DataCo's volume tiers and discount structure.

This is recommended to be done to ensure that DataCo's pricing structure by volume encourages greater CSC capacity utilisation for lower volume users while remaining commercially fair across operators of different sizes. Pricing approaches which contrast to PNG's, such as Samoa's as shown in Figure 9, should be studied carefully. The final structure should support increased volumes while allowing smaller operators to compete effectively in the retail market.

NICTA / GoPNG may use the international bandwidth costs presented in this Blueprint as initial "goal posts."

NICTA should use its powers to obtain the underlying commercial and operational information from relevant parties and undertake the detailed analysis required to establish an appropriate cost-reflective price. As a starting point for that work, the Blueprint's bottom-up modelling estimates the underlying O&M cost of international bandwidth at approximately USD 4.2–10.2 per Mbps per month, with USD 6 per Mbps per month used as a reasonable proxy within this range for the purposes of the Blueprint's modelling.

As a further market reference point, comparable international bandwidth in Fiji is understood to be priced at approximately USD 1–3 per Mbps per month. In the long term, policymakers should recognise that PNG's international bandwidth prices may be expected to fall to a small fraction of what they are today, reflective of the experience of countries that have experienced scaling of internet uptake and usage, such as other Pacific and Asian markets.

Once the efficient price and pricing structure have been established as above, GoPNG and KCH may further instruct DataCo to make more changes to its pricing, if required.

This is to be done subsequently to the initial price reduction instruction issued to DataCo as recommended above and if required following NICTA's review of pricing levels and structure.

Operators should explore other solutions to improve utilisation of CSC capacity and value.

To provide better value for money to ISPs for international connectivity and to mitigate their risks of being disconnected, bulk buyers of connectivity could re-sell connectivity to ISPs at a reasonable mark up to the prices they pay. In such a case ISPs might be able to reduce how much they pay per Mbps per month. This could be done by setting up Points of Presence (POP) for international connectivity which connect to the CSC and provide a direct interconnection to ISPs. Whilst this might offer benefit to ISPs, any bulk buyer of capacity who decides to resell some of this to ISPs may be expected to only do so if it is consistent with their business model and commercial considerations for undertaking wholesale services.

Sub-actions:

1. GoPNG and KCH to instruct DataCo to immediately reduce its international prices.
2. DICT to inform the operators and ISPs of the decision to reduce DataCo prices and set the expectation that such reductions will be reflected in consumer retail prices
3. NICTA to establish the efficient CSC cost-recovery price based on current volume patterns. NICTA to use its information-gathering powers to obtain DataCo's underlying cost information and apply their methodology to determine the appropriate cost-recovery price
4. GoPNG and KCH to instruct DataCo to make further changes to prices once NICTA's analysis is done, if required
5. Require transparent and non-discriminatory access to CSC capacity, including for smaller ISPs purchasing at lower capacity tier
6. Industry to establish points of presence for terminating CSC connectivity from DataCo if this facilitates resale of capacity to smaller buyers, e.g. ISPs.

Recommendation 2. Embrace LEO Satellite technology as a game changer for PNG

Action 2.1: Integrate LEO Satellite for backhaul

Action description: Enable licensed LEO Satellite operators to provide backhaul to mobile operators and ISPs across PNG. The objective is to make LEO Satellite a practical alternative to expensive MEO satellite backhaul and hard-to-reach fibre and microwave links, allowing operators to convert existing sites to LEO where it materially reduces network costs and improves reliability.

Lead	Horizon
NICTA, with all licensees	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	Indirect	High

NICTA should ensure that operators can use LEO backhaul wherever it is technically and commercially appropriate, without creating regulatory barriers to switching between satellite technologies.

The framework should remain technology-neutral and allow LEO, MEO, fibre and microwave to coexist, with operators able to select the most appropriate backhaul technology for each site. This is recommended in alignment with the context set out in Section 2.4e in Chapter 2.

Operators should be encouraged to design backhaul architecture that avoids dependency on any single satellite provider or proprietary technology.

While current LEO constellations such as Starlink and Amazon Leo generally require constellation-specific terminal hardware, the underlying site network can be kept provider-agnostic, with standard interfaces between the satellite terminal and the site router. For a large-scale deployment, the recommended approach is therefore to deploy a common, vendor-neutral routing, security, power and network-management architecture that allows satellite terminals to be replaced or supplemented without redesigning the wider telecommunications infrastructure.

Adopting a vendor-neutral approach reduces the risk of future vendor lock-in, provides resilience against service outages or regulatory changes, and gives PNG the flexibility to transition between satellite providers as new technologies become available, while maintaining greater national control over network operations, data, security and critical infrastructure. LEO equipment procurement should comply with trusted vendor arrangements as recommended in this Blueprint.

This is offered as good practice for MNOs to consider in their own network planning and procurement decisions, rather than as a requirement to be mandated through regulation.

Sub-actions:

1. NICTA to complete the licensing and type-approval pathway for LEO Satellite backhaul, if not already complete, so operators can use LEO links to backhaul remote towers
2. MNOs to identify existing MEO or GEO-backed sites where LEO could reduce costs or materially improve reliability, and prioritise conversion where the site-level economics support it

Action 2.2: Modernise and publish the LEO Satellite licensing framework

Action description: Update NICTA's licensing framework so that it is fit for LEO Satellite services and future satellite technologies, while publishing the terms and conditions that apply to existing and future operators. The framework should remain technology-neutral and competition-friendly, but provide sufficient specificity for satellite services, including for backhaul, retail broadband and D2D, so that new entrants can understand the pathway to market and operators can compete on predictable and equivalent terms.

Lead	Horizon
NICTA	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Indirect	Indirect	Indirect	High

PNG has already taken an important step by licensing Starlink, but the regulatory framework needs to catch up with the technology.

All individual licences, meaning the right to supply telecommunications services commercially, are issued and governed under the same instruments. Every licensee, regardless of the technology it uses, is subject to:

- The National Information and Communication Technology Act 2009
- The National Information and Communication Technology (Operator Licensing) Regulation 2010
- The Standard and Special Terms and Conditions of Individual Licences Rule 2025
- The specific terms and conditions attached to that operator's licence
- Any changes made to the above instruments during the term of the licence

The NICT Act is built on a principle of technology neutrality. This is a strength because it allows operators to choose how they deploy their networks without tying regulation to a particular technology or generation. However, the NICTA Act 2009 and existing licensing frameworks were developed before the emergence of commercial LEO constellations and do not provide the level of specificity that newer satellite services require. NICTA has licensed Starlink under its existing general licensing framework, which is a reasonable way to enable the technology quickly and avoid creating an unnecessary regulatory barrier.

As LEO becomes a permanent part of PNG's connectivity market, the licensing framework should evolve so that it is better suited to the characteristics of LEO Satellite services and provides a clear pathway for future entrants. At the same time, LEO Satellite service providers should also be subject to the same regulatory expectations and conditions set on terrestrial operators, including those that apply to cyber security, data protection and protection from online bullying and harassment.

LEO licences are not public, making it difficult for local industry players and new entrants to be confident they are agreeing to fair and level terms.

The terms of PNG's existing satellite licensing arrangements are not publicly available. A prospective second or third entrant currently has no way to see what conditions the incumbent operates under, what obligations attach to its licence, or what a comparable application process would involve. That absence of transparency runs the risk of being a barrier to entry for new LEO operators, as well as for local operators and other licensees who wish to ensure that the licensing arrangements of LEO operators are fair and equivalent to their relevant license conditions.

With Starlink and OneWeb already active in PNG's enterprise market, and Amazon LEO and Telesat both having made submissions to NICTA's 2023 consultation, PNG has the potential to emerge as an important market for LEO operators. There is an opportunity now to set out a clear, published licensing pathway for LEO operators with standard conditions, security and trusted vendor compliance obligations. This is critical to avoid the risk of having uneven licensing terms being offered to individual market entrants.

There are specific regulatory obligations that already apply to LEO operators in PNG.

The following provisions, all part of the 2025 Rule, are the ones most directly relevant to how a LEO Satellite operator is expected to operate in PNG:

Instrument	Provision	What it requires
Schedule 4	Special Terms and Conditions for Network Licensees who provide Public Cellular Mobile Services and other Network Services using Low Earth Orbit and Non-Geostationary Satellite Networks	Sets out the dedicated conditions governing satellite network and operations for LEO and NGSO licensees.
Schedule 4.6	Licensee's Satellite Network and Operations	Establishes the requirement for the licensee to provide an Earth Station.
Schedule 4.7	Development of Network and Services and extension of Broadband Services in collaboration with Licensed Operators in PNG	Creates a backhaul service obligation to licensed local network operators. Clause 4.7.4 states the licensee "is encouraged to comply with this condition at the earliest", language that encourages but does not mandate a compliance timeline.
Schedule 4.8	Scope of International Gateway Services provided by the Licensee	Clause 8.3 requires local voice and text traffic to be kept local rather than routed offshore.
Schedule 12	Special terms and conditions for international gateway operators	Clause 12.3(3) requires all international internet connectivity and communications traffic to be routed in accordance with gateway arrangements approved by NICTA, and to comply with Government policy, including national security and cybersecurity policy.

Taken together, these provisions establish obligations for satellite operators. They do not, however, provide a single, clear framework explaining how those obligations apply to LEO services or how a new operator should navigate the licensing process. They also do not set out the technical specifications of meeting these obligations.

This lack of clarity is evident in the requirement for Starlink, as the current licensee, to build an Earth Station.

Starlink's PNG licence obliges it to establish a local ground station, an Earth Station, under Schedule 4.6 and NICTA has indicated that it intends to enforce this. However, based on our consultations with NICTA, the underlying rationale for this requirement is not clear, nor publicly communicated or announced.

The Blueprint team believes that the primary purpose, from a regulatory position, might be to ensure that satellite traffic can terminate locally in PNG, supporting national sovereignty and control over satellite connectivity.

Separately, the industry has articulated that there may be a different benefit altogether from a having Starlink Earth Stations in PNG, referred to as a Community Gateway in the discussion. This would be to facilitate

routing domestic network traffic via LEO satellite hubs rather than relying on more expensive GEO or MEO satellite connections and to circumvent gaps in terrestrial fibre links on the ground.

The architecture and positioning of such Community Gateways, however, would be different to what has been specified in the Starlink licence (as we understand, we have not seen the licence).

The Blueprint observes a mismatch between the current regulatory position on Starlink being obliged to deploy an Earth Station, and industry perspectives which appear to be motivated by different considerations. The Blueprint team is not in a position to conclude whether requiring a domestic Earth Station is the right approach for PNG. DICT and NICTA need to clarify the underlying logic and rationale for the Earth Station requirement before this idea is taken forward.

A dedicated LEO and NGSO licence class would provide a more durable solution.

The current approach relies on applying a dedicated satellite Schedule within a broader licensing framework that was designed before commercial LEO constellations existed. This was sufficient to enable Starlink to enter the market, but it has also created a fragmented framework. Operators have to piece together requirements across different Schedules, while some obligations lack clear implementation timelines.

A dedicated LEO and NGSO licence class would provide a more durable solution and would allow NICTA to set out:

- The requirements for market entry
- Spectrum and frequency coordination requirements
- Earth Station requirements and their purpose
- Network and service obligations
- Interconnection requirements
- International gateway and traffic routing requirements
- National security and cybersecurity obligations
- Regulatory pathway for emerging services such as Direct to Device

This is a different and more durable fix than continuing to interpret and clarify Schedule 4 on an ad hoc basis as questions arise. This would not mean creating a preferential regime for Starlink. The objective would be to establish a common set of transparent conditions that any appropriately qualified LEO or NGSO operator can understand and meet.

The framework should also be forward-looking enough to address Direct-to-Device connectivity.

D2D allows compatible smartphones to connect directly to satellites without a dedicated terminal and is particularly relevant to PNG given the potential for emergency communications in remote, mountainous and maritime areas. NICTA should therefore explicitly identify D2D as a potential use case now, even if the detailed regulatory framework continues to develop as the technology matures. For D2D, the framework will need to address how satellite operators can use mobile operator spectrum to provide service, how satellite and mobile networks coordinate to avoid interference and manage customers between terrestrial and satellite coverage, and how D2D traffic connects into the mobile operator's existing network. It should also establish appropriate requirements for consumer protection, emergency communications and service continuity. Because D2D relies on a satellite operator using an MNO's assigned spectrum, it is likely to require licence variations and interference coordination arrangements under the NICT Act.

The purpose of this Action is to make LEO a durable and competitive part of PNG's telecommunications market.

Publishing licenses and terms transparently will help keep PNG's LEO market attractive to multiple service providers in future and reduce the risk of the country becoming overly dependent on a single operator. Other markets have moved to publish clear, technology-neutral licensing guidelines specifically to remove this uncertainty for new entrants, for example:

- **Mexico** operates a technology-neutral satellite licensing regime, with clear published conditions covering landing rights and a required percentage-of-revenue payment; multiple LEO providers are already licensed there or have announced entry plans as a direct result of that clarity
- **Singapore's** Infocomm Media Development Authority licenses satellite ground stations under a published Satellite Communication Station Licence, with a standard annual per-terminal fee, and its 2023 Digital Connectivity Blueprint explicitly commits government to ensuring sufficient spectrum and increasing regulatory clarity specifically to support LEO Satellite growth. The pathway to apply is published and open, allowing operators to apply directly to IMDA

NICTA should leverage international regulatory guidance rather than develop this framework from first principles.

The Global System for Mobile Communications Association (GSMA) Satellite Regulatory Playbook, published in June 2026, provides a practical framework for regulators responding to the evolution of LEO Satellite broadband and D2D services. It identifies key areas including local establishment, national security, consumer protection, infrastructure and facilities, end-user terminals, fiscal treatment, emergency services and enforcement, while emphasising transparency, predictability, technology neutrality and regulatory harmonisation. NICTA should use this guidance as a reference point and adapt it to PNG's circumstances.

Sub-actions:

1. Publish the full terms and conditions that currently apply to PNG's existing LEO and NGSO satellite operators, including Schedules 4, 8 and 12 as applicable to those operators. This will allow industry and the public to understand the obligations that already apply before a new licence class is introduced
2. NICTA should formally explain the purpose of the Schedule 4.6 Earth Station requirement and its relationship to the local traffic and gateway-routing requirements in Schedule 4.8 and Schedule 12.3(3), as well as any national security, lawful interception, cost or network architecture objectives
3. Create a dedicated licence class for LEO and NGSO satellite network operators, replacing the current approach of applying satellite conditions through an otherwise general licensing framework. The new class should provide a single, predictable pathway to market
4. Specify how Schedule 12.3(3), including national security and cybersecurity requirements, applies to LEO and NGSO operators and satellite-carried traffic. Satellite traffic should be subject to equivalent standards to traffic carried over fibre, submarine cable or other international connectivity infrastructure
5. Include D2D within the new licensing framework, covering spectrum use, interference coordination with mobile operators, network integration, consumer protection, emergency communications and service continuity
6. Ensure that LEO Satellite licensees are aware of their local regulatory obligations, including with respect to cyber security, data protection and online bullying and harassment.
7. Benchmark the new LEO and NGSO licence class, including Earth Station and gateway requirements, against the GSMA Satellite Regulatory Playbook and comparable published frameworks

Action 2.3: Ensure direct enterprise sales of Community Gateway services compete on a level regulatory footing

Action description: Ensure direct sales of high-capacity satellite services to large enterprises are governed on equal terms, reinforcing a level playing field as Community Gateways begin entering the market. The framework should ensure that large-scale satellite deployments are subject to appropriate national security, consumer, data, lawful-access and regulatory obligations, while avoiding unnecessary restrictions on the deployment of new infrastructure.

Lead	Horizon
NICTA	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	Low	Low	High

A Community Gateway is a dedicated, high-capacity satellite connectivity service that provides an opportunity for enterprises and government institutions in PNG to access dedicated connectivity directly from a satellite provider.

A Community Gateway is a dedicated, high-capacity ground installation rather than a single consumer terminal. It is offered by LEO operators, including Starlink under its Dedicated Service Product. The equivalent product offerings of other LEO providers are not yet known. A Community Gateway can provide advanced connectivity to large enterprise and government installations, such as mines, hospitals and university campuses, while also being integrated into the broader domestic network. For example, the Starlink service can use multiple bonded gateways to provide high-throughput connectivity, with up to 20 Gbps downlink and 20 Gbps uplink and can be deployed as a dedicated connectivity service to an enterprise site. This creates an opportunity for PNG enterprises to access connectivity directly from a global satellite provider where it offers a better technical or commercial solution.

Community Gateways may also be deployed as wholesale infrastructure, with capacity distributed onwards to an operator's network or integrated into the domestic backbone to provide additional capacity and relieve pressure on existing routes. This integration into the domestic network is discussed under Action 4.5, this Action is focused on direct-to-enterprise satellite services.

NICTA should ensure that enterprise connectivity markets are regulated on a level basis, so that local telecommunications operators and LEO sat providers compete on equivalent terms.

Local network operators are subject to strict regulatory oversight, spectrum fees, and mandatory contributions to universal service funds to support unprofitable rural connectivity services. They also adhere to stringent national security standards, data sovereignty laws, and lawful access reequipments. Where a global satellite provider is selling a comparable communications service directly to a large PNG enterprise or government institution, the relevant obligations should apply on an equivalent and proportionate basis.

The objective is not to prevent enterprises from buying satellite connectivity directly, or to impose identical regulation on different technologies.

Enterprises should remain free to choose the connectivity solution that best meets their needs. The issue is whether a provider can avoid applicable PNG obligations simply because the service is delivered by satellite rather than through a terrestrial network.

Regulation should therefore focus on the service being provided and the regulatory risk it creates, rather than the underlying technology. This is consistent with emerging international guidance, including the GSMA

Satellite Regulatory Playbook, which advocates regulatory parity where satellite services provide functionally equivalent connectivity while maintaining technology neutrality. Where a Community Gateway becomes the primary connectivity service for a major enterprise or government institution, it is vital that PNG retain the practical ability to enforce its laws and regulatory requirements. NICTA should therefore establish upfront what requirements apply to these deployments, including where relevant cybersecurity, data protection, lawful access and national security obligations, rather than leaving these issues to be resolved after the service is operational.

Sub-actions:

1. Clarify the regulatory treatment of direct enterprise satellite services. NICTA should establish which existing licensing, site approval, national security, cybersecurity, data protection and lawful-access requirements apply to Community Gateway deployments
2. Apply existing gateway and earth-station approval requirements consistently to direct enterprise Community Gateway deployments, where those requirements are applicable
3. Establish proportionate regulatory parity between direct satellite services and comparable enterprise telecommunications services, so that global satellite providers do not receive unintended exemptions from applicable PNG obligations
4. Confirm lawful-access, cybersecurity and data requirements upfront for large-scale enterprise and government satellite deployments, ensuring that PNG's requirements remain enforceable regardless of the underlying technology
5. Maintain technology-neutrality and customer choice, allowing enterprises to select satellite, terrestrial or hybrid connectivity according to their technical and commercial needs, provided the relevant regulatory obligations are met
6. Monitor the development of direct enterprise satellite services and review the framework as the market develops, particularly as other LEO providers enter PNG, and the scale of Community Gateway deployments increase

Recommendation 3. Drive rural connectivity in wards which don't have the internet today

Action 3.1: Create a bilateral programme to deploy LEO Community Wi-Fi sites to PNG's underserved wards

Action description: The programme will use LEO Satellite technologies to connect remote sites where terrestrial networks are not currently viable. It will prioritise schools, health facilities and other community Wi-Fi while also making connectivity available to local residents. Each hub will combine a LEO terminal, independent solar and battery power where required, managed LEO Satellite, basic IT equipment, digital literacy and cybersecurity training.

Each site will adopt a localised operating model that allows community members to access the internet for education, health, business and personal purposes. The Action allocates impact across e-health, e-education and citizen internet inclusion objectives.

Lead	Horizon
DICT with development partner funding	Horizon 1 → Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	High	Low

The programme will offer an immediate kick start to getting PNG's rural and remote population online.

With approximately 7,000 wards in PNG, this programme will provide a kick start connectivity to a subset of wards. As well as providing immediate access to the internet for these populations, the programme will demonstrate models that can be replicated by other funders, communities and commercial providers in other locations across PNG.

These principles apply to programme sustainability:

- Any terminal that's been installed through the programme must work after an initial period of funded use; fulfilling this principle requires designing into the programme how funded terminals are transitioned into post-funded lifetime
- Responsible, transparent and competitive rollout, with transparent criteria for selecting deployment locations, competitive procurement of terminals and services, and careful sequencing and resourcing of each phase. Procurement should be competitive without requiring a separate process for every individual site, allowing the programme to move quickly while ensuring aid funding is directed to the highest-impact locations and used responsibly
- Speed, with DICT and partners to move at pace to identify sites, design the programme and execute it

Funding from development partners in the magnitude of PGK150 million (USD34 million) could deploy ~2,000 LEO Community Wi-Fi sites across selected wards.

The Blueprint estimates LEO Community Wi-Fi sites to have a deployment cost of approximately PGK68,000 to PGK80,000 (USD15,560 to USD18,300), the range driven by the equipment and staffing needs of each site. This is compared to reported USD1.5 million spent on a terrestrial tower. A more detailed breakdown of the costs is in

Annex D. Note that the Blueprint has not undertaken a detailed project costing for this initiative but developed a high-level view to support design of this recommendation and its potential impact.

The bilateral programme should be co-governed by the Australian and PNG Government.

The bilateral programme should be jointly governed by the Australian and PNG Governments, ensuring that both Governments have a clear role in its direction and oversight.

The Blueprint does not prescribe the detailed governance, funding or delivery arrangements, which should be agreed between the two Governments and align with Australia's development-programme and Commonwealth procurement requirements, including principles of transparency and open competition.

In the interests of speed, the pilot phase could leverage existing Australian programmes and established delivery mechanisms to expedite a pilot to start before the end of 2026. Such a pilot could inform the design, governance, delivery and sustainability of a larger programme.

For the larger programme to scale effectively, it could be situated within the Papua New Guinea–Australia Comprehensive Strategic and Economic Partnership (CSEP). The CSEP is the overarching framework for Australia and PNG's bilateral cooperation, covering areas including economic development, trade and investment, development cooperation, governance, infrastructure, education and human development. The CSEP could provide an established mechanism for both Governments to jointly set priorities, coordinate delivery and review progress.

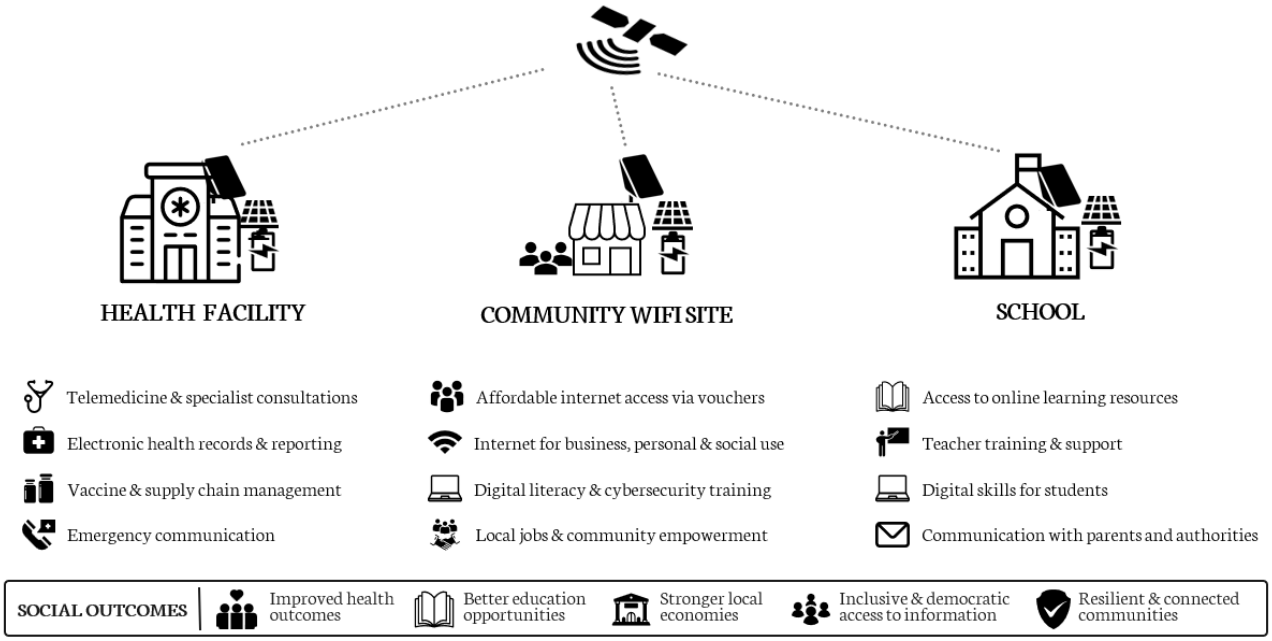
DICT should be resourced to perform its role effectively within the governance and delivery mechanisms agreed by the two Governments. The specific personnel and resourcing arrangements should be determined as part of establishing the programme, with DICT and relevant PNG organisations identifying the points of responsibility for managing interactions with the Australian Government and supporting the programme's establishment and implementation.

The programme will democratise access to connectivity through institutions and community access.

Institutional connectivity will provide LEO-enabled Wi-Fi at schools, health centres and other local institutions, allowing them to access the digital services, information and systems they need to perform their functions effectively. These institutions can also act as trusted points of access for the surrounding community and where appropriate, these connections could also be made available to surrounding communities at designated times provided there is appropriate network security and traffic isolation.

Shared community Wi-Fi access points, where anyone can connect for business, personal or other purposes, will be equally important to closing the remaining connectivity gaps. They can give a small trader in a village with no other connectivity option the same ability to get online as someone in Port Moresby. This can enable people to access health, government and education services, while also opening opportunities to participate in e-commerce, trade, online banking and other aspects of the digital economy.

Figure 41: LEO Community Wi-Fi Sites use case examples



Source: Long Street Advisors

The programme will kick-start rural internet use, to be scaled through commercial models and other sources of donor funding.

Aid-funded kick start programmes of this nature will not close PNG's significant internet inclusion gap alone. Whilst the programme will deploy connectivity to remote and rural areas as a kick start mechanism to increase internet uptake in such areas, work needs to be done to sustain and scale the impacts.

Long-term scaling of digital inclusion through LEO terminals being used in schools, health centres and by the general public will come from market mechanisms. This will include localised commercial deployments of LEO community Wi-Fi access points led from within local communities or spearheaded by service providers who scale such services in PNG. The model adopted by such deployments will be similar to the bilaterally funded programme, in that they will deploy terminals to be used by individuals across a community but the economics for deployment and usage will be different.

Commercialisation would likely happen through diverse pay-per-use models suited to each community, allowing deployment and connectivity costs to be recovered alongside a markup or margin that rewards the enterprise providing the service.

The public access model could use simple prepaid tokens or vouchers. Users would be able to buy short sessions, daily or weekly passes and, where there is demand, higher-use business packages. The voucher system should be capable of operating in communities with limited mobile-money coverage, so printed/offline vouchers should be available alongside digital purchase. Buying such a voucher would not be dissimilar to someone in a terrestrial coverage area today buying a 3-day mobile data top-up, except that the LEO coverage will not be mobile but restricted to use within a few metres of a terminal (unless communities implement Wi-Fi networks which spread the signal to around a village, for example).

The local voucher seller should receive a defined margin for each sale. A portion of gross revenue should be reserved for the recurring LEO service and network costs; another portion should support local site operations and maintenance; and a small reserve should accumulate for future battery, LEO Satellite or equipment

replacement. The remaining margin should provide a reason for the local operator to keep the service active and grow usage.

High level Blueprint analysis indicates that the commercial opportunity for scaling LEO terminals in rural and remote areas which have no terrestrial coverage today is a real and material one. This could be taken forward by communities, or by larger companies including ISPs or operators on a grander scale. Funding terminal acquisition, along with power supply, is likely to present an obstacle to entrepreneurs who lack collateral to borrow the initial deployment capital. However, once installed, high level analysis indicates that the terminals should be offer profitable returns to owners, as well as relatively inexpensive internet access through vouchers.

Donor funding provides an additional pathway to scale the programme beyond the initial commercial deployments. Once the initial tranche of LEO Community Wi-Fi sites has been deployed through the proposed bilateral programme, the model should create an opportunity for other development partners, including multilateral institutions and provincial and local governments, to finance additional deployments. This could allow the programme to expand progressively across a much larger share of PNG's wards.

Over time, the objective should be to transition these sites towards sustainable commercial operation rather than create a dependency on donors. As more communities gain experience using the service and demand becomes established, local entrepreneurs, ISPs and other service providers can take over or establish Community Wi-Fi sites using the commercial models described above, with user revenues covering recurring connectivity, power, maintenance and equipment replacement costs.

Other countries are deploying similar models, and PNG should draw from their experience.

Fiji's model is useful because it treats connectivity as a managed local service. In Phase One, Fiji announced FJD 3million, which it said will directly benefit 11,300 Fijians who, until that point, had little or no access to internet or reliable voice services. Fiji would roll out 126 Starlink-based sites, each with at least two LEO Satellite access points, solar systems for off-grid locations, emergency satellite phones and a voucher-based access model. Fiji Times reported an approximate cost of FJD29,000 per site for the satellite-based model compared with roughly FJD400,000–500,000 for a terrestrial tower.

Telecom Fiji's January 2026 Universal Service Obligation contract provides an especially useful operating precedent: 30 rural and maritime sites are being deployed using Starlink Community Managed LEO Satellite, selected community members are trained to manage and sell access vouchers; and young people are trained as first responders for basic troubleshooting and maintenance.

Fiji's current Phase 2 tender further reinforces the model by procuring end-to-end supply, installation, commissioning, operation and maintenance of solar-powered satellite Community LEO Satellite Centres and allowing awards across multiple providers by province or lot.

Every funded site could receive a standardised package, with engineering variations allowed for geography and host use case.

We propose the following components be considered for provisioning of the LEO Community Wi-Fi sites. Please note that this is indicative based on similar models deployed elsewhere and that the Blueprint team has not conducted a detailed costing of all these elements. This will have to be considered before funding is finalised. The Blueprint team has bundled some of these components together.

Package component	What should be included
LEO connectivity	Authorised LEO terminal for reselling connectivity, approved mount, service plan, power supply, cabling, grounding/lightning protection and commissioning, two year-subscription.
Solar + battery	Solar panels, battery bank, charge controller/inverter, protection, monitoring and secure mounting.
Institutional network	Separate logical service for school/health/government host, protected from public traffic.

Community network	Public LEO Satellite with voucher/token authentication and affordable pay-per-use products.
IT equipment	Laptops/tablets for institutions, charging, secure storage and basic peripherals.
Physical security	Lockable enclosure/rack, asset tags, signage, basic site security and equipment register.
Emergency resilience	Emergency communications capability where justified; solar/battery designed to support continuity.

Device and handset affordability could be an obstacle to uptake.

Device affordability is a key obstacle to internet uptake across Low- and Middle-Income Countries (LMIC). The recommended programme does not include device funding, since devices are typically owned and operated by private individuals. In other LMICs, shared devices between family members or friends, and usage of devices provided by a terminal (or internet café) owner are workarounds that have enabled scaling of internet use in lower income localities. Similar arrangements, which suit PNG's social patterns, are likely to emerge. DICT should conduct feasibility analysis into device affordability when finalising the kick start programme to ensure major obstacles can be addressed through a suitable solution.

Training is one of the most important parts of the investment.

A site will only be sustainable if people in the community have the skills to operate it, use it safely and manage the services around it. Training should therefore be delivered through three complementary streams: technical operation, voucher-based access, and e-safety and digital literacy.

Technical operation

- Each LEO community Wi-Fi site should have at least two trained local people: a primary operator and an alternate. They should be selected locally, offering opportunity to young people and meaningful participation by women. Where the hub is in a school, a teacher or school ICT focal point may be one operator; where it is in a church or community facility, a local youth or community enterprise member may be the primary operator
- Training should be focused on equipping local people with the ability to undertake safe first-line checks: confirm power, inspect the battery/solar system, check cables and visible equipment, restart approved equipment, check the router/AP status, verify whether the problem is local or upstream, record the fault and escalate it through the operator's support channel

Voucher-based access

- The programme could consider introducing voucher- or token-based access from the outset as a way to support long-term sustainability. Local operators could be trained to manage token issuance, customer service, cash/mobile-money reconciliation and simple reporting, creating a small local economic role while helping test the model for future commercial operation. Where possible, digital tokens such as QR codes could be used

E-safety and digital literacy

- Every community should receive practical digital literacy and e-safety training alongside the launch of the LEO community Wi-Fi site. The aim is to ensure that the wider community has the skills and confidence to use the new connection safely and productively, particularly first-time and low-literacy users
- Training should be delivered as part of the site opening and should cover basic internet and device use alongside practical online safety. This could include how to connect to LEO Satellite, use a smartphone

and common online services, search for reliable information, set up and protect accounts, recognise scams and misleading content, protect personal information, and respond to online fraud or harassment. Where relevant, sessions should also cover child online safety, digital financial services, online learning and other services that are particularly useful to the local community

- The ITU's Smart Islands programme provides a useful model. In PNG, ITU has delivered community training alongside its Smart Villages programme, with more than 800 people in Maprik and surrounding villages participating in sessions covering basic digital literacy, online safety, cybersecurity, finance and e-commerce. The approach is designed to give people practical skills they can immediately use, rather than treating connectivity and digital skills as separate interventions
- Training should continue after the site opens. Simple, visual e-safety and digital literacy materials should be displayed and available for people to take away at the connection point, covering topics such as common scams, password security, safe browsing and where to seek help. The hub should also provide a simple way for community members to request refresher training when there is demand or when new digital services, technologies or online risks emerge

The programme should establish a trainer-of-trainers model. Regional trainers should be certified so that refresher training and new-operator training can continue after the bilateral programme ends. Training should therefore be treated as an enduring PNG capability rather than a project launch activity.

Telikom has a LEO Sat-enabled programme which will complement the bilateral programme.

Telikom has recently signed a Memorandum of Understanding (MOU) with the Department of Provincial and Local-Level Government Affairs to deploy around 7,000 Starlink terminals across PNG's 6,912 wards and 375 LLGs. The programme is primarily intended to connect government offices and enable ward officials to upload demographic and socio-economic information through the National Ward Record System (NWRS), DPLGA's digital platform for ward-level data collection and management that supports government planning, budgeting and service delivery.

This arrangement is distinct from the bilateral programme recommended here, which is focused on connecting schools, health facilities and communities through Community Wi-Fi. The two programmes should therefore be coordinated case-by-case, based on the location and connectivity of government facilities, existing infrastructure and community needs, to ensure they complement rather than duplicate each other.

Sub-actions:

1. Pilot the programme through existing mechanisms, testing the model across a representative set of schools, health facilities and community sites.
2. Test and refine a scalable deployment package, including connectivity, power, installation, maintenance and community access arrangements.
3. Establish the full programme based on the lessons from the pilot, with appropriate funding, governance, delivery and sustainability arrangements.
4. Scale deployment across underserved wards, using the pilot to inform the pace, prioritisation and model for wider rollout.
5. Build local capability to sustain the programme, developing PNG-based technical, operational and community capacity to install, maintain and support sites over their lifetime.

Recommendation 4. Build the domestic network through investment, competition and shared infrastructure

Action 4.1: Instruct DataCo to focus on its mandate to be a wholesale-only provider

Action description: Restate and enforce DataCo's role as a wholesale-only market participant. DataCo should not engage in retail sales to end customers, enterprises or government institutions, whether directly or through arrangements that function as retail activity. The company should provide non-discriminatory wholesale access to licensed operators and infrastructure investors on equivalent terms. This applies a narrower and stricter mandate than DataCo has been allowed to operate under in recent years.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Indirect	Indirect	Indirect	High

Lead	Horizon
GoPNG with DICT and NICTA support	Horizon 1

DataCo remains a critical participant in PNG's telecommunications infrastructure.

The objective is not to reduce DataCo's importance. On the contrary, it is to make its critical, nationally important role less ambiguous, more focused and less susceptible to distraction. DataCo should concentrate its investment and operating capacity on the National Transmission Network and other wholesale infrastructure that is critical to the functioning of the wider telecommunications market. Its infrastructure should be available on a transparent and non-discriminatory basis. In order to play its role, DataCo should be instructed to return decisively to the role for which it was established: a wholesale provider supporting the wider telecommunications market.

The wholesale-only mandate should be enforced, not simply restated.

DataCo has sold directly to enterprises and government institutions through a regulatory loophole, competing with the retailers that depend on it for wholesale access. This dual role creates a structural conflict: a wholesaler that also competes at retail has an incentive to use wholesale pricing, service terms or access conditions in ways that can disadvantage downstream competitors. Action 6.1 is intended to close the underlying licensing loophole; in the meantime, GoPNG can direct DataCo to cease activities that fall outside its wholesale mandate.

DataCo should take further steps to ensure decisions are based on reliable due diligence and analysis.

The significant investment made in the KSCN has not translated into the reliable network required by the market. To ensure future investments have a higher probability to be successful, DataCo should prioritise investment appraisal to ensure both the rationale, and the design, justify proceeding.

Sub-actions:

1. Issue a shareholder direction from GoPNG and Kumul Consolidated Holdings reaffirming DataCo's wholesale-only mandate
2. Require DataCo to cease direct retail sales to end customers, enterprises and government institutions, including arrangements that function as retail activity
3. Direct DataCo to prioritise investment in the National Transmission Network and other strategically important wholesale infrastructure, with major investments tested against demand, resilience, cost, value for money and the potential for private-sector delivery.
4. Require DataCo to review its existing and planned investments to identify projects that should be retained, redesigned, deferred or left to private investors where the market can support them.

Action 4.2: Encourage licensees to consider wholesale activities and mobilise new investment

Action description: Make clear, through explicit Government announcement, that domestic wholesale backbone capacity is open to any licensed operator or infrastructure investor, including suitable new entrants, under existing law, and not reserved for DataCo. Actively encourage consortia to form around routes too large for a single investor.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Indirect	Indirect	Indirect	High

Lead	Horizon
DICT, IPA, MNOs, ISPs, infrastructure investors, with NICTA support	Horizon 1 → Horizon 2

The law allows multiple players to participate in the domestic wholesale market.

GoPNG should make clear that existing legislation and licensing arrangements allow multiple investors and service providers to offer domestic backbone capacity as a declared service. An MNO, ISP or consortia of operators, are permitted to build routes between major centres. An infrastructure investor should be able to obtain the necessary licence, finance a route and sell capacity to multiple operators. What has been missing is a sufficiently clear signal that this path is genuinely open, and without that signal the market has continued to behave as though DataCo were the only wholesale option.

The scale of investment required to develop PNG's domestic backbone, together with the capabilities needed to execute it, is too large an agenda for a single state-owned wholesale provider to fulfil. DataCo should continue to play an important role, but the segment also needs to become an investable market in which MNOs, ISPs, infrastructure companies, utilities, investors and development finance institutions can contribute capital where they see a commercial case. This is the purpose of Actions 4.1 and 4.2.

Competition is also a reliability measure, not only a pricing and investment measure.

If PNG remains dependent on a single provider to deliver the majority of new backbone capacity, slow investment or operational underperformance could become a constraint on mass internet adoption.

Competition in the wholesale market is more likely to result in better outcomes, from the perspective of gross investment, route diversity and reliability, than having a single player, which is effectively what's happened in recent years.

Consortia are best organised by the market, with Government focused on removing barriers to entry.

The investment case for some backbone routes may be more appealing when multiple operators join forces to deploy, rather than leave it to a single operator to take the risk of investment by themselves. Once the opportunity is clearly open, operators, ISPs, infrastructure investors and development finance institutions should be free to combine capital, anchor demand or existing infrastructure in a joint venture around a specific route, on the ownership and commercial terms they agree. Government's role should be to make the opportunity visible and remove obstacles, not to convene, approve or own commercial arrangements.

DICT could engage IPA to publish a PNG Telecommunications Network Investment Opportunity statement

A fact-based investment opportunity statement, jointly published by DICT and the Investment Promotion Authority (IPA), could target investment from existing and new investors who have undertaken similar activity in other markets. The statement should:

- articulate the specific opportunities, guiding investors to understand this and to challenge current perceptions that this segment is a closed monopoly
- explain how GoPNG is committed to a wider telecommunications sector reform initiative, described in the Blueprint, that means investment in the backbone is likely to be significantly more attractive than before
- emphasise the relevance of reforms being undertaken that make the market for wholesale services more attractive, including pricing reforms; firmer regulation; infrastructure sharing; new technology use
- explain how PNG is addressing energy access problems for telcos
- explain how PNG is adopting a trusted vendor framework to support network reliability, security and resilience

The statement should be a signalling exercise, not an offer or guarantee, and should leave investors to reach their own commercial conclusions. IPA, supported by DICT, may consider roadshows to attract investors, at connectivity investment conferences for example in Singapore, Sydney and elsewhere.

GoPNG should update the definition of National Transmission Network to include a wider range of wholesale connectivity assets that just DataCo's assets.

The concept of the National Transmission Network (NTN) becomes wider than referring only to DataCo's network. To avoid confusion, either NICTA or DICT should update the formal definition of NTN to ensure it reflects that the network is a virtual one, composed of many sub-networks that connect different geographies of PNG using different technologies and operated by different operators. Such a definition need not include ALL wholesale assets, if some are not deemed to be of sufficient importance to be considered part of the NTN. Future investment into the NTN should also include consultative engagement between wholesale network investors (including DataCo) and retailer (i.e. MNOs and ISPs). This consultation should be used to ensure wholesalers have confidence in the investments they are making, that such investments will specifically address retailers' needs to reach customers.

Sub-actions:

1. Publish a Government statement confirming that domestic wholesale backbone infrastructure is open to all appropriately licensed operators and infrastructure investors
2. Encourage MNOs, ISPs, infrastructure companies, utilities, investors and development finance institutions to assess commercial opportunities for new routes and competing wholesale capacity.
3. Enable consortia, joint ventures and other co-investment structures
4. DICT should partner with IPA to publish a PNG Telecommunications Network Investment Opportunity Statement that sets out the opportunity, the reform direction and relevant priority infrastructure needs
5. DICT to encourage wholesale network investors (including DataCo) to establish consultation mechanisms with MNOs and ISPs to understand telecommunications retailers' needs as they plan wholesale network investment

Action 4.3: Access PPL's infrastructure to speed up and facilitate domestic network deployment

Action description: Confirm a pathway for all telecommunications operators and infrastructure investors to access PPL's ducts, dark fibre and Optical Ground Wire (OPGW) capacity, and pole and pylon network, converting one of PNG's largest and most underused infrastructure assets into a platform for closing the domestic backbone gap. PPL is free to open its infrastructure to the market, but what is missing is an enabling regulatory framework that removes obstacles or friction, a commercial model that PPL can employ, and clarity that private telcos and state-owned enterprises have equal access to PPL to enter into infrastructure sharing agreements.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	Indirect	Indirect	High

Lead	Horizon
DICT, Connect PNG team, MNOs, Department of Works	Horizon 1 → Horizon 2

Re-use of PPL's infrastructure could materially expand telecommunications connectivity especially in areas with gaps in the domestic network.

PPL is one of PNG's largest infrastructure operators, with an electricity transmission and distribution footprint that is directly relevant to telecommunications deployment. PPL's network includes ducts, poles, pylons and fibre infrastructure, including Optical Ground Wire (OPGW) deployed along transmission corridors.

Most of PPL's infrastructure that could be used for telecommunications is either not or used on an ad hoc basis. Making PPL assets available to telecommunications operators could unlock additional backbone and access infrastructure for telcos, defraying additional capital investment to construct new networks, and provide PPL with new revenue. This is particularly important given the high cost of new fibre deployment in PNG: trenching and associated civil works can cost approximately USD30,000 per kilometre.

Where existing PPL ducts, poles, pylons or OPGW can be used, operators can avoid a substantial share of civil construction costs and accelerate deployment. Access to PPL infrastructure should therefore be treated as a practical way to expand domestic backbone connectivity along existing electricity corridors.

Four complementary opportunities should be opened up to eligible industry participants.

PPL infrastructure can support telecommunications at four distinct layers. These should be progressed in parallel, with the first three treated primarily as wholesale infrastructure opportunities and the fourth as a site-access and colocation opportunity.

1. **Dark fibre and OPGW capacity**

   PPL's OPGW network provides an opportunity to lease existing fibre capacity along electricity transmission corridors. This can be offered as wholesale dark fibre or other unlit-capacity arrangements, allowing telecommunications operators to use existing transmission routes without constructing new fibre.

   This is likely to be the fastest opportunity to operationalise because it can make use of existing infrastructure with limited additional construction. It should therefore form the first stage of PPL's open-access programme.

2. **Duct access for fibre deployment**

   PPL's ducts can provide a lower-cost route for operators to deploy fibre into and through towns. Using existing ducts can reduce civil works, excavation, reinstatement and land-access costs, while also reducing construction-related disruption. Duct access should be prioritised in locations where the cost of new civil works is a major barrier to fibre expansion.

3. **Pole and pylon attachment**

   Telecommunications operators should be able to attach fibre, communications cables and associated equipment to PPL's existing poles and pylons under standardised technical and commercial conditions.

   The existing use of PPL poles by DataCo demonstrates that physical attachment can be implemented in practice. The priority should be to extend access to other licensed operators on transparent and non-discriminatory terms, subject to technical capacity, engineering and safety requirements.

4. **Small-cell and 5G equipment colocation**

   PPL's poles and pylons could also support small cells and other lighter access-layer telecommunications equipment, particularly for metro 5G deployment. This is distinct from backhaul access because it would allow network equipment to be placed closer to end users. Colocation could reduce the need for operators to construct dedicated sites and towers, particularly in dense urban and peri-urban areas. It should therefore be developed as a longer-term component of the open-access framework, with appropriate engineering, safety, spectrum and planning requirements.

The first three layers create wholesale infrastructure capacity that should be made available to multiple operators on open, non-discriminatory terms. Small-cell and 5G colocation is different: it is primarily an arrangement for operators to place equipment on PPL infrastructure rather than a wholesale capacity product. It can therefore be offered directly to individual operators under standard site-access terms without requiring PPL to operate an open-access telecommunications network for that layer.

Commercialisation of each would provide PPL with opportunities to build new revenue streams, at high profit and return on capital since the additional capital investment needed by PPL to realise the revenue uplift would be minimal.

The immediate constraint is the absence of a standardised access framework.

PPL's infrastructure is currently accessed by a limited number of telecommunications entities, primarily DataCo. Bilateral engagement with telcos to utilise PPL assets is likely to be time consuming and difficult to scale beyond ad hoc deals.

Scaled use can be facilitated by systematically structuring, announcing and opening PPL assets to telecommunications operators and ISPs through a transparent, predictable and enforceable framework. Without such a framework, access remains dependent on individual commercial arrangements, creating uncertainty for operators and investors, complicating network planning and risking inconsistent treatment between market participants.

A facilities access regime, jointly overseen by NICTA and the National Energy Authority, would provide the missing foundation.

GoPNG and PPL should establish an enforceable facilities access regime for relevant electricity infrastructure, jointly administered by NICTA and the National Energy Authority (NEA). This reflects the fact that the regime sits across two regulatory frameworks: NEA's jurisdiction over PPL as the asset owner and NICTA's jurisdiction over the telecommunications operators seeking access. The regime could be established through a dedicated facilities-access framework or by extending existing facilities-access provisions of the NICT Act to relevant PPL infrastructure. Whichever model is selected, it should establish:

- Non-discriminatory access: Eligible telecommunications operators should be able to request access on equivalent terms, subject to legitimate technical, capacity and safety constraints
- Transparent pricing: Access charges should be published or determined according to clear, transparent and cost-reflective principles
- Standardised terms: Operators should not need to negotiate the fundamental terms of access from scratch for every route or asset
- Defined response timelines: PPL should respond to access requests, conduct technical assessments and provide decisions within specified periods
- Technical and safety standards: Attachment and colocation should comply with clear engineering, electrical-safety and network-protection requirements
- Information transparency: Operators should have access to sufficient information on available ducts, fibre capacity, poles, pylons and relevant transmission corridors to assess deployment opportunities
- Dispute resolution: NICTA and NEA should have defined roles in resolving access disputes and enforcing applicable access obligations
- Investment certainty: The framework should provide sufficient predictability for operators and infrastructure investors to incorporate PPL infrastructure into long-term network plans

This would present PPL's existing infrastructure as a shared platform for backbone investment, allowing private operators to deploy fibre more quickly and at lower cost. It would reduce reliance on DataCo's existing infrastructure, support greater competition in the wholesale backbone market and make it easier for new entrants to build competing networks.

The objective is not to require PPL to give away access to its infrastructure, but to ensure that where the infrastructure is technically suitable, access is available on fair and transparent terms and at a price that reflects the cost of providing access. This would allow PPL to recover the reasonable costs associated with making its infrastructure available while removing unnecessary barriers to private investment.

PPL would not need to become a telecommunications operator or licensee if it begins with "dark fibre" arrangements in which it provides access to infrastructure without operating a telecommunications service.

This approach would allow PPL to enter the market more quickly without requiring it to develop new telecommunications capabilities.

PPL's infrastructure should be matched directly to identified backbone gaps

The highest-value opportunities should be identified by overlaying PPL's infrastructure map with the domestic backbone gap analysis developed through this Blueprint, including:

The assessment should include:

- PPL's transmission corridors
- OPGW and other fibre routes
- Available dark fibre capacity
- Duct locations
- Pole and pylon networks
- Existing telecommunications routes
- Locations identified as high-priority backbone gaps in the Blueprint

Such an exercise would identify where existing PPL infrastructure can deliver the greatest connectivity benefit and avoid unnecessary duplication of infrastructure that already exists.

The Lae–Hagen–Tari corridor should be assessed as an immediate priority. PPL's transmission infrastructure runs along a corridor that overlaps substantially with one of PNG's most exposed domestic backbone segments. Making existing PPL fibre or suitable transmission infrastructure available along this route could provide an alternative or complementary path to the existing microwave-dependent network and materially improve resilience.

Any commercialisation of PPL's infrastructure should align with the Blueprint's trusted vendor requirements.

Any pathway through which PPL's infrastructure is commercialised—whether dark fibre access, duct access, or pole and pylon attachment—should fall within the Blueprint's trusted-vendor regime under Action 5.1 where the relevant security requirements apply. Opening this asset to the market should not inadvertently create a new gap in PNG's network-security posture.

NICTA and DICT should make this distinction explicit in the facilities-access regime from the outset, so that PPL and market participants understand when trusted-vendor obligations attach as PPL's role evolves.

Sub-actions:

1. Make an announcement to signal intentions to make PPL access available to all licensees and to set up a facilities access regime
2. Establish an enforceable facilities-access regime for relevant PPL infrastructure, jointly administered by NICTA and the National Energy Authority (NEA), with clear jurisdictional responsibilities
3. Publish non-discriminatory access rules, transparent and cost-reflective pricing principles, standard terms, response timelines, technical and safety requirements, information-disclosure requirements and a defined dispute-resolution process
4. Map PPL infrastructure against the domestic backbone gaps, including transmission corridors, OPGW routes, ducts, poles and pylons, and identify priority locations where existing PPL infrastructure can close or materially reduce identified connectivity gaps
5. Develop and publish a reference offer for dark fibre and OPGW access, including available routes, capacity, technical specifications, pricing principles, standard terms and application procedures.
6. Extend the access framework to pole and pylon attachment and make access available to all licensed telecommunications operators subject to technical and safety requirements
7. Establish standardised duct access arrangements for urban and town fibre deployment, prioritising locations where civil works represent a major barrier to fibre expansion
8. Establish a transparent commercial framework while preserving flexibility in the underlying business model. PPL and industry should be able to determine whether individual assets or routes are commercialised through access fees, revenue-sharing arrangements, long-term capacity leases or other appropriate structures, provided that the underlying access regime remains transparent, non-discriminatory and enforceable
9. Establish a joint implementation mechanism between PPL, NICTA and DICT to coordinate asset mapping, priority-route selection, reference-offer development, regulatory implementation and engagement with operators and infrastructure investors

Action 4.4: Adopt a "dig once" policy for national infrastructure building through Connect PNG

Action description: Adopt a "dig once, build once" policy across Connect PNG and other major public infrastructure programmes so that telecommunications ducts, conduits and fibre capacity are installed alongside road and power corridor construction from the outset, rather than requiring a second and more expensive round of works later.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	High	High

Lead	Horizon
MNOs, ISPs, DataCo, PPL, infrastructure investors, asset owners, DICT, Connect PNG and NICTA	Horizon 1 → Horizon 2

Major infrastructure investment creates an opportunity to reduce substantially the cost of future telecommunications deployment

When a road is constructed or an electricity corridor is established, adding telecommunications infrastructure later requires a second round of excavation, land-access negotiations and construction at prohibitive cost, meaning it often doesn't happen at all. By contrast, installing ducts, conduits or other passive infrastructure during the original works can usually be achieved at much lower incremental cost.

PNG should adopt a "dig once, build once" approach across major public infrastructure programmes. For Connect PNG projects, telecommunications requirements should be assessed as a standard part of corridor planning alongside road design, land access and construction scheduling. Where appropriate, ducts or conduits should be installed during road construction even where an operator has not yet committed to use them, provided the incremental cost is justified by the expected future connectivity benefit.

The same principle should apply to electricity infrastructure. PPL grid expansion should incorporate telecommunications requirements into corridor design from the outset, including provision for fibre capacity, pole and pylon loading, attachment and access arrangements, consistent with Action 4.3.

Done effectively, this could materially reduce the cost and disruption of expanding PNG's domestic backbone and reduce the need to reopen roads, negotiate new rights of way or duplicate civil works.

DICT should have a formal role in Connect PNG planning and project development so that telecommunications requirements are incorporated before construction decisions are finalised, rather than considered only after physical infrastructure has been built.

Sub-actions:

1. Require telecommunications requirements to be assessed as a standard part of Connect PNG and other major public infrastructure planning before corridor design and construction decisions are finalised
2. Give DICT a formal role in reviewing major public infrastructure programmes so telecommunications opportunities are identified before construction begin
3. Integrate telecommunications requirements into PPL grid-expansion planning, including fibre capacity, pole and pylon loading, attachment and access arrangements, consistent with Action 4.3.

Action 4.5: Aggregate and optimise domestic traffic routing using LEO Satellite Community Gateways

Action description: Integrate LEO Satellite Community Gateways into the domestic network architecture and deploy them as aggregation and backhaul points where terrestrial routes are not commercially viable or where an additional path would materially improve network reliability and resilience.

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	Indirect	Indirect	High

Lead	Horizon
MNOs, ISPs, DataCo, infrastructure investors, asset owners	Horizon 1 → Horizon 2

Community Gateways could become an integral component of the domestic backbone architecture, rather than being treated only as an end-user access solution.

Community Gateways should not be treated solely as a dedicated service for enterprises, as described in Action 2.3. They can also operate as aggregation and backhaul points within the domestic network, particularly where fibre has not reached and a terrestrial route is not commercially viable. This can accelerate connectivity improvements while private backbone investment scales.

A typical installation, at around USD1.25 million (PGK5.46 million) in full capital cost, comprises several satellite dishes providing a symmetrical connection of around 20 Gbps up and down. Based on current and near-term expected volumes, this would be sufficient to serve the combined needs of multiple operators rather than a single customer. Suitably located, a Community Gateway could connect directly to an international breakout point, such as an earth station in Sydney or Singapore, without depending on PNG's terrestrial backbone.

This makes Community Gateways particularly valuable in parts of PNG where the terrestrial network has gaps in it or is exposed to frequent disruptions or outages. As noted elsewhere, the Highlands has no equivalent redundant path today, while the Islands Region sits in an active seismic zone where a single fault can sever a domestic fibre route and leave affected provinces reliant on satellite backup without a terrestrial alternative.

A number of well-placed Community Gateways could address a disproportionate share of PNG's most acute backbone exposure relatively quickly. Unlike a new terrestrial route, these installations would not require new civil works or right-of-way negotiations along an entire corridor. Community Gateways should be additive to fibre and microwave investment, not a substitute for it, and should be considered an important option for strengthening domestic connectivity where extending terrestrial infrastructure is costly or difficult.

Once Community Gateways are deployed, the market could determine what additional connectivity infrastructure is required in each location. In some areas, the capacity and resilience provided by fibre or microwave may justify further terrestrial investment; in others, a Community Gateway may provide a sufficient or more cost-effective solution.

The Community Gateway solution could therefore further optimise terrestrial domestic network investment, as well as relieve operators' current dependency on expensive GEO and MEO satellite backup for these routes. The Blueprint does not prescribe the balance between these technologies, which should depend on local demand, costs, capacity requirements and commercial viability.

Several ownership and deployment models are possible. PNG should not assume that one model will suit every location. A single operator could deploy a Community Gateway for its own needs and wholesale spare capacity

to others on commercial terms. Several operators could co-invest through a joint venture or consortium, sharing both capital costs and resulting capacity. As with other elements of the domestic network investment opportunity, the models should be determined by the market rather than mandated centrally.

Community Gateways are becoming a practical component of domestic connectivity across the Pacific.

A number of Pacific Island countries have deployed or explored Community Gateway models to connect remote communities and locations that are difficult or uneconomic to reach through conventional terrestrial infrastructure, or to strengthen existing networks.

Figure 42: Examples of Community Gateway deployments in the Pacific

Nauru

- State-owned Cenpac Corporation signed the gateway deal with Starlink on 20 Aug 2024
- Government provided land at Command Ridge; gateway inaugurated 16 Dec 2024
- The state entity was Starlink's customer; partner Nauru Telikom (Neotel) put its mobile/5G network onto the gateway

Kosrae, Federated States of Micronesia

- State carrier FSM Telecom bought a Community Gateway in February 2025
- FSM had already permitted Starlink retail nationally
- The gateway added wholesale capacity for the least cable-connected state, ahead of the East Micronesia Cable landing

Kiribati

- Starlink retail officially launched 22 March 2025.
- State-owned wholesaler BwebwerikiNET (BNL) activated a Community Gateway in 2026, under performance monitoring before formal acceptance
- Capacity is distributed onward via retail ISPs, Vodafone Kiribati and Ocean Link

Source: CCRC Australia, Airtel India, Starlink, Kentik, GSMA, TeleGeography, RNZ, Developing Telecoms, Solomon Star, SATSOL, Long Street Advisors

Sub-actions:

1. Mobile operators and ISPs to consider where Community Gateway deployment will add to network quality and reliability, as well as traffic cost optimisation

Action 4.6: Enforce the wholesale service-specific principles to reflect cost recovery and encourage lower prices

Action description: NICTA finalise and enforce the service-specific pricing principles for Wholesale Service Declarations No. 1, 2 and 3 of 2025, which set the maximum allowable price for each declared wholesale product on a cost-based footing. Given the time already elapsed since the 2025 declarations, finalisation and enforcement should proceed as a matter of urgency, backed by clear public communication of the glide path so the market can plan against it.

Impact analysis:

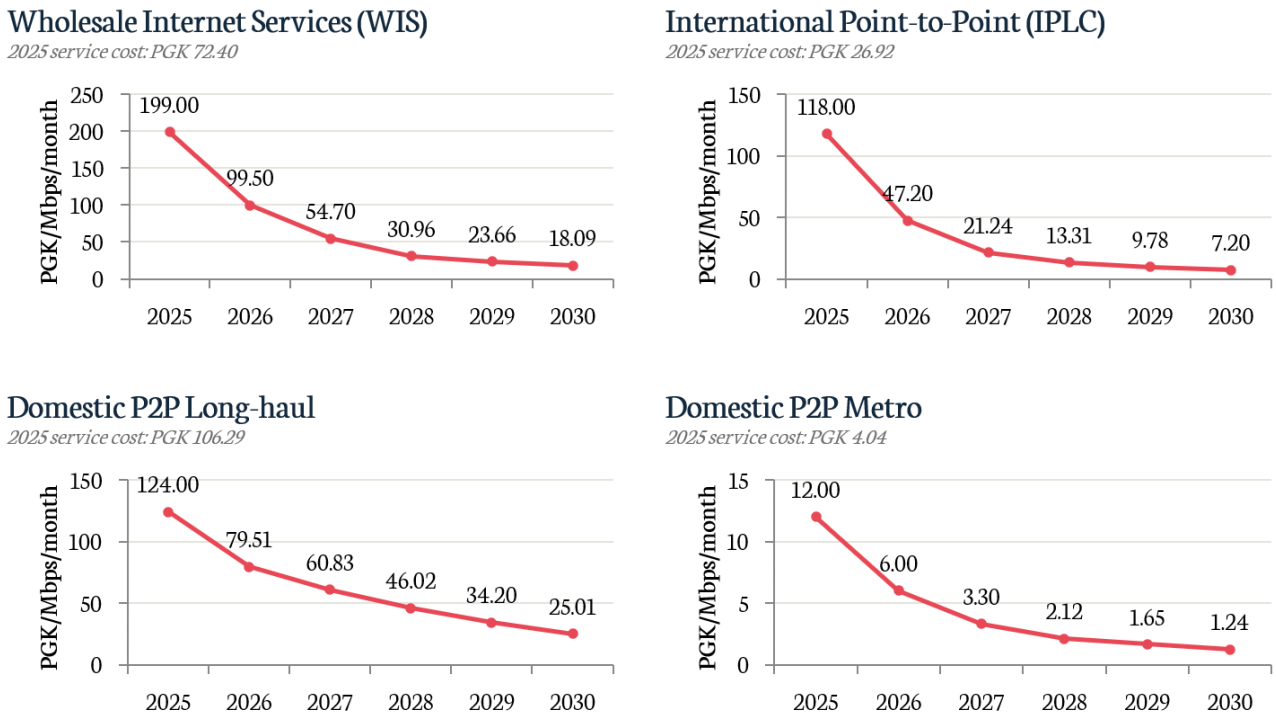
Coverage	Affordability	Adoption	Industry sustainability
Low	High	Indirect	High

Lead	Horizon
NICTA	Horizon 2

NICTA will set a glide path for the maximum allowable price on four wholesale products, based on cost recovery principles.

NICTA's service-specific pricing principles for Wholesale Service Declarations No. 1, 2 and 3 of 2025 set a maximum allowable price for each declared wholesale product using a cost-based methodology. Only the efficient costs of supplying the service and a reasonable return, calculated against a benchmarked efficient capital structure, will be permitted to be recovered. This obligation will apply to any industry player providing declared services in PNG. The published glide path from NICTA's second-round consultation modelling is set out below.

Figure 43: NICTA wholesale service cost modelling, second round consultation (PGK/Mbps/month)



Source: NICTA Public Consultation into the Service-Specific Pricing Principles for Certain Declared Services -Phase II, 16 April 2026

DataCo's current pricing is not in line with this glide path. It will need to recast its pricing structure to comply.

DataCo's pricing, according to the most recent Reference Interconnection Offer, does not sit within the ceilings that the figure above sets out. Pricing for some services sits above the glide path lines put forward, and in other cases sits below. For example:

- **Pricing above the line**:

- **Wholesale Internet Service:** PGK270 against a ceiling of PGK199.00, 36 per cent above the allowable price
- **International bandwidth (IPLC):** PGK380 against a ceiling of PGK118, more than three times the allowable price
- **Long haul domestic fibre:** PGK400 against a ceiling of PGK124.00, more than three times the allowable price

- **Pricing below the line**: On Domestic P2P Metro, DataCo are charging PGK1 per Mbps/month which is far below the 2025 price point NICTA has estimated, PGK12, suggesting that they are not charging cost for this product. While PGK12 is the maximum allowable price under NICTA's glide path, NICTA's underlying modelling estimates the efficient cost of supplying the service at approximately PGK4.04/Mbps/month. DataCo's current price of PGK1 is therefore below both the regulatory ceiling and the modelled cost of supplying the service.

Below-cost domestic pricing discourages investment and hampers affordability, redundancy and quality.

Domestic metro fibre price charged at approximately PGK1 per Mbps per month, compared with a modelled service cost of PGK4.04, may appear attractive from an affordability perspective. However, if a wholesale provider is pricing materially below its efficient cost to serve, a private investor building a competing network would struggle to recover the cost of construction and capital.

This can create the wrong market signal: the lower the incumbent price falls below the cost of new infrastructure, the harder it becomes for a new provider to justify building that infrastructure. Pricing should therefore not inadvertently protect the existing network from competition by making alternative infrastructure commercially unattractive. The objective should be a glide path that reduces prices as the market becomes more efficient and competitive, while preserving a reasonable return for efficient infrastructure investment.

It is very difficult for a regulator to set wholesale pricing principles through regulation.

A regulator must estimate the costs of an efficient network, determine an appropriate return on capital, account for differences in network scale and utilisation, and set a price that is affordable without discouraging investment in new infrastructure. The task becomes particularly difficult where the regulated provider has a network that is materially different from the network a new entrant would need to build.

NICTA's proposed methodology models an efficient, notional operator with a network footprint broadly equivalent to DataCo's, using DataCo as the reference operator. That provides a sound basis for assessing the efficient cost of existing services, but it may not fully capture the economics facing a new entrant building a different network in a different location. A new provider investing in a second Highlands route, for example, may face different construction costs, utilisation levels, scale and risk from the notional operator.

NICTA should therefore explicitly test the glide path against the investment objective as well as the affordability objective. The objective is to implement the glide path in a way that lowers wholesale costs while preserving the commercial incentive for new providers to build the additional capacity, routes and resilience PNG needs. This balance will be critical if wholesale price regulation and wholesale market liberalisation are to work together rather than pull investment in opposite directions.

For example, the Blueprint does not recommend that NICTA simply require DataCo to increase the price of Domestic P2P Metro. The current PGK 1 price is below both NICTA's proposed ceiling and its modelled efficient cost, but the appropriate response should be considered in the context of the broader reform programme. In particular, reductions in international bandwidth prices following reforms to Coral Sea Cable pricing and the introduction of greater competition through the PDCI may remove some of the economic basis for the current

pricing structure. The appropriate treatment of domestic prices should therefore be considered alongside these reforms rather than in isolation.

The Blueprint does not assume that every future reduction in wholesale prices needs to be achieved through regulation. Increased competition should itself become a major mechanism for driving prices down. As alternative international capacity, domestic routes and wholesale providers enter the market, operators should have greater choice and bargaining power. This competitive pressure can achieve price reductions without requiring NICTA to continuously determine the appropriate price for each product.

Regulation therefore has an important role, particularly during the transition from a concentrated wholesale market to a competitive one. But its role should evolve as competition develops. The objective should be to establish a framework that prevents excessive pricing today while creating the conditions in which competition can increasingly perform that function tomorrow.

NICTA has completed its pricing declarations, but the pricing analysis is open to challenge.

From what the Blueprint team can see, NICTA's methodology of collating information could be undermined for several reasons: it appears to rely primarily on information voluntarily provided by DataCo, rather than an obliged disclosure of DataCo's real costs; NICTA's benchmark relies on international comparisons that may not reflect PNG-specific construction costs, terrain or scale.

Without exercising its compulsory information-gathering powers, NICTA has no way of confirming if the information it has received is accurate or complete. Regulators internationally do not rely on voluntarily provided information as the basis for pricing decisions, precisely because the entity being regulated has an inherent incentive to shape what is disclosed. The Blueprint recommends NICTA exercise its compulsory information-gathering powers under Section 246 of the NICT Act to obtain relevant information from DataCo and other operators, and use this evidence base to re-model and, where appropriate, refine the pricing declarations.

Within each product's allowable price, the current wholesaler also has an opportunity to recast its volume-based pricing tiers to encourage faster volume growth in PNG.

In PNG, the steepest marginal savings in DataCo's Wholesale Internet Service pricing currently occur at relatively high volumes, around 30–100Gbps, which are beyond the scale of many PNG retailers. By comparison, international wholesale markets often offer meaningful volume discounts at much lower usage levels. A more progressive volume curve could help stimulate demand from smaller operators, encourage greater data consumption and accelerate growth in PNG's currently low levels of international capacity usage. The objective should not simply be the lowest possible wholesale price. It should be a pricing structure that makes connectivity affordable, encourages volumes to grow and, critically, continues to make investment in new wholesale infrastructure commercially viable.

Sub-actions:

1. Use NICTA's compulsory information-gathering powers under section 246 of the NICT Act to obtain underlying cost, utilisation, demand, network and pricing information from DataCo and other relevant operators and use that evidence to test and refine the methodology before finalising the declaration and wholesale pricing principles
2. Enforce the published maximum allowable price for each of WIS, IPLC, P2P Long-haul and P2P Metro against the 2025–2030 glide path
3. Enforce international pricing down to within its published ceiling as the first and most urgent correction
4. Monitor wholesaler compliance against the glide path product by product to ensure that the glide path is adhered to by individual product, and to ensure cross-subsidisation between products is removed
5. Publish the glide path and DataCo's actual pricing against it on a regular basis, so any gap between allowable price and actual price is visible and attributable rather than surfacing only in periodic review
6. Mandate that DataCo provide a defined response to explain any occasion when pricing falls outside the glide path
7. Expect DataCo to recast P2P Metro pricing toward its modelled service cost as a direct commercial consequence of the IPLC correction, rather than requiring a separate mandate to force it
8. Treat the evolution of wholesale pricing alongside broader reforms to international capacity, domestic competition and PDCI, with regulation playing a greater role during transition and competition increasingly driving price reductions over time

Action 4.7: Transform Telikom to be sustainable, competitive and ready for private investment

Action description: Support the transformation of Telikom PNG, addressing network modernisation, capital structure, management capability and market positioning so that it can operate as a sustainable and competitive third player in PNG's telecommunications market and become ready for private investment.

Lead	Horizon
Government of Papua New Guinea as shareholder, KCH, Telikom Board, with DICT support	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Indirect	Indirect	Indirect	High

There are several options for Telikom. The Blueprint sees the most realistic option to consider a sale of up to 49 per cent plus management rights to a strategic investor, retaining PNG majority ownership.

Such a transaction would recapitalise Telikom, bring in telecommunications and digital-sector expertise, and retain PNG majority ownership while providing the investor with an appropriate role in management. Before such a transaction could be pursued, Telikom needs an independent review of its finances, debt position,

operational condition and the requirements for investor readiness. The Blueprint therefore does not prescribe a detailed transformation plan before that review is completed.

While the review and transaction are being developed, Telikom should avoid taking on additional debt that would increase its debt-to-equity gearing ratio or otherwise make future recapitalisation more difficult.

The detailed transformation plan should be determined following the independent review rather than prescribed in advance.

The independent review could consider five potentially transformational actions.

The Blueprint recommends an immediate exercise for Telikom, assessing the realistic options available to the business. The assessment should consider the requirements for:

- **An injection of fresh capital** to deploy new 4G and 5G capabilities where justified; tower sharing; co-investment in backhaul, focused on metro and inter-city fibre and microwave in collaboration with Digicel, Vodafone, DataCo and other operators. Tower expansion is not recommended at this stage.
- **New management and technology know-how** to equip Telikom to compete for market growth, including capability in developing competitive products and services and in building consortia and partner ecosystems to integrate complex enterprise and government solutions, where Telikom may have a competitive advantage.
- **A deeper and broader end-to-end ICT connectivity and services business**, including scaling Kumul Cloud Infinity so that it delivers valuable and profitable services to PNG customers, and expanding Datec to strengthen Telikom's enterprise and cloud capability beyond the data centre itself.
- **Maximising the value and impact of other initiatives**, including participation in the Pukpuk Digital Connectivity Initiative and its SPV, and implementing a trusted-vendor strategy across radio access, core, wholesale and backhaul, and enterprise communications and IT networks.
- **Restoring the business to strong financial health**, including a restructured debt position that is sustainable to service and repay.

The target of new capital injection as above could be to grow Telikom's overall revenue market share by taking a more than fair share of new revenue growth, focused on enterprise and ICT revenue growth.

Sub-actions:

1. Commission an independent readiness review covering Telikom's financial and debt position, network and operational condition, assets, market position, management capability and requirements to put it on a more stable footing for attracting a strategic investor
2. Develop a transformation and investor-readiness plan based on the review, identifying the restructuring, recapitalisation, network investment and capability improvements required to position Telikom for a potential sale of up to 49 per cent to a strategic investor
3. Maintain financial discipline while the strategy is developed, avoiding decisions that would increase Telikom's debt-to-equity gearing or otherwise make future recapitalisation and strategic investment more difficult

Action 4.8: Encourage infrastructure sharing to cut duplicated infrastructure cost and accelerate coverage growth

Action description: Eliminate duplicated tower spend in overlapping coverage areas, and extend coverage faster and cheaper by sharing infrastructure, with the commercial terms of any given sharing arrangement left to the operators involved to negotiate directly.

Lead	Horizon
Telecommunications Infrastructure Sharing Committee made up of MNOs and ISPs.	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	High	High

Fewer than 1 per cent of towers in PNG are shared, even in metro areas where multiple operators have built out coverage across substantially the same urban footprint.

Mapping of 4G coverage in Port Moresby and Mount Hagen shows two operators' networks overlapping almost entirely across the same streets and suburbs, each built on its own dedicated infrastructure to serve substantially the same customers. Chapter 2 discussed PNG's low tower tenancy ratio compared to other countries (see Figure 33).

Rural areas present a different problem where sharing makes more commercial sense.

Rural footprints differ far more than metro ones. Coverage is thinner, and it is more common to find just a single operator servicing an area with towers frequently loss making and difficult to keep reliably operational. Average revenue per subscriber in Port Moresby sits at around PGK100 against a cost to serve of PGK60 while in rural areas average revenue per subscriber falls to PGK15 against a cost to serve of PGK70, a loss on every subscriber served. Servicing and maintaining standalone rural sites against that economics is inherently difficult, which is precisely the condition passive infrastructure sharing, tower structures, power and site access rather than active network equipment, is best suited to address. Consulted parties have indicated that they would be willing to share rural sites on this basis and would also extend that sharing beyond tower infrastructure to operating costs and power.

Passive sharing should be the immediate priority because it delivers substantial cost and coverage benefits without requiring operators to integrate their core networks.

Sharing towers, sites, power, fibre connections and access arrangements can reduce duplicated capital and operating costs while allowing each operator to retain control of its own active network and customer services. This makes passive sharing relatively straightforward to implement and particularly well suited to PNG, where the cost of building and maintaining standalone infrastructure is high, especially in rural and remote areas.

Realising this opportunity depends on making towers structurally stronger.

Of PNG's roughly 2,600 mobile towers, approximately 1,100 are identified by operators as potentially ready for sharing. A significant share of the remainder is unavailable not by choice but because it was not built to carry a second or third operator's equipment. This includes the 157 towers built under UAS funding which carry sharing obligations as a condition of that funding, none of which have been shared to date including some because of technical specifications. The new commercial agreements make this technical constraint more important, not less. As operators move into implementation, the constraint will increasingly be whether towers, power systems, fibre connections, access roads, leases and other site infrastructure are capable of supporting multiple users.

Broadcasting should also be considered as part of the infrastructure-sharing opportunity.

Television and radio services often need infrastructure in the same locations as telecommunications networks, particularly in rural and remote areas where power, site access and tower construction are expensive. As mobile and broadband networks expand their geographic footprint, NICTA and broadcasters should assess where broadcast infrastructure could be co-located on existing or new telecommunications sites, and where towers, power systems, access arrangements and other site facilities could be shared. Aligning telecommunications and broadcasting expansion in this way could reduce the number of standalone sites required, lower construction and operating costs, and make it more viable to extend both connectivity and broadcasting services to underserved communities.

Given PNG's terrain and the cost of building and maintaining standalone infrastructure across it, the country is better positioned than most to benefit from sharing once these technical barriers are addressed.

The commercial terms of any given arrangement, including pricing and access conditions, are best left to the operators involved to negotiate directly rather than fixed by regulation. However, there is value in a coordination mechanism. Government and industry should convene a Telecommunications Infrastructure Sharing Committee, bringing NICTA and all licensed operators together to assess which towers can technically support shared tenancy, track progress against sharing obligations such as those attached to UAS funded sites, and give operators a structured setting in which to negotiate terms. Greater industry alignment on the principle of sharing, backed by this kind of clear, jointly governed framework, offers the most sustainable path to lowering metro costs and accelerating rural coverage at the same time.

Active sharing could be considered over time, but it carries greater technical and security implications.

Active sharing involves operators sharing elements of the equipment that carries and manages network traffic, rather than simply sharing the physical infrastructure. While this can reduce costs further, it also creates greater interdependence between networks and can introduce common points of failure or security vulnerabilities. Any move towards active sharing should therefore be considered alongside PNG's trusted-vendor and network-security requirements set out under 5.2, ensuring that shared equipment and suppliers meet appropriate security standards and do not create risks to network integrity or national security.

Commercial negotiation should remain the default, with NICTA being bought in only where sharing negotiations fail.

If the parties remain unable to agree after TISC facilitation, either party should be able to refer the dispute to NICTA. At this stage, NICTA would assess whether there is a legitimate basis for refusing access or whether the proposed terms are preventing otherwise feasible infrastructure sharing. Its assessment could consider whether:

- Infrastructure has sufficient physical and technical capacity
- Sharing would create a safety, security, reliability or network-integrity risk
- Access would materially interfere with the infrastructure owner's existing operations
- Access terms proposed are reasonable and non-discriminatory

NICTA should have a defined timeframe for completing this assessment so that disputes do not remain unresolved indefinitely.

The model should distinguish between ordinary commercial sites and publicly supported infrastructure.

The strength of the regulatory backstop should depend partly on the nature of the infrastructure involved. For privately financed commercial towers, operators should have the greatest flexibility to negotiate access and pricing, subject to competition, safety and other applicable requirements. For publicly funded or Universal Access and Service-funded infrastructure, stronger sharing expectations should apply. Where public funding

was provided on the basis that infrastructure would be available for shared use, an operator should not be able to prevent access simply because the parties have failed to agree commercially. NICTA should be able to assess compliance with the applicable sharing obligation and, where authorised, require the infrastructure to be made available.

There is also an opportunity to share site-power infrastructure as telecommunications infrastructure sharing expands.

Where operators share a tower or other telecommunications facility, there should be a clear regulatory basis for sharing the underlying solar, battery, generator and other power infrastructure and allocating the associated costs. Uncertainty around the regulatory treatment of infrastructure providers can create unnecessary constraints and discourage commercially viable sharing models. The same principle should apply at the boundary between telecommunications and electricity regulation: the electricity framework should not prevent telecommunications infrastructure from being powered jointly simply because more than one telecommunications user occupies the site.

NICTA and the National Energy Authority should therefore jointly review the regulatory treatment of shared power at telecommunications sites and identify whether licensing, approval or other requirements could prevent or materially increase the cost of sharing these arrangements. Where necessary, the authorities should establish a clear exemption, cost-sharing treatment or simplified regulatory pathway for power infrastructure used by multiple telecommunications users at a shared site.

There is a further, smaller opportunity to supply surplus power to nearby communities.

Operators are unlikely to want to become electricity suppliers, and rural telecommunications sites are generally not designed to generate large amounts of surplus power. Community supply should therefore not be treated as an obligation or policy expectation. There may nevertheless be individual sites where limited community use makes commercial or operational sense—for example, paid phone charging or supply to a nearby community facility. Enabling such uses could also strengthen relationships between sites and surrounding communities and potentially improve site security.

Under PNG's electricity licensing framework, generation for an operator's own use is treated differently from generation, transmission, distribution, supply and sale of electricity, which are regulated activities requiring authorisation. NICTA and NEA should clarify how the framework applies to limited power supply, community charging and other small-scale services associated with telecommunications sites, including whether a small-generation exemption or light-touch licence could be appropriate, subject to necessary safety and consumer protections.

Sub-actions:

1. DICT to formally establish a Telecommunications Infrastructure Sharing Committee, chaired by industry and comprising all licensed operators, to coordinate sharing opportunities
2. Require any tower owner to offer space to competitors on published, non-discriminatory terms wherever coverage overlaps, leaving pricing and decommissioning decisions to bilateral negotiation between the operators involved
3. Encourage the set-up of independent tower companies in future, whereby current tower infrastructure owners outsource the function to tower specialists
4. Leave the choice of structure to operators (e.g. where a monopole or lighter structure suits better than a full shareable tower), with the TISC working out separately how sharing applies to structures not built for multiple tenants
5. Apply non-discriminatory access as a condition of public and donor funding specifically, UAS, provincial or aid-agency funded towers, since public money should come with that condition attached
6. Request PNG broadcasters to inform NICTA of their desire to share, or make available, tower infrastructure to be co-located with telecommunications equipment.
7. Put in place a mechanism for NICTA resolving sharing disputes
8. NICTA and the NEA to jointly review the regulatory treatment of power infrastructure at shared telecommunications sites, identifying any licensing, approval or other requirements that could prevent operators sharing solar, battery, generator and other power systems
9. Establish a clear regulatory pathway where power infrastructure is used jointly by multiple telecommunications operators
10. NICTA and the NEA to clarify the regulatory treatment of limited community power supply associated with telecommunications sites, including activities such as community charging, supply to nearby facilities or other small-scale uses of available generation capacity, distinguishing these activities from full-scale electricity retailing

Recommendation 5. Strengthen cybersecurity and network resilience to protect PNG's national interest

Action 5.1: Put in place trusted vendor and responsible procurement principles for all network deployments

Action description: Put in place a dedicated trusted vendor and procurement regime for telecommunications and other critical infrastructure providers. The regime should ensure that telecommunications operators and other critical infrastructure providers cannot procure or deploy network technology from suppliers that present an unacceptable national security risk, including suppliers subject to direction or control by foreign governments where that direction could conflict with PNG's national interests.

Lead	Horizon
DICT	Horizon 1 →Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	Low	High	High

Communications deployed via equipment installed by vendors who are not trusted runs the risk of undermining interoperability and security objectives shared between PNG and its partners.

The Pukpuk Treaty supports closer integration between the PNG Defence Force and Australian Defence Force, which increases the need for secure and interoperable communications networks. For example, the treaty states its purpose "to recognise and affirm the commitment between the Parties to protect their sovereignty, secure their mutual defence and security interests and contribute to regional stability and security, by strengthening and expanding defence cooperation through enhanced capability, interoperability and integration."

The Treaty states that "Papua New Guinea's critical infrastructure plays a key role in facilitating the purposes of this Treaty, including interoperability." It commits both Parties to mutually determine any third-party involvement in that infrastructure that could compromise their ability to implement the Treaty.

Communications deployed via equipment installed by vendors who are not trusted runs the risk of undermining the interoperability and security objectives the Treaty is meant to support.

As cloud-based network architecture is introduced into PNG a trusted vendor policy becomes critical.

The migration of telecommunications networks to being cloud-based puts new pressure on the industry and nations to safeguard networks from being controlled or put under surveillance unlawfully. The migration of network capabilities to the cloud is referred to as network virtualisation. Network virtualisation is accelerated through the deployment of 5G networks, the first "G" to introduce this in the core network, adopting a fundamentally more evolved network architecture compared to the ones seen in the 3G and 4G eras.

Earlier mobile generations, such as 3G and 4G, kept most of the network's intelligence in a small number of centralised, physically secured core locations, with vendor equipment at the edge largely limited to radio access hardware passing traffic through.

Virtualisation means that more network controls and functions are accessible remotely and digitally. 5G moves intelligence out to the edge and virtualises the core itself, running on software-defined infrastructure that can be updated, reconfigured and monitored remotely by the vendor who built it. That shift means a 5G vendor doesn't just supply hardware but also has a role in running the network's most sensitive functions, including the

parts that manage subscriber data, network slicing, and command over which traffic goes to which destination point. Hence, vendors who supply the networks must be trusted.

A number of countries, including Australia and much of the European Union, have moved to restrict or ban specific vendors from 5G networks, even in markets where the same vendors' 3G and 4G equipment has been in use for years without the same restriction being applied. The concern with 5G is that once the core network components are in place, removing them becomes an enormously expensive and disruptive undertaking.

This does not mean that the presence of equipment from untrusted vendors in existing 3G and 4G networks should be treated as acceptable. Consistent with its broader national security position, PNG should assess the implications of existing 3G and 4G equipment and determine whether any further measures are warranted, taking into account the security risk, technical feasibility, cost and operational impact of replacing legacy equipment.

The immediate priority should be to ensure that the principles governing trusted vendors, foreign ownership and control, and national security are established before 5G licensing and deployment proceeds. This will allow operators to make investment decisions with clear rules from the outset and avoid creating a future requirement to remove equipment that could have been excluded at the point of deployment.

PNG already has the beginnings of the legal framework to do this through the new Cybersecurity Bill.

Section 37 of the proposed Bill places a due-diligence obligation on Critical Information Infrastructure (CII) operators when procuring ICT products and services and gives the Minister the power to prohibit specified vendors or products on national security grounds. The priority should therefore be to use the regulations under the Bill to turn these powers into a clear and operational rule for telecommunications procurement.

The framework does, however, depend on a Bill that is still under consultation and may not be in force before important network procurement decisions are made. If passage is delayed beyond the September 2026 sitting, DICT and NICTA should not wait for the Bill to take effect. The same trusted vendor principles should be implemented in the interim through existing telecommunications licence conditions and, where government or donor funding is involved, procurement conditions attached to publicly funded network projects.

Policy should set out that technology used in PNG's critical telecommunications infrastructure, operators should not be permitted to procure from suppliers that are subject to foreign government direction, ownership or control where that creates an unacceptable risk to PNG's national security or sovereignty.

This should be a country-agnostic test rather than a country blacklist. The assessment should focus on the risk presented by the supplier: its ownership and control, relationship with a foreign government, legal obligations in its home jurisdiction, transparency, security track record and the level of access it has to the network.

This approach is consistent with international practice. Australia, for example, restricts telecommunications operators from using equipment from vendors likely to be subject to extrajudicial directions from a foreign government that conflict with Australian law. The EU's 5G framework similarly focuses on identifying and managing high-risk suppliers and excessive dependencies.

PNG needs a dedicated trusted vendor and procurement regime, not a single policy, framework or set of principles applied in isolation.

Implementing this recommendation effectively requires more than adopting a single policy or framework document. It requires a full regime: legislation that creates clear legal powers, a ministerial mandate to designate high-risk suppliers, an enforcement mechanism with real consequences for non-compliance, a designated authority responsible for administering the regime, and the operational frameworks, principles and policies that translate legal powers into a rule an operator can apply before it buys equipment. Each of these components

is necessary; none is sufficient on its own, and the sub-actions below are structured to build all of them, not just the policy layer.

The regime should be simple enough for an operator to adopt before it buys equipment.

The immediate task for DICT, working with NICTA and the relevant security agencies, should therefore be to develop regulations or binding requirements under the Cybersecurity Bill that answer four practical questions:

1. *Which suppliers are high risk?* Objective criteria covering foreign ownership, control or influence; the ability of a foreign government to compel access to systems or data; applicable foreign laws; ownership transparency; and security and integrity track record.
2. *Which parts of the network are covered?* Initial focus should be the most sensitive functions, core, cloud, network management and orchestration, with the framework able to extend as network architecture changes.
3. *What happens if a supplier is designated high risk?* The consequence should be clear and binding: operators cannot procure or deploy a high risk supplier's equipment or services in the designated functions, using the Minister's Section 37 power as the mechanism.
4. *What must an operator do before purchasing?* Conduct and retain evidence of supplier due diligence and demonstrate compliance to NICTA or DICT on request.

A trusted vendor regime should sit alongside a foreign investment screening mechanism.

Trusted vendor policy governs which equipment and software can be deployed in the network. It does not, on its own, govern who can own or invest in the companies that operate that network. A supplier can be excluded from supplying equipment under a trusted vendor regime, while an entity connected to the same jurisdiction could still acquire an ownership stake in a PNG telecommunications operator, gain board representation, or otherwise secure influence over network operations through investment rather than procurement.

Achieving the full ambition of this recommendation, protecting PNG's telecommunications sector from undue foreign control or influence, therefore requires PNG to also consider a foreign investment screening mechanism, so that significant investments into telecommunications operators, infrastructure owners and critical suppliers can be assessed for national security risk in the same way procurement decisions are.

Nations that take critical infrastructure protection seriously typically legislate for it as its own regime, covering the ownership, control, resilience and security of infrastructure deemed critical to the national interest, of which telecommunications is one sector among several including energy, water, banking, health and transport.

Rather than addressing PNG's critical infrastructure protection needs only piecemeal, through the Critical Information Infrastructure provisions in the Cybersecurity Bill, GoPNG should consider whether PNG needs a dedicated critical infrastructure protection regime covering foreign investment screening, ownership and control requirements, and security obligations across all critical sectors, not cyber risk within telecommunications alone.

This would align with the priority already identified through the Cyber Cooperation MoU with Australia for strengthening critical infrastructure regulation and expanding DICT's powers in this area and would allow PNG's telecommunications-specific trusted vendor regime to sit within, and draw strength from, a wider and more durable national framework, rather than standing alone.

The objective should be to move away from ad hoc decisions about individual procurements and towards a clear trusted-source and prohibited-source framework.

PNG can draw on Australia's own existing vendor and jurisdiction risk assessment work as a practical shortcut, consistent with Pukpuk Treaty cooperation. India's Trusted Products and Trusted Sources lists, which require

operators to procure from trusted vendors for core and access networks while grandfathering existing equipment, are a useful working precedent for the mechanism.

Whether to address existing equipment is a decision for GoPNG and its partners.

The policy's priority compliance point should be new procurement for all elements of network deployment. The important milestone is to introduce compliance before 5G and other next-generation components are commissioned. A timetable for 5G has been announced already.

Whether Foreign Ownership, Control or Influence protocols should also extend to existing 3G or 4G equipment already in service, and on what timeline, is a separate question for GoPNG and allies to weigh against the cost and disruption involved. Some larger economies have required existing equipment to be removed and replaced and have provided significant public funding to support that process whereas others have taken a more staged approach.

Equipment procurement protocols should address trusted vendor issues in telecommunications.

Strict and consistently applied procurement practice in telecommunications is essential to addressing trusted vendor implementation, and this extends beyond physical network equipment. As networks become increasingly software-defined and cloud-based, the software, orchestration platforms and cloud services that manage and control the network carry many of the same trusted vendor risks as physical hardware, and in some cases greater risk, since software can be remotely updated, reconfigured or monitored by its vendor long after deployment.

Nations have introduced procurement standards for operators to adhere to, covering both hardware and software supply chains, to ensure they comply with national policies. In PNG's case, the introduction of such measures, undertaken through the National Procurement Commission, should apply equally to hardware and software procurement, and to both private sector and state-owned enterprises deploying telecommunications networks.

The 2021 KCH Amendment Act introduced a procurement exemption under section 4A that currently removes the SOE portfolio, including DataCo and Telikom as telecommunications operators within this portfolio, from coverage under the National Procurement Act 2018. State-owned enterprises operating telecommunications infrastructure should be brought back under the National Procurement Commission, so they can be held accountable to the same procurement protocols and trusted vendor frameworks, covering both equipment and software, as every other party in the market, rather than being exempt because of their ownership structure.

The same requirements should apply to telecommunications infrastructure funded by government, donors or public programmes. The EU, for example, has made compliance with its 5G security principles a condition of certain telecommunications infrastructure funding. For any state- or donor-funded network procurement, a security declaration should confirm that equipment and software will not be sourced from non-trusted suppliers and that appropriate measures are in place to address foreign jurisdiction and access obligations, and these requirements should be mandatory rather than voluntary.

Trusted and non-trusted vendor equipment might all comply with ITU and GSMA standards (e.g. 3GPP) and might therefore be technically interoperable. Operators may claim this exempts them from compliance with the trusted vendor compliance regime recommended here. However, proving technical interoperability does not exempt operators from proving compliance to a trusted vendor requirement.

Sub-actions:

1. Set out a roadmap for operationalising both the vendor and procurement principles, pre-approval, reliance on international certification, procurement reviews, ongoing compliance, and how the framework evolves as technology changes
2. Develop regulations under Section 37 of the Cybersecurity Bill that establish a telecommunication trusted vendor policy, setting out the circumstances in which a supplier or technology product may be considered high risk and prohibited from use in PNG's critical telecommunications infrastructure
3. Establish clear, country-agnostic high-risk supplier criteria covering foreign ownership, control or influence; the ability of a foreign government to direct or compel the supplier; applicable foreign laws; ownership transparency; security and integrity record; and the supplier's level of access to critical network functions
4. Within this, assess risk across the telecommunications stack layer by layer, prioritising technological dependencies where vulnerabilities are most concerning and where interoperability is most needed
5. Operationalise the Minister's Section 37 power to designate and prohibit high-risk vendors or products, with a clear process for making, publishing and enforcing those designations so that operators know which suppliers they cannot procure from
6. Apply the policy to future procurement only, considering specific conditions or requirements which might apply to safeguarding, ring-fencing or replacing existing equipment
7. Bring telecommunications infrastructure procurement within the auspices of the National Procurement Act, through a targeted amendment to section 4A or a National Executive Council direction
8. Establish a trusted-source/prohibited-source mechanism rather than relying on case-by-case government approval of every procurement
9. Introduce minimum security and dependency requirements for major network vendor contracts, including provisions covering vendor remote access, foreign-government access obligations, termination rights, migration to alternative suppliers and excessive dependence on a single supplier

Action 5.2: Build a digital trust ecosystem through cybersecurity and data protection law

Action description: The legislative foundations for a trusted digital economy should be completed and operationalised through consolidation and resourcing of national cybersecurity capabilities into an empowered and accountable entity that can operate with the required degree of independence.

Lead	Horizon
DICT	Horizon 1 → Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	Low	Indirect	Indirect

Cybercrime in PNG is rising as internet access expands, a point raised at the Digital Transformation Summit 2026.

Greater digital connectivity increases PNG's exposure to cybercrime and online threats. Government systems, financial institutions and businesses are already facing a rising rate of cyberattacks as services move online. A more connected PNG is, absent a trusted vendor and procurement framework, a more exposed one. Stronger cooperation between government agencies, industry and international partners was identified at the summit as necessary to protect PNG's digital systems, alongside a call for Pacific nations to develop common approaches to ICT policy, digital infrastructure and cybersecurity in support of regional peace and security.

PNG is at the point where the legislative foundations for a trusted digital economy are being put in place.

This is now being addressed through the Government's 2026 legislative programme. The Cybersecurity Bill 2026 and Data Governance and Data Protection Bill 2026 were released for public consultation in August 2026, alongside the Verifiable Credential & Trust Services Bill. The Bills form part of a broader reform programme built on PNG's Digital Transformation Policy 2020, National Cyber Security Policy 2021, Data Governance and Protection Policy 2024 and Digital ID Policy 2025. DICT and NICTA are jointly coordinating the legislative review through a Technical Working Group.

The Cybersecurity Bill would establish the national architecture for managing cyber risk.

The proposed Bill takes a risk-based approach to Critical Information Infrastructure, allowing systems and services essential to national security, economic stability, public health, safety or continuity of government to be designated as critical and subjected to stronger security, audit, incident-reporting and cooperation requirements. It also provides for cyber incident reporting and response, emergency powers, cybercrime investigation and digital evidence, online safety, and regulation of cybersecurity service providers.

Importantly, the Bill also begins to address technology supply-chain risk. CII operators would have due-diligence obligations when procuring ICT products and services, while the Minister would have a power to prohibit particular vendors or products on national security grounds. This provides the legal foundation for the trusted-vendor approach set out in Action 5.1, with the detailed requirements to be developed through the policy that follows.

The Bill makes NICTA the interim authority for cybersecurity.

Under the proposed arrangements, NICTA will perform the functions of the National Cybersecurity Authority at commencement, while the Government considers whether and when to establish a separate authority. The consultation specifically asks how these functions should be incubated within NICTA and what conditions should apply before a standalone authority is established.

That makes the immediate priority to resource NICTA to take on this role. NICTA needs investment to effectively perform the function when the law commences. Further, there will need to be internal reform to ensure that the regulatory role and operational cyber-response role are clearly separated. Papua New Guinea Computer Emergency Response Team (PNGCERT), the Cybersecurity Operations Centre and other national cyber-response capabilities therefore need clearly defined functions, reporting lines and protections that allow them to respond operationally without compromising NICTA's independence as a regulator.

The Data Governance and Data Protection Bill provide the rules for how data is collected, used, protected and shared.

The proposed Bill establishes rights for individuals and obligations for organisations handling personal data, together with requirements around data security and breach notification. It also addresses government data sharing, cross-border data transfers, digital identity, sovereign hosting and the use of automated and AI systems. The Bill is therefore important not only as a privacy law but as part of the infrastructure needed for trusted digital government and a functioning digital economy.

The proposed governance arrangement would initially place administration of the Bill with NICTA as the National Data Authority, while allowing for a future standalone national digital economy authority. NICTA will therefore have to be resourced to carry these responsibilities initially, but Government should be explicit about which functions NICTA is expected to perform and what conditions would trigger their transfer to a future independent authority.

The two Bills are sufficiently developed to establish the core legal architecture. The next step should be to turn the legislation into something that businesses, government agencies and citizens can comply with. That means finalising the Bills following consultation, preparing the regulations and standards required under them, designating CII where appropriate, establishing reporting and enforcement processes, and giving the responsible institutions the people, technical capability and funding to perform their functions.

Cyber safety and e-safety matters most for the Papua New Guineans who are first time internet users.

First-time users are particularly exposed because they may not yet have developed the practical habits needed to recognise these risks. They may not know how to distinguish a legitimate message from a phishing attempt, understand why they should not share passwords or personal information, recognise that an image or video may have been manipulated, or know what to do when something goes wrong. Limited digital literacy can make these risks more difficult to identify, particularly where people are accessing the internet through shared devices or relying on other people to help them navigate online services.

This creates a direct link between internet adoption and online safety. The Blueprint's ambition is to increase internet adoption significantly. Achieving that growth would bring millions more people into the digital environment. If the expansion of access is not accompanied by a corresponding expansion in people's ability to use the internet safely, PNG risks increasing exposure to online harm at the same time as it increases connectivity.

Cyber safety and e-safety are therefore an important part of building trust in digital adoption. People need to believe that going online will improve their access to education, government services, employment, financial services, information and social connection without exposing them or their families to unacceptable risks. The objective is to ensure that people have the knowledge, tools and support needed to recognise common risks, make informed decisions and seek help when something goes wrong.

The legislative and institutional work described in this Action, while necessary, is weighted toward protecting networks, data and critical infrastructure from attack.

However, these measures primarily operate at the system and institutional level. They cannot, by themselves, give a first-time internet user the practical knowledge needed to identify a fake message, avoid a scam or protect their account. The reporting mechanism established under the Sub-actions is an important part of the response framework. It gives people a way to report scams and other online harms and creates a mechanism through which government can understand the scale and nature of emerging threats. But a reporting channel is primarily a response mechanism. It helps after a harmful event has occurred; it does not necessarily prevent that event from occurring in the first place.

PNG needs a complementary prevention and awareness layer that reaches people before they experience harm.

This should be built into the expansion of connectivity itself. Where new communities are being connected through mobile networks, community LEO Satellite or other access points, users should receive simple guidance on safe internet use at the same time. This is particularly important for community connection points, where the opening of the facility provides a natural opportunity to deliver basic digital literacy and e-safety training to a large number of first-time users. We have recommended the way that this can be applied under Action 3.1 and the same principles can be used for other programmes that are extending connectivity to new users.

DICT is already progressing a number of measures intended to address online harms and improve the safety of PNG's digital environment.

This includes initiatives relating to website blocking and the Social Media Policy 2025. The Blueprint operates primarily at the telecommunications level. Its focus is on expanding coverage, improving affordability, increasing adoption and strengthening the sustainability of PNG's telecommunications sector. It is therefore not intended to duplicate the broader legislative, regulatory and institutional work being led by DICT on cyber safety, online harms and the wider digital environment. These measures form an important part of the broader regulatory and institutional response to online risks. The Blueprint therefore treats DICT's cyber safety and e-safety reforms as critical to the outcomes of the Blueprint.

Sub-actions:

1. Finalise the Cybersecurity Bill 2026 and Data Governance and Data Protection Bill 2026 following the current consultation process. The Government has directed DICT and NICTA to progress the Bills for introduction to Parliament in the September 2026 sitting
2. Develop the regulations, standards and implementation rules required to make the Bills operational, particularly for CII designation, cybersecurity requirements, incident reporting, procurement and vendor due diligence, data protection, breach notification, cross-border transfers and enforcement
3. Establish NICTA's interim role as the National Cybersecurity Authority and National Data Authority with clear functions, resources and accountability, rather than assuming that the existing organisation can absorb the new responsibilities without additional capacity (See Recommendation 6.6)
4. Separate national cyber-response functions from NICTA's regulatory decision-making, establishing clear operational arrangements for PNGCERT, the Cybersecurity Operations Centre and related national capabilities so that they can monitor threats and respond to incidents without creating conflicts with their role as regulator
5. Ensure the data protection regime is practical for PNG businesses and government agencies, with proportionate compliance requirements (e.g. modified for SMEs), clear guidance and staged implementation
6. Establish a national cyber incident reporting and coordination mechanism for telecommunications operators and other regulated entities, providing CII operators and regulated entities with a clear, standardised channel for reporting cyber incidents, breaches and significant network or infrastructure threats
7. Establish an accessible national reporting mechanism for consumers and businesses to report scams and online harms, including fraud, phishing, impersonation, online harassment and other harmful activity. The mechanism should be accessible through data, voice and SMS and reports should be triaged and referred to the appropriate telecommunications operator, government agency, regulator or law-enforcement body
8. DICT to establish a prevention and awareness programme to increase digital literacy and prevent online harms

Action 5.3: Create a clear hosting protocol for PNG's most sensitive data

Action description: In accordance with PNG's cybersecurity and data-governance legislation, direct the most sensitive government, national security and citizen data to appropriately controlled sovereign hosting. This should be done by operationalising a hosting certification regime that determines which tier of data can be stored with which provider, based on that provider's security accreditation, technical controls and ownership structure. At the same time, remove unnecessary regulatory and practical barriers to private data-centre investment so that competitive capacity can develop to serve wider government and private-sector demand.

Lead	Horizon
DICT	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	Low	Indirect	Indirect

Sovereignty is a question of control and accountability, not geography.

Data sovereignty refers to who has legal authority and technical control over the data regardless of where it sits. A government can retain full control over its most sensitive data even where it is hosted offshore, provided it holds the encryption keys itself rather than the provider, sets the rules governing access, has clear visibility over where that data is stored and processed, and can retrieve its data and move to a different arrangement whenever it chooses. Technical controls of this kind, customer-held encryption, clear access rules, and an ability to exit, function as sovereignty protections.

PNG's approach, like any nation's, should not treat onshore hosting as the only route to control. This distinction is increasingly central to how the relatively small nations of the Pacific region are approaching digital and AI governance collectively. This is reflected in regional efforts such as the 2023 Lagatoi Declaration and the Pacific Islands Forum's broader digital agenda under the 2050 Strategy for the Blue Pacific Continent. For PNG specifically, this matters because building substantial new domestic data centre capacity runs directly into the power constraints burdening the rest of the network.

PNG should therefore take a risk-based approach consistent with its cybersecurity and data-governance requirements. The most sensitive data should receive the strongest protections and, where required by those laws or government policy, be hosted within a sovereign environment. Less sensitive workloads should not automatically be subject to the same requirements where equivalent security, control and accountability can be achieved through technical and contractual measures.

The first step should be a hosting certification framework.

PNG's data-governance framework is intended to establish how data should be classified and governed. The next step is to translate that classification into a practical framework for where each category of data can be hosted and what a provider must demonstrate to be eligible.

Government should therefore establish a hosting certification framework that:

- Defines the security and control requirements associated with each relevant data classification
- Assesses hosting providers against those requirements
- Considers technical security, resilience, availability and business continuity
- Assesses ownership and control structures, including trusted-vendor and foreign-control risks
- Establishes requirements for encryption, access controls, data location and processing
- Provides assurance over government access to data and encryption keys where required
- Establishes requirements for incident reporting and breach notification
- Requires appropriate disaster recovery and data portability arrangements
- Provides a clear process for certification, renewal, monitoring and withdrawal

The framework should result in a simple and transparent outcome in which government should be able to determine which providers are certified to host which categories of data.

This is preferable to making hosting decisions separately for every government system. It also avoids creating an artificial distinction between domestic and offshore providers. A provider located in PNG should not automatically qualify to host sensitive government data simply because it is onshore, just as an offshore provider should not automatically be excluded where it can meet PNG's requirements for security, control and accountability.

Australia's Hosting Certification Framework provides a useful reference point for how such a model can operate. PNG should consider a similar approach, adapted to its own data classifications, sovereignty requirements and market conditions.

Once the certification framework is established, government should undertake a systematic review of its existing and planned digital systems and determine which data actually needs the strongest level of sovereign protection. Government agencies should therefore be required to make an explicit hosting decision when procuring or significantly upgrading digital systems. Procurement should consider the sensitivity of the data, security requirements, resilience, continuity of access, ownership and control, portability, cost and the availability of suitable certified providers.

Domestic data-centre investment should be treated as a strategic decision.

PNG should be cautious about assuming that building more domestic data-centre capacity is automatically in the national interest. Data centres require highly reliable electricity, backup power, cooling, physical security, high-capacity and redundant connectivity, specialist skills, equipment supply chains and continuous maintenance. These requirements make data centres particularly challenging and expensive to operate in PNG.

This matters because the same infrastructure constraints affecting the wider telecommunications sector also affect data-centre economics. An unreliable power supply can require substantial investment in generation, batteries and backup systems. Limited backbone connectivity can reduce the value of a facility even where the facility itself is technically capable. Land, security, cooling and access to specialist personnel create further costs. These are ongoing operating requirements, not simply upfront construction costs.

Government and SOEs should therefore not invest in data-centre capacity simply because domestic hosting sounds desirable from a sovereignty perspective. Multiple publicly supported data centres competing for a limited pool of government and commercial workloads could result in underutilised infrastructure and higher costs rather than greater sovereignty or resilience.

PNG now has a sovereign data-centre asset that should be utilised.

Kumul Cloud Infinity was formally opened for service on 21 August 2026 by the Minister for State Enterprises. The facility is a joint initiative of Telikom Limited and Datec PNG Limited, with CloudSigma, Hewlett Packard Enterprise and NVIDIA as technology and implementation partners. Its stated purpose is to provide PNG with sovereign cloud and AI capability, strengthen control over sensitive information and reduce reliance on offshore infrastructure.

Government is embarking on a significant digital transformation programme, creating and consolidating systems that will hold increasingly large amounts of government, citizen and potentially national-security information. Government should therefore identify the most sensitive systems being developed through its digital transformation programme and assess them for migration to Kumul Cloud Infinity. This should include government systems and data for which sovereignty, security, continuity of access or control are particularly important. Where government has already stated an objective of keeping sensitive information sovereign, it should now demonstrate that objective through its procurement and hosting decisions.

Kumul Cloud Infinity should be treated as a strategic national capability subject to the same requirements that would be applied to any provider.

Kumul Cloud Infinity has the potential to provide a secure and reliable sovereign cloud platform for government. Its strategic value, however, will depend on whether it can deliver the security, reliability, performance, resilience and commercial service quality required to support government systems at scale. Government should therefore use its digital transformation programme to create an early base of demand for the facility, providing the workloads and operational experience needed to establish Kumul Cloud Infinity as a credible sovereign cloud platform.

However, government business should not be guaranteed simply because Kumul Cloud Infinity is government-linked. The facility is operated through a joint venture between Telikom and Datec. The wider data centre and cloud market should remain open to private-sector providers and future investment. To maintain competitive neutrality, government should designate Kumul Cloud Infinity as an anchor provider for sensitive or strategic workloads where it meets the same clear requirements that would apply to any other provider.

Continued access to government workloads should be conditional on Kumul Cloud Infinity satisfying an independent, experienced security risk reviewer that it is:

- Meeting published security and accreditation standards given the sensitivity of the workloads it hosts
- Satisfying the trusted vendor requirements under Action 5.1, on the same basis as any other cloud or technology provider
- Meeting defined reliability, availability, performance and resilience requirements for government workloads
- Publishing transparent and commercially reasonable pricing, so that government procurement decisions can be assessed against the market.

These conditions should be ongoing requirements, rather than a one-off test at the time the facility is established. Government should periodically assess whether Kumul Cloud Infinity continues to meet the required standards and whether its pricing and service performance remain competitive.

This approach allows government to use its own demand to help establish a strategically important sovereign cloud capability, without closing the market or providing an unconditional advantage to a government-linked provider. Private data centre and cloud providers should remain able to compete for government workloads where they can meet the same security, trusted vendor, performance and pricing requirements. The principle should be that Kumul Cloud Infinity earns its role as an anchor provider through performance and compliance, rather than receiving guaranteed government demand by virtue of its ownership structure.

The private sector should be enabled to build data centers.

Data centres for wider, private sector and public use should be left open to be built by investors who are attracted by the opportunity. There isn't a clear argument to reserve a privileged role for such data centre deployment for any single provider or state-owned enterprise.

Existing operators and new entrants alike should be enabled to establish data centre capacity, since it is the private sector, not government, that will best understand the practical limitations of building and running one in PNG including given the existing challenges with power reliability, land access and connectivity to the domestic backbone.

Government's role here is not to build capacity itself but to enable whoever is best placed to build it by removing barriers and obstacles. That requires being proactive by actively identifying and removing unnecessary regulatory restrictions, licensing friction, land access barriers, or approval delays that would otherwise deter investment.

The case for a dedicated GEO satellite is not clear.

A case for a GEO satellite dedicated for PNG should be assessed once PNG has taken initial steps to address the issues in this recommendation. A dedicated GEO satellite for PNG has been proposed as a response to sovereignty and hosting concerns. Such GEO arrangements may not provide PNG with "its own satellite" but with leased capacity on a satellite that's also commissioned for multiple other purposes. Such capacity is likely to be expensive as well as come with operational and control constraints. Possible use cases that would support considering a dedicated GEO satellite include provision of communications capability for defence, security or emergency services uses whereby provisioning the alternative via existing MEO, GEO or LEO providers might prove to be more expensive over time.

A case to proceed with a dedicated GEO satellite project would have to justify the cost at this stage of PNG's digital development and present a value-for-money and impactful investment case compared to alternative ways to allocate GoPNG resources for supporting digitalisation. The issue is not simply whether a dedicated GEO satellite is affordable, but whether the additional assurance it provides is sufficiently valuable to justify the significant cost relative to the alternatives.

Sub-actions:

1. Establish a national hosting certification framework that links PNG's data classifications to the security, resilience, ownership, control and technical requirements that hosting providers should be expected to meet
2. Certify and periodically reassess hosting providers against those requirements, creating a clear designation of which providers are eligible to host each category of government and sensitive data
3. Review government data and digital systems to identify which workloads require domestic or otherwise sovereign hosting and which can be hosted securely by appropriately certified commercial providers
4. Assess Kumul Cloud Infinity under the same certification framework as other providers, and use it for strategic government workloads where it meets the required security, resilience, performance and value-for-money standards
5. Apply the trusted-vendor and security requirements under Action 5.1 to Kumul Cloud Infinity and any other provider hosting sensitive workloads
6. Require government agencies to make an explicit hosting decision when procuring new digital systems, considering sovereignty, security, access, resilience and the ability to retain control over government data
7. Keep the wider data-centre market open to private investment and competition, removing unnecessary regulatory, licensing, land, power and connectivity barriers to new data-centre capacity
8. Treat a dedicated GEO satellite as a longer-term resilience option, assessing whether a strategic gap remains after existing and planned connectivity and hosting arrangements are operating, rather than committing to the investment in advance

Recommendation 6. Implement delayed telecommunications policy and regulatory reforms

Action 6.1: Adjust the Operator Class License framework to limit future retail-bypass licensing

Action description: NICTA should reform the Operator Class Licence (OCL) framework so that an OCL is available only to entities that provide telecommunications or connectivity services to third-party customers. Entities that hold an OCL solely to consume connectivity for their own use should no longer be eligible to obtain or renew one and should instead purchase connectivity through a licensed retail operator.

Lead	Horizon
NICTA	Horizon 1 → Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	Low	Low	High

The current Operator Class License (OCL) is distorting the wholesale and retail "swim lanes" in PNG's telecommunications market.

The OCL is a class licence, not an individually assessed licence. The OCL is meant to provide a licensing pathway for entities that operate networks or provide telecommunications services within the scope of the class license. In practice, the framework allows organisations that are consuming connectivity for their own purposes to obtain and OCL and purchase wholesale capacity directly. In this way, DataCo is currently able to undercut retailers on price by selling wholesale services to organisations with an OCL licence, such as banks, churches and schools. This presents such end users with a financial incentive to bypass the retailers and buy directly from a wholesaler.

Where NICTA's Individual Network, Application and Content Licences involve a merits-based application process, applicants for an OCL register via a standard form, and that registration is largely self-executing. If an applicant's stated activity falls within the class licence conditions, NICTA has limited scope to decline or scrutinise the registration on eligibility grounds. Critically, the current eligibility conditions do not test whether the applicant provides telecommunications services to third-party customers.

Closing this gap would safeguard the retail operators' market.

The current situation creates a fundamental commercial imbalance where wholesalers are able to bypass the retail layer and compete directly for these customers while simultaneously charging the ISPs that depend on its wholesale network for access to those same customers. In effect, ISPs are being asked to purchase wholesale connectivity from a provider that can then use that same infrastructure to compete against them in the retail market. This places retail operators in the untenable position of competing against their own wholesaler, while carrying the costs of acquiring, servicing and retaining the customer.

Retail operators and ISPs are already under significant financial pressure and seeking profitable ways to build their revenue base. Preventing wholesalers from bypassing the retail market would return more enterprise and institutional demand to the retail layer, where licensed operators and ISPs should be competing for those customers between themselves, and not with wholesalers.

This sits directly alongside the case for refocusing DataCo on its wholesale only mandate under Recommendation 4.

In the case of DataCo, if it continues to supply end users directly under an OCL registration it is, in effect, extending into retail activity. NICTA should first determine how the existing OCL rules can be tightened to restore the distinction between operators that provide services and end users that simply consume connectivity. The OCL eligibility and renewal conditions should therefore make clear that an entity seeking an OCL meets defined criteria demonstrating that it is providing, or intends to provide, telecommunications services within the scope of the licence.

An entity should not be able to obtain or renew an OCL solely for the purpose of purchasing wholesale connectivity directly from a wholesaler for its own internal consumption. This would preserve the legitimate use of the OCL by appropriate operators, including closed user groups and other qualifying network arrangements, while reducing its use as a mechanism for large end users to bypass the retail market. NICTA should also review existing OCL registrations against the revised criteria and establish appropriate arrangements for future applications and renewals. Before implementing the changes, NICTA should obtain legal advice on the extent to which the OCL eligibility and renewal conditions can be tightened within the existing legislative and licensing framework.

Longer term structural reform may also be required.

DataCo's own class licence permits it to operate as both a wholesale and a retail provider, which is the licence-level source of the retail-adjacent activity. Using ownership of PNG's domestic and international network assets to sell directly at the retail level it is meant to supply as a wholesaler is anti-competitive, regardless of whether the current framework gives NICTA an easy way to stop it. Tightening the OCL framework can address the immediate pathway, but it may not resolve the underlying structural question of how wholesale and retail roles should be separated in the longer term.

NICTA should therefore seek separate legal and policy advice on whether the telecommunications licensing framework should be restructured to establish a clearer wholesale-only licence or other structural separation mechanism, particularly in relation to DataCo. The purpose of this longer-term review would be to determine whether the existing framework provides sufficient separation between wholesale infrastructure provision and retail service delivery, or whether a more fundamental licensing change is required.

Sub-actions:

1. Recast the OCL eligibility rules immediately. An OCL should only be issued to entities that provide telecommunications/connectivity services to third-party customers. Entities that obtain connectivity solely for their own use should not be eligible to hold an OCL
2. Require own-use customers to purchase through the retail market
3. Existing OCL holders that are identified as own-use customers should be permitted to retain their existing OCL, connection and pricing until the licence expires. At renewal, the OCL should not be renewed. The customer should instead transition to a retail service provided by a licensed retail operator
4. Existing OCL holders identified as ISPS or providing service to third-party customers, unaffected by the change, and remaining eligible
5. An effective date from which the recast eligibility test applies to new applications and licence renewals only
6. DICT and NICTA should assess, with legal advice, whether a dedicated wholesale-only licence class or other structural reform is required to establish a clearer wholesale/retail demarcation

Action 6.2 Re-farm unused spectrum to support rural expansion and level the playing field

Action description: That NICTA enforce the existing spectrum relinquishment provisions against holdings that sit unused, that the near-final Spectrum Roadmap 2025 to 2030 be published and implemented, and that spectrum access processes be adapted so that all internet service providers can obtain spectrum to serve rural communities.

Lead	Horizon
NICTA	Horizon 1 → Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	Indirect	High	High

NICTA's Draft Spectrum Roadmap sets out the problem for rural expansion and industry balance, and the case for acting before new spectrum is released.

PNG has assigned 447.6 MHz of spectrum assigned across four operators in sub-1GHz bands: 700, 850 and 900 MHz These bands matter most for wide-area coverage, since low-band spectrum travels further and penetrates terrain more effectively than higher bands, making it the natural foundation for extending rural coverage cost-effectively. The current allocation of that low-band spectrum does not track subscriber numbers:

- Telikom serves circa 300,000 subscribers yet holds 46.6 per cent of all sub-1GHz spectrum which is more than any other operator in the market
- Digicel, serving roughly ten times as many subscribers at circa 3,000,000, holds 36.4 per cent of sub-1GHz spectrum, 64.8 MHz, meaning it operates a subscriber base an order of magnitude larger on a smaller share of the band that matters most for coverage
- Vodafone, serving circa 1,200,000 subscribers (which has gone up significantly since the Spectrum Roadmap was drafted), holds only 16.8 per cent of sub-1GHz spectrum and has no assigned spectrum at all in the 850 or 900 MHz range
- Kumul Communications Limited holds 60 MHz which is 13.4 per cent of the country's total assigned spectrum, against a subscriber base described as "miniscule" and a subscribers-per-MHz figure of zero

Use-it-or-lose-it provisions exist, but their pre-expiry enforceability is unclear.

NICTA has told the Blueprint team that it does not currently consider itself able to compel relinquishment of spectrum before the expiry of an existing licence term. This is particularly challenging in relation to Telikom, where NICTA has indicated that its ability to compel relinquishment by a state-owned enterprise is limited and that relinquishment is therefore more likely to occur on a voluntary basis. The issue is consequently both a legal capability question and a question of NICTA's institutional willingness and ability to apply its regulatory powers consistently, including against an SOE.

The immediate priority should be for NICTA to obtain specialist legal advice on precisely what its existing relinquishment and resumption provisions permit it to do. This should be accompanied by building the specialist legal and regulatory capability required to apply those provisions consistently and confidently. The Blueprint should not assume, however, that building this capability will by itself create a power that does not exist in the legislation.

If legal advice confirms that the existing NICT Act does not provide a clear basis for pre-expiry enforcement, GoPNG should pursue a targeted amendment to the spectrum provisions of the NICT Act to provide NICTA with an explicit and enforceable power to recover unused or persistently under-utilised spectrum during the licence term. This should include a provision for NICTA authority to confiscate spectrum before its expiry date if it deems that such spectrum allocation is being underutilised.

Once the legal basis and regulatory capability are established, NICTA should apply the regime consistently across all spectrum holders. No operator or SOE should be effectively exempt from use-it-or-lose-it requirements. Unused or persistently under-utilised spectrum should be capable of being returned to the pool and reallocated to operators that can put it to productive use.

The regulatory framework should not rely solely on confiscation as the mechanism for putting spectrum to productive use.

NICTA should develop more flexible secondary-market mechanisms—including spectrum trading, leasing and sharing—so that spectrum can move to operators that are able and willing to use it more effectively. This could be particularly valuable in the case of Telikom, which holds significant low-band spectrum while facing financial constraints. A transparent mechanism for trading or leasing spectrum could enable those holdings to generate greater economic and connectivity value while potentially providing Telikom with an additional source of value.

Any secondary-market framework would need safeguards to protect competition and the public interest, including appropriate controls on spectrum concentration, coverage obligations, valuation, competition, trusted-vendor considerations and the continued achievement of national connectivity objectives.

Getting these principles right now is also a timing question.

NICTA is preparing to release a substantial new tranche of 5G access spectrum in 2026, comprising 2300 MHz (90 MHz), 2600 MHz (190 MHz) and 3500 MHz (400 MHz), a total of 680 MHz, more than PNG's entire current spectrum assignment across all bands and operators combined. If use-it-or-lose-it enforcement, fair allocation principles and access for a wider set of providers are not established and demonstrated to work in the existing bands before this release, the same pattern of concentrated, underutilised holdings risks being repeated at far greater scale in 5G. Correcting the low-band allocation now is therefore not only a rural coverage measure in its own right, but it is also the proving ground for the principles PNG needs in place before it allocates the next 680 MHz

Sub-actions:

1. Publish the Spectrum Roadmap 2025 to 2030 and make a public announcement over the enforcement that will follow
2. Check the expiry dates and utilisation of all existing spectrum arrangements and determine which holdings can reasonably wait to their expiry before reallocating and arrangements where it is worth pursuing relinquishment before expiry
3. With support of development partners, build the legal capability needed to enforce relinquishment (Refer to Action 6.6 for details)
4. Reallocate relinquished spectrum through the assignment methods set out in the Spectrum Roadmap, beginning with the well-documented 900 + 850 MHz case, once the legal capability and expiry-date register in sub-actions 1 and 2 are in place
5. Publish the utilisation threshold and assessment methodology so enforcement is predictable, applied on the same basis to Telikom as a state-owned enterprise as to every private operator, rather than treated as harder to enforce against because of its ownership
6. Consider also adapted spectrum access processes so all internet service providers, not only the largest operators, can obtain spectrum to serve rural communities

Action 6.3 Reform and redesign the Universal Access and Service (UAS) Fund to accelerate closing rural connectivity gaps

Action description: Restructure the UAS Fund as a technology-neutral, outcomes-focused national digital inclusion and connectivity instrument. Strengthen planning, competitive procurement, governance, quality assurance, infrastructure sharing and long-term service sustainability.

Lead	Horizon
NICTA	Horizon 1→ Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	High	High

The UAS is not currently functioning as designed.

While the underlying concept of the UAS is sound and critical to closing coverage gaps in PNG. However, the programme is poorly executed and has fallen materially short of its intended purpose. The UAS requires substantial restructuring to correct the current challenges in its design and delivery and to ensure it can achieve the outcomes for which it was established.

The primary challenges identified include:

- Site selection is done through desktop research, not on-the-ground assessment, in sites that are typically very remote and hard to reach, and operators are not currently consulted
- At sites which are difficult to maintain infrastructure goes out of service with only 30 of 157 funded towers currently operational

- Contracts appear to go to effectively one operator, since they hold the largest existing rural footprint and are the only realistic bidder for *extending* the footprint
- No towers are shared, despite the programme requiring them to be built on open-access terms
- Technical assurance standards are weak, with no independent verification that a site meets its build specification or remains serviceable
- Funded technology doesn't always suit the site (e.g. a case of VSAT installed within existing 4G coverage)
- The fund was designed around a terrestrial technology environment, legacy satellite, and a build-then-walk-away funding model and designed around access, not including backhaul
- These are typically very rural sites with no commercial incentive to keep serving them, so the fund undermines its own objective once the support period ends
- UAS driven procurement can stipulate solutions which are not appropriate for a location (e.g. stipulating a VSAT solution where a local 4G network is available at lower cost)
- Operators have noted that UAS requires an element of up-front capital investment that's then reimbursed ex post, disincentivising the operator from undertaking the investment

The fund has an opportunity to modernise and make best use of newly available technology.

The fund was built around a terrestrial technology environment with legacy satellite and a build-then-walk-away funding model. That model no longer reflects the technology available or how a site gets connected. A connected site can be broken down into the physical infrastructure, the transmission carrying traffic to and from it, and the access layer serving end users, and the fund currently treats all three as one bundled project. Modernising the fund means unbundling it as much as it means adopting new technology. For example:

- Monopoles offer a faster, significantly cheaper physical build than a full tower where terrain and demand allow it even though these might have to be single operator by design
- LEO Satellite offers a way to bring connectivity, or transmission, to sites where no terrestrial build was going to be commercially justified
- Funding transmission and infrastructure as their own eligible categories, not just access, means the fund can support the layer that determines how a site is connected, rather than only ever paying for the last mile on top of infrastructure.

A modernised fund that can direct money toward whichever technology fits a given site, and toward whichever layer, access, transmission or infrastructure, needs the investment, becomes a credible instrument for the rural access gap.

Site selection should move from desktop analysis to a formal planning framework industry and communities contribute to.

The UAS team should establish a formal Planning and Investment Framework combining the UAS Access Gap Model that already exists, existing and planned operator rollout, infrastructure-sharing opportunities, government and public-service priorities and evidence of demand. Operators should have a formal role in assessing candidate locations because they hold practical knowledge of access roads, terrain, power, backhaul and maintenance conditions that a desktop exercise cannot replicate.

Technology neutrality means LEO Satellite becomes eligible.

Eligible solutions should include 4G, fibre, microwave, fixed wireless, LEO and other satellite technologies, community LEO Satellite, shared connectivity facilities, monopoles, with the appropriate technology

determined by total cost of ownership, geographic conditions, expected demand, required service quality, resilience, energy requirements, deployment time, maintainability, scalability, infrastructure-sharing potential and long-term sustainability. LEO's emergence creates the possibility of hybrid terrestrial-satellite connectivity rather than a binary choice between the two, and the Fund's job is to find the best combination for each site, not to substitute one default technology (the tower) for another (the satellite terminal).

Procurement needs to be reconsidered to ensure that it is competitive and outcome based.

Funding rounds should be open to qualified MNOs, fixed and wireless operators, retail and wholesale operators, ISPs, infrastructure providers, satellite providers and partners, community connectivity providers and other capable delivery organisations, with bidders free to propose the most efficient technical solution rather than being told in advance what to build. The UAS team should be able to use open competitive tendering, pre-qualified supplier panels, framework agreements, competitive site-specific bids or public-private partnerships depending on the project.

Where an operator has already expressed a commercial intention to build in an area, the Fund should use a competitive subsidy mechanism, under which operators compete for the minimum public funding required to deliver an agreed outcome, so UAS funding complements commercial investment rather than duplicating it.

Build-and-walk-away funding resulted in many failed sites.

The sustainability of a rural site depends not only on whether infrastructure is constructed but on whether the service remains available over time, and the current model's practical effect, support ending once the asset is built, is reflected directly in the low level of continuing operation among previously funded sites. The reformed model should provide multi-year operating support, potentially over five years, released progressively against independently verified performance against availability, coverage, service quality, reliability, maintenance, infrastructure condition, energy availability and compliance with sharing obligations. This shifts the Fund from paying for assets delivered to paying for connectivity outcomes sustained.

Every funded project needs enforceable technical standards and independent verification at each stage.

Standards should cover infrastructure design and construction, equipment, power systems, transmission capacity, access technology, availability, service quality, interoperability, sharing, cybersecurity, maintenance, resilience and end-of-support arrangements. Independent technical verification should occur:

- Pre-deployment, to confirm the proposed solution and site are appropriate
- At construction and commissioning, to confirm the funded asset meets specification
- At service commencement, to confirm the service is available
- On an ongoing basis, to confirm the service remains operational and compliant

UAS-funded infrastructure should be treated as a shared national asset, with enforceable open-access conditions, not an operator-specific one.

Where terrestrial tower infrastructure is funded through UAS, sharing and open-access conditions should be mandatory. This should only apply to greenfield mobile tower builds (e.g. 40-60 metre towers) where infrastructure sharing is technically capable. Where monopoles or lighter builds are better for the site, this sharing-expectation should not apply. Where shared towers are technically feasible NICTA should set out published sharing arrangements, compliance monitoring and consequences for non-compliance. This is the same sharing principle set out in Action 4.8, applied specifically to publicly funded infrastructure, where the case for enforcement is strongest since the asset was built with public money precisely to serve more than one operator.

Meaningful connectivity requires funding the demand side too, not just the supply side.

Network availability does not automatically create meaningful connectivity. Instead, affordability, device access, power reliability, digital literacy and institutional capability remain barriers even where technical coverage exists. UAS should be able to fund connectivity vouchers or tokens, device affordability programmes, terminal subsidies, shared community access, digital access centres, community LEO Satellite, rural Small and Medium-sized Enterprises (SME) digital support, digital literacy programmes and targeted support for schools, health centres and public institutions.

Levy and investment principles should be published, so operators and the public can see how funds are used.

The principles governing how UAS levies are determined and funds allocated should be built around equity, affordability, transparency, accountability, value for money, technology neutrality, competitive neutrality, sustainability and measurable public benefit, with regular publication of funds collected, funds committed, funds disbursed, projects completed, operational performance, outcomes achieved and remaining access and adoption gaps.

The reform should be a phased one to set up a sustainable funding mechanism.

We propose the following sequencing be considered:

- Phase 1 (six months): NICTA, as the host agency, to announce the reform of the UAS to industry. Concentrate efforts on establishing the framework for the reformed UAS Fund which will include redefining UAS objectives, standing up governance and Secretariat arrangements, defining technology-neutral technical and service standards, developing the new procurement framework, and identifying priority institutional and community connectivity pilots.
- Phase 2 (six to nine months following Phase 1): launch the reformed fund and introduce competitive, outcomes-based funding. This will include separating infrastructure, transmission and access funding, introducing technology-neutral competitive procurement, enabling LEO and other emerging technologies, introducing multi-year service-based funding, strengthening sharing requirements, and commencing independent technical verification.
- Phase 3 (overlap with Phase 2, extend beyond): should consider how to expand demand-side and public-interest programmes once the supply-side framework is established. This will include considering connectivity vouchers, device and terminal support, community connectivity, digital literacy, institutional connectivity, and resilience and emergency communications.

Governance also needs to be rebuilt alongside the technology model.

Many of the fund's operational failures point to a governance gap as much as a technology one. At a minimum, governance reform of the UAS should consider:

- **A renewed oversight board or Steering Committee:** Telecommunications engineering, procurement, rural infrastructure delivery, and financial oversight rather than administered solely as an internal NICTA programme function. Consider appointing industry reps onto the oversight board.
- **Independent technical verification**: A study of ongoing serviceability, addressing the core finding that only 30 of 157 funded towers remain operational
- **Enforced open-access and infrastructure-sharing conditions**, with compliance monitoring and consequences for non-compliance
- **Competitive, transparent procurement** as the default, replacing the pattern where contracts have gone to effectively one operator by default. NICTA's 2027 Programme signals a shift and lays out options

including open competitive tendering, pre-qualified supplier panels, framework agreements, and public-private partnerships

- **Transparent, published levy determination principles**: Equity, affordability, accountability, and value for money so operators funding the pool through levies can see the basis on which funds are raised and spent, consistent with the principles NICTA has proposed for the 2027 UAS Levy.

The UAS Secretariat needs to be resourced as an effective delivery organisation.

Its mandate should extend beyond administering infrastructure projects to planning, implementing, monitoring and reporting on both supply-side programmes and demand-side programmes. Secretariat will need capability in programme and portfolio management, procurement, technical assessment, contract management, data and analytics, monitoring and evaluation, financial management, community engagement, technology assessment and partnership management. A broader, more complex portfolio than a traditional tower subsidy programme needs a Secretariat capable of running one, which is why technical assistance will be needed in accordance with Action 6.6.

The 2027 UAS Programme should not be finalised ahead of this Recommendation.

Proceeding with the programme in its current form risks committing PGK344 million (USD78 million) of levy funding to an approach that this Blueprint finds flawed and appears to repeat the mistakes of the past as described above.

NICTA's 2027 UAS Programme, currently out for consultation, proposes 322 new mobile broadband sites. That is a significant public investment, yet the programme is priced on a capex-only basis, with no identified operating expenditure, and the sites have been centrally specified rather than identified and competitively tested through the operators that will be responsible for delivering and operating them.

The current approach risks repeating the central challenge of the existing UAS which is funding infrastructure without a credible plan for what happens after construction. A tower that does not have reliable power, backhaul, maintenance and ongoing operating funding is not a connectivity solution. It is a capital asset that may rapidly become underutilised, unreliable or unusable. Committing PGK344 million on a capex-only basis, without first demonstrating a sustainable operating model, therefore creates a real risk that a substantial portion of this investment will be wasted.

The programme also appears to lock in a conventional tower-based solution without adequately considering whether emerging technologies could deliver the required connectivity more efficiently. LEO satellite connectivity and other rapidly developing technologies should be part of the assessment of how underserved communities are connected, particularly in remote locations where the cost of constructing and maintaining terrestrial infrastructure can be prohibitive.

The fund needs to be reconstituted before further capital is committed.

We recommend that NICTA pause the 2027 UAS Programme until further notice and instead focus its efforts on establishing a UAS framework that reflects the expectations and practical requirements identified by industry submissions, while incorporating the principles and reforms set out in this Blueprint.

Once the fund has been reconstituted, future capital commitments should be made through a process that is operator-led, competitively tested, technology-neutral and based on whole-of-life costs, with clear consideration of existing and planned infrastructure, operating sustainability and alternative technologies such as LEO. This would give NICTA a much stronger basis for demonstrating that levy funding is being directed to the locations and solutions where it will have the greatest and most sustainable impact.

Sub-actions:

1. NICTA should pause finalisation of the 2027 UAS project list. NICTA should make no further capital commitments under the current model until the UAS has been reviewed and reconstituted. NICTA should not commit new capital without first understanding what has and has not worked with the capital it has already deployed. This should include an independent assessment of existing UAS-funded sites, covering whether they were appropriately designed and located, delivered to specification, are operational, remain available and reliable, and are being used
2. NICTA and DICT should undertake a thorough, evidence-based review of the UAS strategy, mandate, funding model, project selection methodology, technology approach, procurement arrangements, technical standards, operating model, governance and consultation process
3. NICTA should strengthen the UAS Board and Secretariat with appropriately qualified people in areas including risk, audit and governance, establishing clear accountability for investment decisions and programme delivery, and ensuring the Secretariat has the technical, commercial and programme-management capacity to oversee the fund effectively. The Board should be chaired by an independent and experienced professional who can devote the time and attention UAS will demand especially in the early years of reform

Action 6.4: Mandate Mobile Termination Rate actions

Action description: Ensure the Mobile Termination Rate glide path finalised and enforced, so that wholesale charges for calls between mobile networks fall to efficient cost levels on a predictable schedule, reducing off-net calling costs and supporting more competitive retail pricing.

Lead	Horizon
NICTA	Horizon 1

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	High	High	High

Mobile termination rates (MTRs) are the fees charged by mobile operators to connect a phone call originating from a different network.

The current MTAS price in PNG is understood to be approximately PNG 7 toea per minute. Benchmark markets have progressively reduced rates to below USc1 per minute or adopted bill-and-keep models. High termination charges in PNG inflate off-net call costs, limit consumer flexibility and force on-net call patterns. NICTA's bottom-up cost model calculates the efficient cost of the MTAS at PNG 1.58 toea per minute in 2025, declining to PNG 1.48 in 2026, PNG 1.40 in 2027, and PNG 1.35 by 2028 (see Figure 34). The MTR glide path should therefore establish a clear schedule for moving termination rates towards these efficient cost levels, with each step-down rate and effective date communicated to all operators in advance.

MTR reform does not require operators to build new infrastructure or significant system upgrades.

Operators already have interconnect billing systems that charge each other per minute for terminating calls. Therefore, implementing the glide path means updating the rate in existing interconnect agreements and billing configurations on the scheduled step-down dates. NICTA should monitor compliance and take enforcement action where operators do not apply the mandated rates.

The MTR reform should also be implemented alongside NICTA's existing approach to on-net and off-net pricing.

Retail prices should not allow operators to maintain a large difference between on-net and off-net calls that effectively discourages customers from calling other networks. NICTA's Retail Service Determination No. 1 of 2024 found that differences between Digicel's on-net and off-net pricing could have anti-competitive effects. Applying this principle consistently across all licensed operators will help ensure that lower wholesale termination rates translate into lower off-net calling costs and greater consumer choice. The MTR glide path is expected to be released in September 2026. NICTA believes implementation should be straightforward, so it can proceed and land within Horizon 1.

Sub-actions:

1. Publish the MTR glide path, setting out the specific rate for each step-down and the date each rate takes effect
2. Communicate the glide path and implementation requirements to all licensed mobile operators
3. Enforce the first step of the glide path from a fixed date, with NICTA monitoring operator compliance
4. Monitor subsequent step-downs and enforce compliance with the full glide path
5. Enforce Retail Service Determination No. 1 of 2024 on on-net/off-net price discrimination equally across all operators from this point forward.

Action 6.5: Support local caching and restore the Neutral Internet Exchange Point

Action description: Strengthen PNG's domestic internet infrastructure by supporting greater deployment and use of local caching and restore the PNG Internet Exchange Point (PNG-IXP) as a neutral, independent and functioning national peering platform.

Lead	Horizon
NICTA and DICT, working with the PNGIXP Association and industry	Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	High	Indirect	High

Caching offers opportunity for PNG's internet experience to be cheaper and better.

Most of what people in Papua New Guinea watch, read and share online is stored overseas and delivered to PNG using international capacity. Caching solves part of this problem by storing frequently accessed international content, popular websites, applications and streaming services, on servers inside PNG. Once a cache is in place, a new request for that content is provided locally rather than from overseas. The global content and content-delivery providers supply this equipment and content to the host country at no charge. It is in their own commercial interest for their services to load quickly wherever they're accessed, and they see no benefit from the dilution of experience through expensive and circuitous routing of data globally for every need.

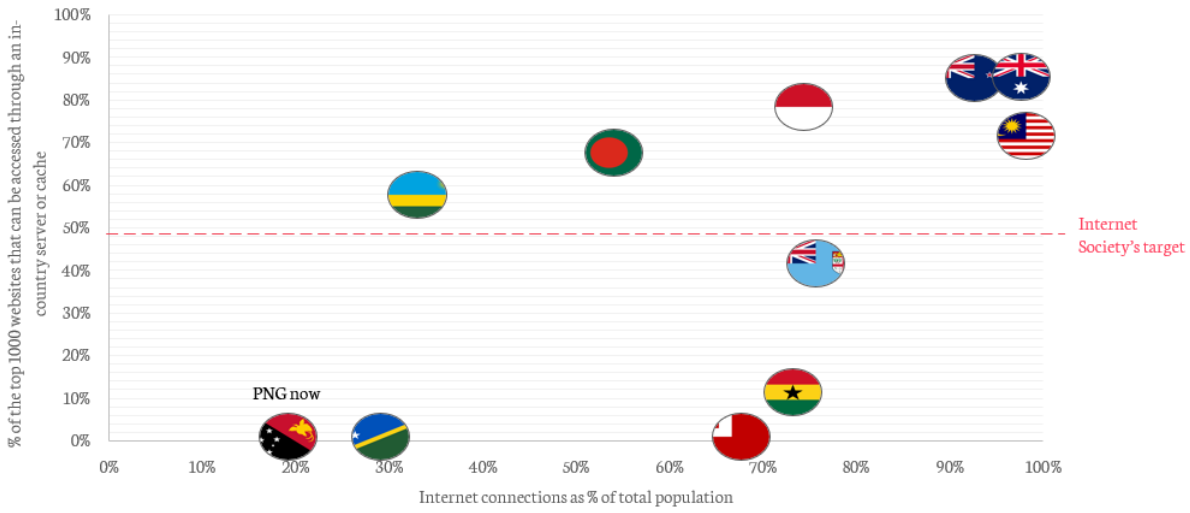
Caching handles a substantial volume of PNG's traffic, but on limited local caching infrastructure.

Around 70 per cent of PNG's internet traffic is currently delivered through caching, meaning that frequently accessed content is stored closer to users rather than retrieved from the original website each time. However, only around 2 per cent of PNG's 1,000 most-visited websites are currently cached within PNG itself. The two figures measure different things: 70 per cent refers to the share of traffic that is cached somewhere in the network, while 2 per cent refers to the share of popular websites that can be served from caching infrastructure physically located in PNG. This means that much of the traffic that PNG users' access through caching is being served from cache infrastructure located overseas.

As a result, operators still have to pay to carry that traffic over international connectivity. The absence of local caching capability is a direct cost burden on operators as every website that can't be served locally pushes that traffic back onto expensive international transit instead.

Compounding this, some operators report being charged to feed the cache, despite the underlying content being supplied to the wholesaler free of charge by the content and Content Delivery Network (CDN) providers in the first place. This is a charge on content that costs nothing to obtain. Such charges need to be removed, alongside a build-out of local caching capability.

Figure 44: Local website caching capability relative to internet penetration, by country



Source: Internet Society Pulse country report for PNG NICTA, APNIC blog, Peering DB, PNG consultations, Long Street Advisors analysis
Note: Internet connections as a percentage of total population, dual SIM use not accounted for

PNG's Neutral Internet Exchange Point is not functioning effectively.

An IXP is the standard response to the caching challenge. An IXP is a shared connection point where networks link directly to one another so that domestic traffic stays domestic. Papua New Guinea established a Neutral Internet Exchange Point (PNG-IXP) in 2017. PNG's Neutral Internet Exchange Point is not doing the job it was set up to do. Its ownership and function are unclear, the association intended to govern it has not operated as a functioning member body, and operators report that they route little domestic traffic through it. The practical consequence is that operators continue to pay international rates to move traffic between networks that may sit a few kilometres apart.

NICTA houses the exchange physically but has no operational oversight over how it is run.

Without a functioning member-based governance structure and clear operating arrangements, operators have limited visibility over how the exchange is managed and limited confidence that it provides the neutral environment they need. There is an industry perception that NICTA, as the host, is involved in managing a functioning neutral exchange and NICTA should take responsibility for re-establishing it. The exchange should be operated by an entity with no commercial interest in the traffic passing across it. Operators and ISPs should have clear membership rights, transparent rules, published operating arrangements and confidence that no participant can use the exchange to gain a competitive advantage.

The lack of a Neutral Internet Exchange Point disadvantages smaller ISPs.

Larger operators can often work around the problem. Where traffic volumes are high enough, major operators can establish private peering arrangements and deploy their own caching infrastructure. Major content and CDN providers such as Meta and Netflix may provide caching infrastructure to operators where traffic volumes are sufficient to justify deployment. A commonly cited threshold in industry consultations is around 5 Gbps of sustained traffic. Smaller ISPs do not have this option and without a functioning shared exchange, the alternative is to continue paying international transit costs to exchange traffic that could have stayed within PNG. This makes the IXP an important competition issue, not simply an infrastructure issue. A neutral exchange gives smaller operators access to the same peering opportunity as larger players without requiring each operator to recreate the same infrastructure independently.

International evidence on what a working exchange is worth reinforces the case.

Global research conducted in 2026 on internet exchange point economics finds that peering through an exchange is dramatically cheaper than international transit. The same research finds that greater cost savings from peering are associated with lower broadband prices, expanded mobile network coverage and increased telecommunications revenue, and that these effects are most pronounced in exactly the kind of market PNG represents: a low or lower-middle-income economy with a moderately, rather than fully, liberalised telecommunications sector.

Sub-actions:

1. Direct wholesalers to remove charges for access to cached international content, given that the content and equipment used to deliver it are supplied to the wholesale and CDN providers at no cost
2. Review the legal, governance and operational arrangements under which the PNG Neutral Internet Exchange was established, including its ownership, the role of the Neutral Internet Exchange Association, membership arrangements, NICTA's role as host, technical operations, funding and cost recovery
3. Reconstitute the Neutral Internet Exchange Association as an independent, non-profit, member-based entity, following governance models used by established neutral IXPs such as KIXP in Kenya, LINX in the United Kingdom, and other global exchanges
4. Open membership to eligible licensed operators, ISPs, content networks, and other qualifying participants on equal and transparent terms, with published access rules, transparent cost-recovery pricing, and support for settlement-free peering between members where commercially agreed
5. Retain the exchange as hosted at NICTA, consistent with IGF guidance that host neutrality is what matters but communicate NICTA's role is physical host and not IXP operator
6. Put day-to-day technical operation of the exchange in the hands of a neutral operator so no one with a commercial stake in the traffic can control how the exchange runs
7. Establish transparent and cost-based operating arrangements. The exchange should operate on a clear cost-recovery basis, with pricing and any applicable connection or port charges published and applied consistently to members.

Action 6.6: Strengthen NICTA's capability and industry engagement as a modern, data driven regulator

Action description: NICTA's effectiveness will be strengthened through targeted funding and technical assistance. Much of this Blueprint depends on NICTA's capacity to finalise, enforce and monitor what it recommends, and to ready itself to regulate an increasingly complex and fast-evolving telecommunications landscape.

Lead	Horizon
GoPNG and development partners with NICTA and DICT	Horizon 1 → Horizon 2

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
High	High	High	High

NICTA should build the capability and independence to use the powers it already has.

The regulator has undergone a substantive institutional refresh during 2025-2026. This put in place a new foundation from which to build NICTA's future required capability. The next priority is to ensure NICTA has the capability and resources to use the powers it has and carry the reform agenda through in practice. Based on consultations with NICTA, we have identified eight areas where targeted support and funding could strengthen

this capability. These priorities should be further tested and refined with NICTA to determine the areas of most immediate need and establish a practical sequence for reform.

1. Build out the legal capability

NICTA should establish or strengthen a dedicated telecommunications legal function capable of and bold enough to support:

- Enforcement proceedings
- Spectrum reform and relinquishment
- Reform of the Operator Class Licence
- Near-term and longer-term options to address problematic wholesale-retail activities
- UAS contracting and procurement
- Licensing reform
- Interpretation and application of NICTA's existing statutory powers

This capability should allow NICTA to move from identifying regulatory problems to determining quickly what action is legally available and, where necessary, preparing the legal basis for reform. It is important that this capability can be applied equally, and on a non-discriminatory basis, to both private and state operators.

2. **Strengthen enforcement capability and use the powers NICTA already has**

The NICT Act gives NICTA significant regulatory and information-gathering powers. NICTA should receive support to establish the processes and specialist capability needed to:

- Identify and specify non-compliance
- Use Section 246 and other available powers to obtain information required for industry consultations and regulatory reviews
- Investigate breaches
- Issue appropriate regulatory directions or penalties
- Escalate serious matters where necessary
- Track enforcement outcomes

3. **Build the data base needed for evidence-based regulation**

NICTA should use its existing information-gathering powers more systematically and should not rely solely on information that operators choose to provide voluntarily where that information is incomplete, inconsistent or insufficient.

The **NICTA Integrated Database (NIDB)** provides an important foundation for this. NICTA should build on it as the central source of regulatory information across:

- Pricing
- Market structure
- Spectrum
- Network coverage
- Quality of service
- Licensing
- UAS projects
- Other sector indicators

The objective should be to establish a single trusted regulatory fact base from which NICTA can conduct market analysis, monitor compliance and measure progress against the Blueprint.

4. **Build the monitoring systems required to enforce the rules**

Priority investment should include:

- Network quality-of-service monitoring
- Spectrum monitoring
- Pricing and market monitoring
- UAS project and service-performance monitoring
- Cybersecurity and incident monitoring capability

5. **Strengthen UAS delivery capability**

The UAS reforms proposed in this Blueprint substantially increase the demands on NICTA.
A reformed UAS Fund will require stronger capability in:

- Project management
- Procurement
- Technical assessment
- Contract management
- Independent quality assurance
- Service-performance monitoring
- Financial oversight
- Programme evaluation

NICTA should therefore establish dedicated UAS programme management and quality assurance capability rather than relying on general regulatory resources to manage an expanding investment portfolio. This is particularly important because the proposed UAS reforms move beyond construction funding towards multi-year service delivery, technology-neutral procurement and independent verification.

6. **Strengthen economic and regulatory analysis**

A number of the Blueprint's most important reforms depend on NICTA being able to independently understand the economics of the telecommunications market.
NICTA should strengthen its capability in:

- Wholesale cost modelling
- Pricing analysis
- Market definition and competition analysis
- Assessment of operator costs
- Infrastructure economics
- Affordability analysis
- Regulatory impact assessment

This capability is particularly important for the Blueprint's proposed reforms to wholesale pricing, mobile termination, DataCo, spectrum and infrastructure sharing. NICTA should be able to test industry claims against its own evidence and models rather than relying primarily on information or analysis provided by individual market participants.

7. **Strengthen digital transformation and emerging technology capability**

The telecommunications sector is changing faster than traditional regulatory structures, and NICTA's role may expand beyond traditional telecommunications regulation. NICTA should strengthen its Digital Transformation capability to support regulation and oversight of:

- LEO Satellite connectivity;
- Hybrid terrestrial-satellite networks
- AI-enabled networks

- Cybersecurity
- Data governance

In particular, if NICTA takes on the proposed broader responsibilities for cybersecurity and data governance, it will require additional specialist staffing and capability to perform those functions effectively. This should be treated as a specific resourcing requirement rather than assuming that existing staff can absorb the additional responsibilities. There should be dedicated capability development for cybersecurity and data governance if these functions are formally assigned to NICTA.

8. Establish a structured industry engagement and communications function

NICTA also needs stronger capability to engage consistently with industry and communicate its decisions. A structured engagement programme should include:

- A published consultation calendar
- Transparent publication of regulatory decisions
- A communications plan covering regulatory instruments already in force and new reforms as they are introduced

NICTA should also strengthen its public communications and media capability so that it can clearly explain regulatory decisions, enforcement action and market outcomes. This is particularly important as the Blueprint introduces reforms that will affect operators differently and may require significant consultation and implementation.

NICTA should be able to make regulatory decisions without unnecessary delay.

The effectiveness of the regulatory framework is weakened if decisions that fall within NICTA's statutory functions can remain unresolved while awaiting Ministerial action. This is particularly problematic in a fast-moving sector, where regulatory delays can affect investment decisions, market entry, competition and the introduction of new technologies.

The National ICT Act 2009 already provides a mechanism to prevent indefinite delay where Ministerial consideration is required. For wholesale service declarations, section 130 provides that where NICTA recommends that a wholesale service be declared, renewed, varied or revoked, the Minister has 60 days to make a decision. If no decision is made within that period, the recommendation is deemed to have been accepted. A similar mechanism applies to retail service determinations under section 160, where the Minister has 60 days to accept or reject NICTA's recommendation and the recommendation is deemed accepted if no decision is made within that period.

Accordingly, where the statutory 60-day period has expired without a Ministerial decision, NICTA should proceed on the basis provided by the Act and implement the deemed-acceptance mechanism rather than allowing the matter to remain unresolved. This would preserve the Minister's statutory oversight while ensuring that the absence of a decision does not indefinitely prevent NICTA from carrying out its regulatory responsibilities.

As part of any future review of the National ICT Act 2009, the GoPNG should consider whether the current 60-day period remains appropriate for a rapidly evolving telecommunications market. If the policy objective is to provide faster regulatory certainty, consideration could be given to reducing the period, while retaining appropriate safeguards for matters requiring Ministerial consideration. The objective should be to maintain appropriate Ministerial oversight while ensuring that regulatory decisions cannot be delayed indefinitely by administrative inaction.

Sub-actions:

1. Confirm the regulatory capabilities that NICTA needs to strengthen immediately and concentrate resources on these first. The initial priorities should be legal and enforcement capability, regulatory data and information gathering, independent economic and pricing analysis and regulatory monitoring and compliance
2. Development partners should provide targeted technical assistance, legal expertise and institutional support to help NICTA interpret and use its existing statutory powers, pursue enforcement matters and obtain information
3. Use partnerships with regulators and development partners to build practical expertise in areas such as wholesale pricing and cost modelling, competition analysis, spectrum management, infrastructure sharing, quality-of-service monitoring and UAS procurement and contract management
4. Build the NICTA Integrated Database into the core evidence base for regulation and use NICTA's information-gathering powers to populate it
5. Attract funding for monitoring systems needed to cover quality of service, spectrum use and cybersecurity where relevant to NICTA's responsibilities
6. Create dedicated UAS delivery capability within NICTA which covers procurement, technical assessment, contract management, independent quality assurance, service-performance monitoring, financial oversight and programme evaluation
7. Integrate specialist staff with knowledge in emerging technologies including LEO networks, AI-enabled networks, cybersecurity, data governance
8. Establish a more structured approach to industry engagement and regulatory communication, including a published consultation programme, clearer regulatory guidance, timely publication of decisions and stronger communication of enforcement actions and market outcomes

Action 6.7: Mandate Mobile Number Portability (MNP) reforms

Action description: Implement Mobile Number Portability so customers can retain their mobile number when switching operators, reducing barriers to switching and strengthening competitive pressure across PNG's mobile market.

Lead	Horizon
NICTA	Horizon 2 → Horizon 3

Impact analysis:

Coverage	Affordability	Adoption	Industry sustainability
Low	High	High	High

MNP has been endorsed by the Minister of ICT, and the next step is industry implementation.

MNP enables subscribers to retain their mobile number when switching from one network operator to another, removing a barrier to switching and, in turn, sharpening competitive pressure. MNP is relevant for individuals

who value the identity and recognisability of their phone number when contacting others. It is not relevant for "over the top" services, such as generating WhatsApp calls or messages. MNP is likely to impact operators negatively if they have loyal customers who value their number, as MNP will free them up to move operator.

Out of the current three mobile operators in PNG, Telikom is the likely largest loser from MNP. Telikom's subscriber base of approximately ~300,000 likely includes a significant number of loyal customers attached to their existing mobile number. MNP would remove this switching barrier, making it easier for these customers to move to competing operators.

NICTA's Mobile Number Portability Inquiry and Recommendations Report, published July 2025, sets out both the case for MNP and a bottom-up cost estimate for what building it requires. Two categories of cost are involved.

- **The first is operator readiness:** Each mobile network operator will need to build or upgrade the systems needed to route calls and texts. NICTA's cost model, based on operator interviews and benchmark data from other MNP implementations, puts the combined readiness cost across PNG's three MNOs at USD9.1 to 11.1 million (PGK39.8 to 48.5 million). Averaged across three operators, that is roughly USD3 to 3.7 million (PGK13.1 to 16.2 million) each, though the actual split will depend on how modern or fragmented each operator's existing systems already are. An operator running older or more bespoke billing and CRM platforms should expect to sit toward the higher end.
- **The second cost category is the porting house itself**, more precisely the Number Portability Clearinghouse (NPC), the independent central database that every operator's network queries in real time to find out which carrier a given number currently sits on. This has to be run by a neutral third party rather than by any one MNO. NICTA's report models a cloud-based NPC, rather than a traditional in-country system, as the recommended approach for PNG, at an estimated USD100,000–200,000 (PGK437,000-874,000) to set up and USD200,000–300,000 (PGK0.87-1.3 million) a year to run, or USD1.1–1.7 million (PGK4.8-7.4 million) over five years.

NICTA's modelling puts the total cost of setting up and running MNP in PNG over five years at USD13.9 to 17.1 million (PGK60.7 to 74.7 million). However, NICTA also provides evidence that PNG is well-placed to capture the benefits of Mobile Number Portability. Applying a conservative 20 per cent to 30 per cent value enhancement to the PNG mobile market over a five-year period following launch, NICTA estimates MNP could generate consumer benefits, driven by increased competition and lower prices, of between USD80 million (PGK349.6 million) and USD150 million (PGK655.5 million).

MNP will require a dedicated implementation process.

While MNP has been endorsed by the Minister, NICTA has indicated that full implementation will take 2–3 years. The next step is to establish a technical working group, chaired by NICTA, to agree a common implementation roadmap and go-live date. The porting house at the centre of MNP is expected to cost USD1.1-1.7 million (PGK4.8-7.4 million) over five years with funding and technical specifications to be decided. Capital constrained mobile operators are likely to struggle with financing a systems investment in the magnitude of USD3-4 million (PGK13-17.5 million). If any player cannot fund the needed upgrades or decides to prioritise that capital expenditure on other priorities, the national MNP timeline will slip.

Consumer protection in PNG requires that customers are treated equally regardless of which network they call.

MNP will remove the barrier created by customers needing to change their existing number when switching operators. This will increase customers' ability to respond to differences in price and service quality and sharpen competitive pressure between operators. NICTA's existing Retail Service Determination No. 1 of 2024 provides a basis for ensuring that on-net and off-net pricing does not undermine these benefits. The principle should be applied consistently across all licensed operators ahead of, and following, MNP implementation.

Sub-actions:

1. Announce to industry the final MNP determination and the requirements for implementation
2. Convene the Technical Working Group, chaired by NICTA, to agree a common implementation roadmap and go-live date, and to resolve the funding model for each operator's readiness build and the porting house
3. Require each MNO to complete its operator-readiness activities against an agreed implementation timetable
4. Conduct end-to-end testing across all operators and the NPC before establishing a national MNP go-live date
5. Launch MNP nationally and monitor implementation, customer uptake and any operational issues during the initial rollout
6. Agree the technical specifications and procurement approach for the Number Portability Clearing house

Chapter 4.

Sequencing and dependencies

Chapter overview

This Chapter sets out the logic behind the sequencing of the Blueprint's Recommendations and Actions, including which Actions need to be prioritised, which depend on earlier decisions or reforms, and where multiple Actions can progress in parallel. It provides a clear pathway from the immediate decisions and announcements in Horizon 1 through to implementation and scale in Horizons 2 and 3, highlighting the key dependencies that need to be managed to maintain momentum and deliver the Blueprint's outcomes.

Sequencing follows three stages of implementation:

- **Horizon 1: October 2026 to end of 2026:** make the key decisions and announcements, give clear direction and mobilise the programmes to start immediately
- **Horizon 2: 2027 to end of 2028:** put the regulatory, legal, institutional and investment foundations in place
- **Horizon 3: 2029 to end of 2031:** move from establishing frameworks to large-scale infrastructure investment, service delivery and market development.

A number of Actions begin in one stage and continue into the next. Others proceed in parallel because they do not depend on each other. The sequencing is therefore not intended to create a rigid sequence of 22 separate steps. Rather, it identifies the critical dependencies and ensures that Actions that can move now are not held back unnecessarily.

As much as possible, all major Government policy decisions required to implement the Blueprint should be made by the end of 2026. This is important both to create momentum behind the reform programme and to provide certainty to industry ahead of the 2027 election year. The objective is that, by the end of 2026, Government has made the key decisions, set the direction and mobilised the programmes needed to carry the reforms forward.

Horizon 1

1. Horizon 1: Immediate actions – October 2026 to end of 2026

These are the actions that should proceed as soon as the Blueprint is adopted at the PNG-Australia Ministerial Forum in October 2026. Many of these actions involve announcements to be made at the Ministerial Forum to demonstrate GoPNG's strategic commitment to the Blueprint and its connection to national development including Reset@50. Actions should then be started on immediately to maximise the benefits.

- **Action 1.1** Finalise the PDCI SPV to provide services on a non-discriminatory, cost-recovery terms. The commercial and governance structure should be fully agreed and the SPV formally established within Horizon 1. The GoPNG should be able to announce the principles of the SPV
- **Action 1.3** Announce that CSC prices fall immediately in line with the Blueprint's guidance. Expedite the process of establishing the efficient cost-recovery price using NICTA's powers to obtain DataCo's actual operating and maintenance cost information, with the aim of seeing prices move downwards before the end of 2026 and inform MNOs and ISPs of the expectation that retail prices will fall to reflect international cable pricing reductions
- **Action 3.1** Announce the intention to establish a LEO Community Wi-Fi programme to extend affordable internet access to underserved ward. Commence a pilot through existing Government and development-partner mechanisms. The pilot should test the deployment, community use and sustainability model and provide evidence to inform the design of the larger programme

- **Action 4.1** Instruct DataCo to focus on its mandate as a wholesale-only provider and restate this clearly at the Ministerial Forum
- **Action 4.2** Announce that the wholesale market is open to all current and future licensees, and that they will be enabled and encouraged to build out the domestic backbone and that the NTN definition is to be updated
- **Action 4.3** Announce that PPL infrastructure will be opened to the private sector as a platform for domestic network investment; NICTA and the National Energy Authority begin work immediately on the facilities access regime
- **Action 4.4.** Announce the "dig once" policy for national infrastructure building through Connect PNG
- **Action 4.7** Commission the independent review of Telikom
- **Action 4.8** Announce the 2026 progress made by MNOs towards tower sharing and Government's intention to accelerate and coordinate these efforts
- **Action 5.1.** Announce PNG's intent to implement trusted vendor principles for critical telecommunications procurement; begin work to operationalise the trusted vendor regime
- **Action 5.2.** Seek to pass the Cybersecurity and Data Governance Bills
- **Action 6.1.** Announce that the Operator Class License will be reformed to correct the wholesale/retail demarcation
- **Action 6.2.** Announce the intention to actively manage and enforce spectrum relinquishment and begin a priority review of unused and under-utilised spectrum
- **Action 6.3.** Announce the intention to reform the UAS in line with the principles laid out in the Blueprint
- **Action 6.4.** Announce MTR reform and the glide path that will bring call termination charges down
- **Action 6.6.** Announce the technical assistance package for NICTA and move quickly to put support in place to strengthen its legal, economic, technical, data and enforcement capabilities

Additionally, we recommend that Government make clear its position on the role of LEO Satellite connectivity in PNG for the four use cases set out in Chapter 1 including for backhaul (Action 2.1), direct to households and businesses, Community Wi-Fi Sites for wards and villages (Action 3.1) and Community Gateways (Action 4.5). We recommend that NICTA subsequently take the appropriate steps to ensure the regulation is in place to enable all of the use cases described above.

2. Horizon 2: 2027 to end of 2028

The focus in 2027-28 shifts from GoPNG announcing decisions to putting them into operation. This is the critical foundation phase for the Blueprint. The Actions below establish the regulatory frameworks, legal arrangements, infrastructure and institutional capability needed to support larger-scale investment and delivery from 2029 onwards.

Recommendation 1

- **Action 1.1** (continued) Complete the detailed structuring of the SPV, including its non-discriminatory service providing access terms and cost-recovery pricing mechanism
- **Action 1.3** (continued) The 2026 price correction should already have taken effect; continue to monitor for further reductions

Recommendation 2

- **Action 2.1** Begin scaling integration of LEO into mobile and fixed network backhaul
- **Action 2.2** NICTA publishes the modernised, technology-neutral LEO licensing framework
- **Action 2.3** Ensure direct enterprise LEO sales compete on a level regulatory footing
    - Depends on Actions 2.1 and 2.2: enforcing a level playing field for direct enterprise LEO sales needs the Earth Station decision and the published licensing framework in place first

Recommendation 3

- **Action 3.1** (continued) Establish the LEO Community Wi-Fi programme based on the lessons from the pilot and scale deployment across underserved wards. The programme should establish the appropriate funding, technical, governance and delivery arrangements and move rapidly from the pilot to a larger-scale deployment

Recommendation 4

- **Action 4.2** (continued) Publish the DICT/IPA PNG Telecommunications Network Investment Opportunity statement to identify priority domestic backbone routes and support the private sector in responding to the opportunity
- **Action 4.3.** (continued) Implement the facilities access regime for PPL infrastructure, including poles, ducts and transmission corridors, and encourage private sector investors to sign on
- **Action 4.4** (continued) Set up a formal mechanism for coordination between DICT, Connect PNG and PPL
- **Action 4.5** Expect industry to begin integration Community Gateways into the domestic network architecture as aggregation and backhaul points, particularly in the Highlands and Islands regions
- **Action 4.6** Finalisation of NICTA's pricing principles, using actual cost information to ensure that declared services move towards efficient cost recovery. For CSC, the immediate 2026 price correction should already have occurred; subsequent reductions can be made as traffic volumes increase, and unit costs fall
- **Action 4.7** (continued) Undertake the independent review of Telikom to ready it for sale of up to 49 per cent to a strategic investor
- **Action 4.8** Convene the Telecommunications Infrastructure Sharing Committee and support acceleration of tower, fibre and site power-sharing arrangements between operators

Recommendation 5

- **Action 5.1** (continued) Develop the trusted vendor regime fully and operationalise responsible procurement and investment screening requirements, including bringing SOEs back within the National Procurement Commission framework
- **Action 5.2** (continued) Progress the Data Governance and Cybersecurity Bills through Parliament (if not complete already) and translate the resulting requirements into operational rules, consolidating national cybersecurity capability into an empowered, accountable entity
- **Action 5.3** Begin development of the hosting certification regime and identification of sensitive government, national security and citizen data that is anticipated to be hosted on shore

Recommendation 6

- **Action 6.1** (continued) Enforce the Operator Class Licence reforms

- **Action 6.2** (continued) Continue the spectrum review, publish the Spectrum Roadmap 2025-2030 and establish the legal and institutional capability required to enforce relinquishment. Where the current Act does not provide a clear basis for pre-expiry enforcement, targeted amendments should be developed
- **Action 6.3** (continued) Appoint an independent UAS chair and undertake the review and reform process for the UAS Fund, with a stronger focus on measurable connectivity outcomes, competitive procurement and efficient use of funding
- **Action 6.5** Initiate review of the PNG Neutral Internet Exchange Point
- **Action 6.6** (continued) Continue development of NICTA capabilities to support the above Actions
- **Action 6.7** Convene the MNP technical working group and develop a roadmap for implementation, considering the costs that must be borne by industry. The Blueprint's view is MNP is likely to take time to implement and is less critical to progress on the Blueprint's core objectives – for this reason it is positioned in Horizon 2.

3. Horizon 3: 2029 to end of 2031

Almost every Action has already started by the end of Horizon 2. What changes from 2029 is scale: the frameworks, institutions and programmes built in Horizons 1 and 2 move into large-scale infrastructure investment, service delivery and market development. Horizon 3 is intended to position PNG to fully realise the scaled benefits of the Blueprint.

The new start action which is to extend PNG's cable landing sites (Action 1.2) to remove single points of failure

This action has a dependency on Action 1.1 which is to be completed during Horizons 1 and 2. Action 1.1 refers to the PDCI SPV being structured and finalised.

The Blueprint is sequenced to ensure early decisions create the conditions for later investment and reform.

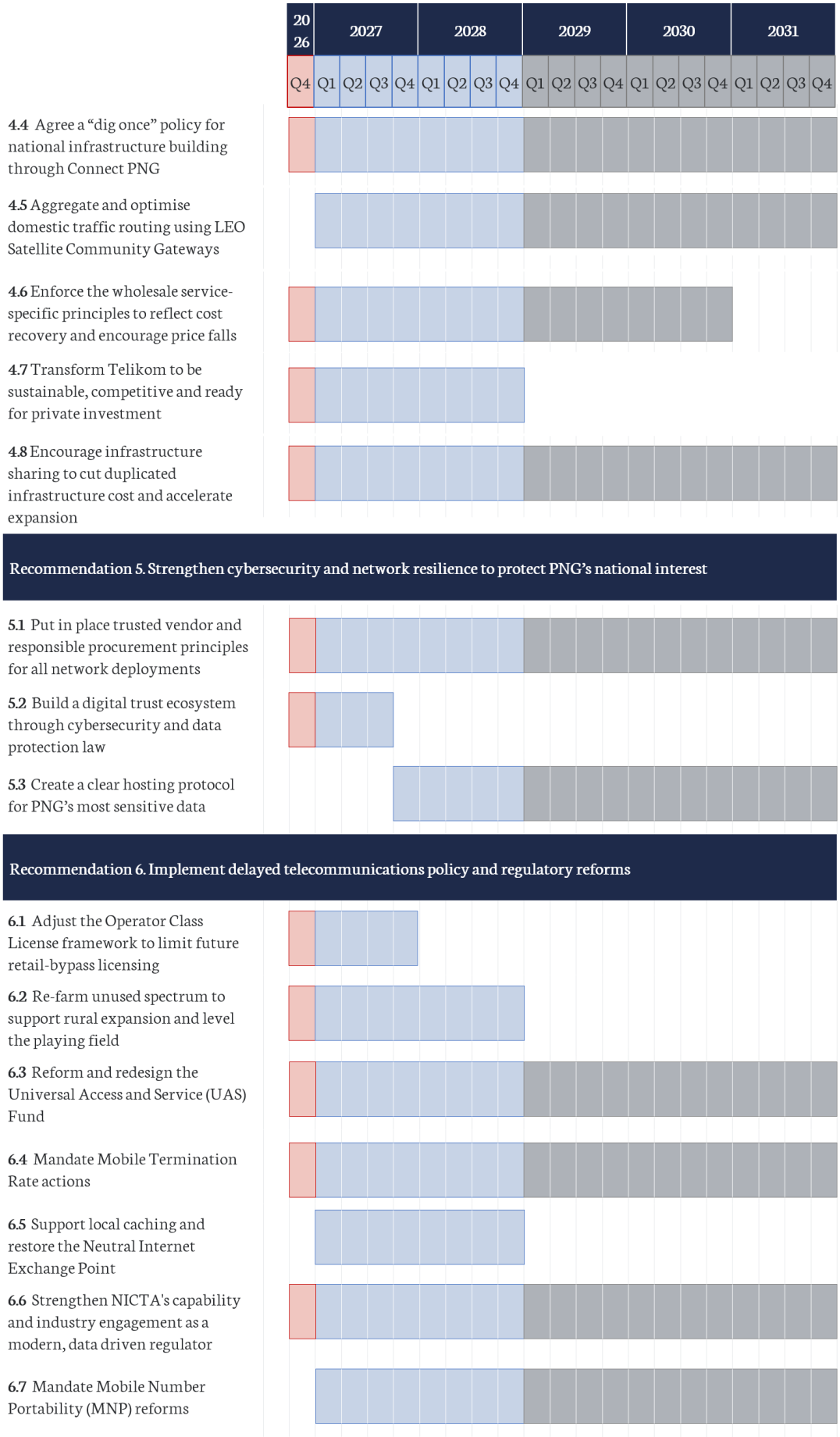
The 2026 priority is to proceed with the decisions that Government and NICTA can make now: reduce excessive wholesale prices, clarify DataCo's role, open the domestic backbone market, begin spectrum reform, mobilise the rural satellite programme, establish trusted-vendor principles and start building NICTA's capability.

2027-28 is the foundation period. The focus is on converting those decisions into functioning regulatory frameworks, investment arrangements and delivery mechanisms. This is when LEO licensing is established, PPL infrastructure access is opened, the UAS Fund is redesigned, cybersecurity and data governance arrangements are progressed, and NICTA builds the capability needed to enforce the reforms.

From 2029, the emphasis is on momentum. The infrastructure and programmes established in Horizon 1 can then expand: PDCI, LEO connectivity, community satellite services, private backbone investment, infrastructure sharing, rural connectivity and local internet infrastructure.

The sequencing deliberately avoids making one Action a prerequisite for everything else. Where a dependency exists, the earlier Action should be prioritised so that the next stage is not delayed. The following Gantt chart summarises this sequencing across all 25 Actions and shows where Actions overlap, continue across Horizons, or depend on an earlier intervention.

Figure 4.5: Gantt chart for sequencing of actions


2026
2027
2028
2029
2030
2031
Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
4.4 Agree a "dig once" policy for national infrastructure building through Connect PNG
4.5 Aggregate and optimise domestic traffic routing using LEO Satellite Community Gateways
4.6 Enforce the wholesale service-specific principles to reflect cost recovery and encourage price falls
4.7 Transform Telikom to be sustainable, competitive and ready for private investment
4.8 Encourage infrastructure sharing to cut duplicated infrastructure cost and accelerate expansion
Recommendation 5. Strengthen cybersecurity and network resilience to protect PNG's national interest
5.1 Put in place trusted vendor and responsible procurement principles for all network deployments
5.2 Build a digital trust ecosystem through cybersecurity and data protection law
5.3 Create a clear hosting protocol for PNG's most sensitive data
Recommendation 6. Implement delayed telecommunications policy and regulatory reforms
6.1 Adjust the Operator Class License framework to limit future retail-bypass licensing
6.2 Re-farm unused spectrum to support rural expansion and level the playing field
6.3 Reform and redesign the Universal Access and Service (UAS) Fund
6.4 Mandate Mobile Termination Rate actions
6.5 Support local caching and restore the Neutral Internet Exchange Point
6.6 Strengthen NICTA's capability and industry engagement as a modern, data driven regulator
6.7 Mandate Mobile Number Portability (MNP) reforms

Chapter 5.

Implementation recommendations

Chapter overview

This chapter sets out three Implementation Recommendations that underpin successful execution of the Blueprint, as well as actions underpinning these recommendations.

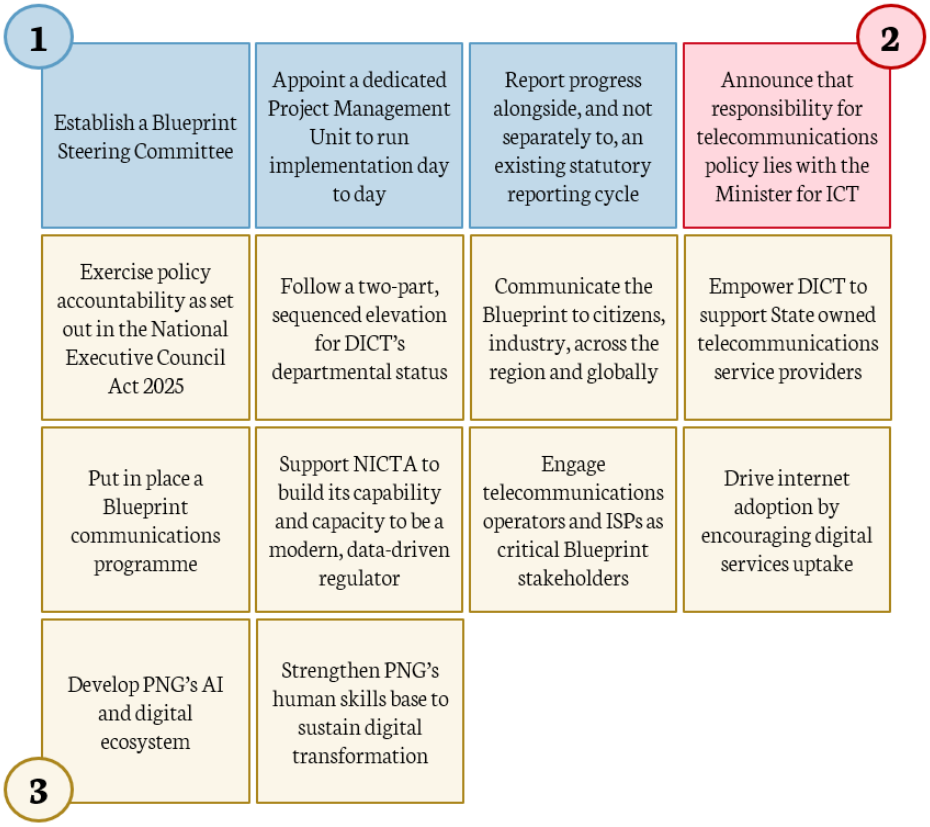
Implementation Recommendations

In addition to the Blueprint recommendations set out above, the Blueprint identifies three implementation recommendations which are of a cross-cutting nature and apply to the holistic success of the Blueprint. These are as follows:

1. Establish a Blueprint Steering Committee, constituted as a Committee of the National Executive Council
2. Announce that responsibility for telecommunications policy lies with the Minister for ICT, and that this applies to the entire PNG telecommunications industry including SOEs.
3. Elevate DICT's departmental status to reflect the breadth of its responsibilities for enabling PNG digitalisation

These recommendations together comprise of 14 actions, as shown in Figure 46.

Figure 46: Implementation Recommendations and supporting actions



Source: Long Street Advisors

Implementation Recommendation 1: Establish a Blueprint Steering Committee, constituted as a Committee of the National Executive Council

The Blueprint will fulfil its potential if the Government treats connectivity as a necessary condition for digitalisation, and digitalisation as an essential lever to transforming PNG's economy and society. The Blueprint's core recommendations are ICT-centric, but the Government should not treat it as an ICT sector programme.

This is because reliable and affordable connectivity enables outcomes across PNG leading to:

- Better health services, enabling PNG communities living outside the reach of adequately equipped medical facilities and professionals to access healthcare remotely and affordably
- Better primary, secondary and tertiary education outcomes, enabling younger people to access world-class educational materials and immersive experiences which are only available today to a select few in the National Capital District region and a few other locations
- Inclusive delivery of government services to all PNG citizens, something which cannot be cost-effectively achieved through any means other than digital
- Growth opportunities for businesses, SMEs and SOEs, by enabling better access to new markets, suppliers and partners, better product and service innovation and new jobs
- Connects PNG businesses to Pacific including ANZ, ASEAN and global markets, enabling e-commerce and digital trade
- Robust national security and resiliency, enabled through deploying reliable and diverse networks which use trusted equipment and operator partners
- Safeguards citizen rights and privileges, supported by modern data governance and sovereignty procedures and cyber security
- Attracts digital infrastructure and services investment and puts PNG on the map for serious industry investors and software and services developers

The national importance of connectivity is therefore not simply that it makes telecommunications services better but rather that it will bring the whole of PNG together.

For this reason, successful implementation requires shared ownership across Government. Connectivity affects the responsibilities and outcomes of a large number of Ministers and agencies. Implementation will require those Ministers to understand the role the Blueprint plays in delivering their respective portfolios and to actively support its delivery. This will also require being clear that the responsibility for telecommunications policy lies with the Minister for ICT. It should also be clear that this responsibility applies to the entire PNG telecommunications industry including SOEs. The Blueprint should therefore have clear whole-of-government buy-in.

From a fiscal perspective, the Blueprint offers PNG two specific upsides which contribute to sustaining structurally higher growth rates:

- Digitalisation relieves pressure on rolling out expensive physical infrastructure, meaning that the Government's funding of schools, hospitals and roads can go further if digital connectivity is enabled for users of these capabilities
- Higher economic growth rates, which, in the longer term, are likely to result in higher tax revenues for the exchequer

Action: Establish a Blueprint Steering Committee

The Blueprint is a national strategic initiative that supports programmes such as Reset@50 and MTDP IV. In light of this status for the Blueprint, we recommend that the Government establish a Blueprint Steering Committee, constituted as a Committee of the National Executive Council under Section 6 of the National Executive Council Act 2025, chaired by the Chief Secretary, with the Secretary of DICT and CEO of NICTA as core members.

Other Ministers, government agencies, SOEs, telecommunications operators, ISPs, industry bodies and development partners should be invited where their input is relevant to specific initiatives. The Steering Committee should resolve cross government issues, maintain momentum against the implementation timetable, and ensure that decisions required outside DICT and NICTA are made quickly. DICT and NICTA will also require targeted specialist support and ring-fenced resources, particularly through Horizon 1, to ensure the Blueprint is implemented rather than added to existing workloads.

Action: Appoint a dedicated Project Management Unit to run implementation day to day

The Project Management Unit should sit within DICT, be staffed with dedicated programme management capability and be properly resourced from the outset, including budget for specialist technical, legal and commercial advisers where Actions require expertise DICT does not hold in-house. It should also be elevated with real authority and empowered to request progress updates directly from Actions owners. It should be accountable to the Steering Committee and submit its own progress reports on a quarterly and annual basis, quarterly to the Steering Committee against the delivery timetable.

We recommend that the National Monitoring and Coordination Authority (NMCA) lead the monitoring, learning and evaluation function, maintaining a dashboard against the Blueprint's four headline outcomes: coverage, affordability, adoption and industry sustainability.

Action: Report progress alongside, and not separately to, an existing statutory reporting cycle

Once the Blueprint is endorsed by National Executive Council, Section 10 of the National Executive Council Act 2025 already requires the Head of a Department or State Agency, which would include DICT and each State-owned telecommunications operator, to submit quarterly implementation reports on NEC Decisions, and an annual report on affairs, operations and expenditure to the NEC no later than 31 March each year. Under Section 10(3) of the Act, failure to comply for two consecutive years is a ground for dismissal stated in the contract of employment of the Head of the Department or State Agency concerned. The Blueprint's own quarterly dashboard should therefore be timed and structured to feed directly into this existing statutory reporting cycle, including the Secretary to the NEC's own quarterly report to the Prime Minister under Section 14 of the Act, rather than create a parallel process that competes for the same information.

This creates a clear division of roles: government provides political leadership, DICT and NICTA drive implementation, industry contributes expertise and investment, and independent monitoring, now backed by a statutory reporting obligation with real consequences for non-compliance, provides accountability for results. The objective is to keep the country moving on the same journey and to ensure that digitalisation remains a national priority through to 2031, regardless of changes in individual portfolios or Ministers.

Implementation Recommendation 2: Announce that responsibility for telecommunications policy lies with the Minister for ICT and applies to the entire PNG telecommunications industry

Given the critical role for telecommunications in PNG as described directly above, it is important that there is formal ministerial level responsibility for the sector and how it relates to the entire economy and society.

Action: Announce that responsibility for telecommunications policy lies with the Minister for ICT

The Government should make clear that responsibility for telecommunications policy lies with the Minister for ICT. This policy responsibility will apply to the entire PNG telecommunications industry, including SOEs. This responsibility is critical to meet the following conditions which are central to the Blueprint:

- Telecommunications policy is centrally important to Government and needs an empowered and accountable ministerial champion, and this should be the Minister for ICT
- The Department of Information and Communications Technology sits under the Minister for ICT, and the Minister should have responsibility to direct the department to formulate policy
- The sector regulator, NICTA, should have access to the support of the Minister for ICT where needed, whilst acquitting its responsibilities as an independent regulatory authority
- PNG's telecommunications service providers comprise of both private and state-owned operators, needing a single ministerial voice that provides that policy direction regardless of ownership

Implementation Recommendation 3: Elevate DICT's departmental status to reflect the breadth of its responsibilities for enabling PNG digitalisation

DICT's formal position in Government today does not reflect the breadth of the role for successful execution of the Blueprint, which requires DICT to:

- Act as the coordinating department across three mutually dependent verticals – Telecommunications, Digital and Broadcasting as well as across common national capabilities that underpin them, including infrastructure, cybersecurity, data, spectrum, regulation, standards, investment, skills, innovation, public-private partnerships and development partner cooperation

- Act as Lead or Co-lead for the majority of the sector's major assets and functions including the Coral Sea Cable, Kumul Submarine Cable Network, Pukpuk Digital Connectivity Initiative, National Transmission Network, mobile networks, fibre backbone, spectrum, government network and cloud, digital ID, cybersecurity, the digital economy, and universal access, among others.

DICT's current position is two administrative levels below where a whole-of-sector coordination role might sit

Under the current budget and sector-classification architecture, DICT sits within the Infrastructure and Utility Sector – two administrative levels below where a department performing whole-of-sector coordination would normally sit. DICT is currently classified as a Level 4 agency, with approval granted in 2025 to transition to Level 5.

Cross-sector coordination and implementation, however, is a function reserved for Level 6 agencies. DICT is, in effect, expected to carry out a Level 6 function – coordinating policy, investment and delivery across every sector and agency the Blueprint touches – without the corresponding classification, governance authority, or institutional support structures (compliance capacity, secretariat support, budget standing) that come with it.

This shows up concretely in the national budget decision sequence, which runs from the Sector Budget Committee (SBC), through the Central Agencies Coordinating Committee (CACC) and Ministerial Economic Committee (MEC), to the National Executive Council (NEC). CACC is where cross-sector budget priorities and trade-offs are settled before they reach MEC and NEC. DICT is not a mandated member of CACC. DICT attends only when invited, meaning its presence at the point where national priorities are ranked is discretionary rather than assured.

DICT's current status puts effective implementation of the Blueprint at risk

The current DICT status:

- weakens its authority to hold State telecommunications operators to the policy accountability described in the No-Objection process (Strategic Imperative 2), since DICT's standing in Government is lower than that of the SOEs, KCH and their respective sector Ministers
- undermines the ability to chair or anchor the Blueprint's governance arrangements (Strategic Imperative 3), including its role resourcing and directing the Project Management Unit and engaging other departments whose cooperation the Steering Committee depends on.
- leaves the ICT sector, and the three verticals it comprises, without a durable institutional champion at the level where competing national priorities (health, education, other infrastructure) are traded off against one another — meaning ICT sector gains made under one administration or Minister are not structurally protected from being deprioritised under the next.
- is inconsistent with the scale of what DICT is already being asked to coordinate: a department with Lead responsibility across submarine cables, national transmission, mobile, fibre, spectrum, digital government, digital ID, cybersecurity and the digital economy is functioning as a whole-of-government coordinating agency in substance, whatever its formal classification says.

Action: Follow a two-part, sequenced elevation for DICT's departmental status, mirroring the pattern used for other cross-cutting national reforms:

1. **NEC recognition of the Blueprint as a national reform agenda.** The National Executive Council formally lists the ICT Sector Plan and Investment Blueprint as a reform strategy/framework in its own right, rather than as a sub-plan within the Infrastructure and Utility Sector. Precedent exists for this treatment of cross-cutting reforms — labour mobility reform has previously been listed and resourced on this basis — and the same drafting approach can be adapted for the ICT sector. This listing should explicitly connect the Blueprint to Reset@50 and MTDP IV, consistent with the Steering Committee's own positioning under Section 6 of the National Executive Council Act 2025.
2. **Formal reclassification of DICT and mandated CACC membership.** DICT's Department of Personnel Management classification is progressed beyond the pending Level 5 transition to Level 6/7, reflecting the whole-of-sector coordination function it already performs. In parallel, CACC's terms of reference are amended to add DICT as a mandated member rather than an invitee, giving the ICT sector an assured voice at the point where cross-sector budget and policy trade-offs are decided.
3. **Transitional arrangements pending reclassification.** Because formal reclassification through DPM channels can take time, the Blueprint recommends that DICT be granted standing invitee status with speaking and paper-tabling rights at CACC as an interim measure from the point of NEC endorsement of the Blueprint, so that the sector's voice is not absent during the reclassification period itself.

The experience of other countries shows that digitalisation seen as a national mission unlocks benefits across the economy, and that this requires commitment as a whole-of-government priority. Regional nations such as Singapore, South Korea, Australia and Vietnam illustrate this. Each in their own way has embraced connected digital technologies as a core national enabler.

Action: Empower DICT to support State owned telecommunications service providers

DICT is the GoPNG department responsible for all ICT and digital policy including the telecommunications sector. DICT has limited oversight over the State's telecommunications operators, which include Telikom and DataCo. These operators and their subsidiaries are accountable to Kumul Consolidated Holdings, a portfolio company with a shareholder mandate from the Ministry of State Enterprises.

Whilst KCH has a shareholder mandate, it has no sector policy mandate. The lack of a sector policy mandate exposes a risk to the Blueprint's effective implementation due to the possibility of KCH directing its telecommunications operators to take steps that are not consistent with the policy objectives of the Government. This is most likely to occur at the investment level as illustrated below.

It is possible that the State's telecommunications operators decide to undertake network deployment activities that are not in line with the Blueprint's target network architecture for 2031 or beyond. For example, a telecommunications operator may decide to deploy new towers in rural areas not backed by a clearly documented investment case which supports a capital return. Or such proposed towers might be neutral towers to be used to host multiple operators' network equipment, but without a documented commitment from operators that they are committed to using them. In such conditions, such project proposals might be inconsistent with the Blueprint's objectives, since the Blueprint recognises that the economic case for towers in rural areas is weak unless backed by multi-operator sharing, clarity over power supply and appropriate usage of LEO Sat backhaul.

The Blueprint recommends that State telecommunications operators are held accountable to DICT for the ***policy consequences*** of their major decisions. In doing so, the Blueprint draws a distinction between policy accountability and overall accountability.

Policy accountability is defined as a responsibility to ensure that actions are consistent with industry or sector policy objectives, such as service affordability and availability and network coverage. Overall accountability refers to all shareholder, corporate, commercial and operational matters, which the Blueprint does not provide a recommendation on and assumes will remain with KCH.

Action: Exercise policy accountability through the pathway set out in the National Executive Council Act 2025

1. **The operator prepares the investment case.** For any proposal within scope, the operator prepares its investment case in the ordinary way.
2. **The case is submitted to DICT for a No-Objection.** DICT assesses the case solely for consistency with national telecommunications policy, against published criteria and within a defined timeframe of one calendar month for network expansion and other in-scope investments, extendable once by written notice. DICT either issues a No-Objection or states its objection in writing with reasons, offering recommendations for how remedial measures could be adopted. The process begins with DICT reviewing the investment request and formulating the threshold criteria it deems applicable to test fitment with the Blueprint. A No-Objection is deemed issued if the timeframe lapses without a decision. Where DICT objects, the operator may resubmit a revised investment case addressing the objection.
3. **An unresolved objection is escalated through the Minister, not the operator.** Where an objection remains unresolved after resubmission, DICT briefs the Minister responsible for ICT, who, jointly with the Minister for State Enterprises given KCH's shareholder role, brings the matter to the National Executive Council as a Submission. This follows the process set out in Part II of the National Executive Council Act 2025: under Section 7(2) of the Act, a Submission to the NEC may only be made by a portfolio Minister, or by a department or agency through its portfolio Minister, so neither the operator nor KCH can refer the matter to NEC directly. The decision of the National Executive Council is final and consistent with Section 8(4) of the Act. Its written decision is a privileged and confidential record.
4. **The case proceeds through normal KCH Board channels.** Commercial assessment, approval and ownership oversight remain entirely with the KCH Board under existing arrangements. The KCH Board is directed that it may not approve any in-scope investment case unless a DICT No-Objection accompanies it.

The No-Objection process applies to any material investment in expanding, modernising or extending a telecommunications network, where material means a budget exceeding PGK10 million (USD2.3 million), or any lesser amount that forms part of an overall project exceeding PGK10 million. This scope applies regardless

of how the investment is financed, including vendor financing, leasing, capacity swaps or indefeasible rights of use, and applies whether undertaken as a single transaction or a series of related transactions.

DICT does not assess commercial merit, does not duplicate the Board's function, and cannot direct an operator to invest. It holds only the ability to object, with reasons, to proposals inconsistent with national policy. Commercial decisions remain with the owner.

The Blueprint recommends that the National Executive Council issues a Decision mandating the No-Objection process described above for all current and future State telecommunications operators, instructing the KCH Board accordingly, and that DICT and KCH give effect to this Decision within their respective governance arrangements.

DICT's visibility and reach across Government should also be strengthened so that its remit as the enabling agency for PNG's nationwide and governmental digitalisation is fulfilled. This could be achieved through mechanisms that give DICT awareness of, and influence over, relevant policies and initiatives across government departments beyond the ICT domain itself.

Action: Communicate the Blueprint to citizens, industry, across the region and globally

The Blueprint will play a key role in enabling provinces, regions and wards across PNG. The reforms will have a greater impact on uplifting PNG's regions than the NCD itself. It will also play a significant role in enabling basic citizen rights towards education, livelihoods and healthcare. But without clear communication, PNG's citizens will not appreciate how the mechanics of encouraging more deployment of digital infrastructure or more competition in the industry will result in impacts that they can see and feel. Once citizens see this, they will emerge as the Blueprint's strongest supporter, and play a valuable role in supporting DICT, NICTA and the industry in making it successful.

Communication should seek to build trust in the internet, not just awareness of it. Millions of the citizens this Blueprint brings online will be doing so for the first time, often with little prior exposure to how the internet works. These new users are also the most exposed to scams, misinformation, bullying and other online harms, and are the least likely to know how to recognise or report them. Safety cannot be an afterthought bolted onto the communications programme; it should be built into it from the outset, so that citizens come online with confidence rather than caution.

Action: Put in place a Blueprint communications programme

DICT should put in place a communications programme, run professionally, is key to making this happen and could consist of:

- Periodic but regular updates on what's happening with telecommunications related growth in PNG, such as through publications, TV or press announcements or interviews
- Publication of a regular Blueprint scorecard, which sets out key attainments in Coverage, Affordability, Adoption and Industry Sustainability, on an annual basis
- Specific campaigns which seek to encourage service adoption across PNG provinces or in specific cohorts (non-geographic) such as women or young adults
- Targeted online safety and digital literacy campaigns, delivered alongside coverage and adoption efforts, that teach first-time and low-literacy users how to recognise scams, protect their data and use mobile money and digital services safely, with particular attention to women, young people and rural communities coming online for the first time

Action: Support NICTA to build its capability and capacity to be a modern, data-driven regulator

DICT should consider the actions it needs to take from a policy perspective to support the sector regulator, NICTA to build its capability and capacity. NICTA has the advantage of having institutional capabilities and skills and already designed regulatory mechanisms. However, as the market has grown and become more complicated in nature, NICTA has not been able to translate its institutional capabilities and regulatory mechanisms into providing PNG with a strong and respected telecommunications regulatory environment. For example, NICTA has not effectively:

- Championed internet affordability or uptake across PNG, with the nation still ranked 191 out of 205 countries worldwide
- Regulated State enterprises, such as DataCo, KCL and Telikom in specific matters of pricing behaviour, wholesale to retail discipline and effective use of spectrum or confiscation thereof
- Implemented an effective, modern and market-responsive UAS programme which results in maximising the deployment of funds and their impact on connecting people
- Used its regulatory and information-gathering powers effectively, including taking enforcement action for non-compliance and compelling the information needed to make evidence-based regulatory decisions rather than relying primarily on voluntary industry reporting

For the Blueprint to be successful, NICTA should be encouraged and supported to push through to execute its mandate as a regulator, including being firm and persistent where needed. Without this approach, it is likely that many of the Blueprint's objectives, across all six recommendations, will not be realised. Specific focus areas for capability development have been explained under Action 6.6.

Broadly speaking, NICTA should explore pathways to grow in the following ways:

- Build its **voice as a respected regulator**, being deliberate in building an authoritative voice and tone in its verbal and written communications and being ready to challenge the industry and administer fines and penalties where merited
- **Defend the rights of consumers** and promote their interests, pointing out where the industry must make adjustments to improve affordability, reliability and coverage, and be fearless to take on important issues which protect or promote consumer interests
- Adopt a **regulator's sense of scepticism** and fact checking, creating structured mechanisms for questioning industry patterns or developments and being ready to challenge accepted norms and paradigms, including publishing reviews of important topics and engaging industry to understand problem areas better
- Be a step ahead in **understanding technology** and foreshadowing its impact on PNG, developing its exposure to new and relevant trends (e.g., 5G, 6G, LEO Sat, AI, public safety, network security, network resilience) including attending relevant forums and conferences
- Proactively **build partnerships with other regulators** in PNG (such as NEA, ICCC) and internationally (such as across the GSMA, ITU, PITA, ACMA, etc)

It is acknowledged that NICTA is already engaged in some of the activities above. But the Blueprint is encouraging that NICTA acts with a stronger and more demonstrated sense of purpose and end goal, for PNG to attain the goals for near-universal coverage and affordability of internet services within the next few years.

Action: Engage telecommunications operators and ISPs as critical Blueprint stakeholders

Without positive engagement from PNG's telecommunications operators and internet service providers, it is unlikely that the Blueprint can achieve many its objectives. The industry in PNG needs both more intense

competition, as well as stronger industry collaboration and DICT should take initiative to be a catalyst in making this happen.

This Blueprint has laid out specific recommendations for bringing the industry together along both of these fronts. Stronger competition is recommended through specific measures under each recommendation, spanning international, domestic, access and LEO Sat. Stronger collaboration is encouraged through the Blueprint recommendation of setting up the Telecommunications Infrastructure Sharing Committee.

Whilst the Blueprint does not include a specific recommendation on this, we note that other countries have telecommunications industry associations, such as the Australian Telecommunications Alliance (ATA) or the Cellular Operators' Association of India (COAI) to name two examples. In their respective countries, these organisations represent common industry points of view related to regulation, sector policy, standards, risks and opportunities. Such bodies are essential for the long-term growth and stability of the industry and have an important role to play in PNG.

DICT, as the sector ministry, may consider taking its own steps to increase industry engagement, such as through convening an industry conference or exhibition or incorporating telecommunications into a wider ICT-themed event on a regular basis. This will help establish its role as the telecommunications sector policymaker.

Action: Drive internet adoption by encouraging digital services uptake

Adoption is touched on through the recommendations in the Blueprint, but merit a specific DICT focus beyond the Blueprint's measures themselves. Whilst the Blueprint concentrates on measures to enable coverage, affordability and industry sustainability, adoption measures should go beyond this to address:

- Encouraging PNG citizens to see more value in the internet, meaning that there is more appreciation of how internet access can transform outcomes in their daily lives such as in education or health – at present many PNG citizens undervalue the internet, due to low reliability of connectivity and the paucity of services that meet their life needs.
- Incentivise PNG software developers to build more services and applications for local use, in Tok Pisin or local languages, built for PNG use cases and consumer needs – at present there are limited digital services available to people which offer localised services, distinct from those available through global platforms or applications. Stronger incentives could be provided through making PNG developers more aware of the growing internet opportunity locally, something which could be done by DICT or the ICT industry itself

Transformation seeded by the Blueprint may benefit from a case study that inspires a wider societal recognition of the benefits digitalisation can bring. Kenya provides a case in point. In the early 2010s, M-PESA, an SMS-based mobile money transfer system, revolutionised livelihoods by giving ordinary people who don't have a bank account an easy way to send money back home to their families. Within a few years, the value of almost 25% of Kenyan GDP was being transacted daily over M-PESA, accessible to anyone with a mobile phone and not requiring more than a 2G connection to work.

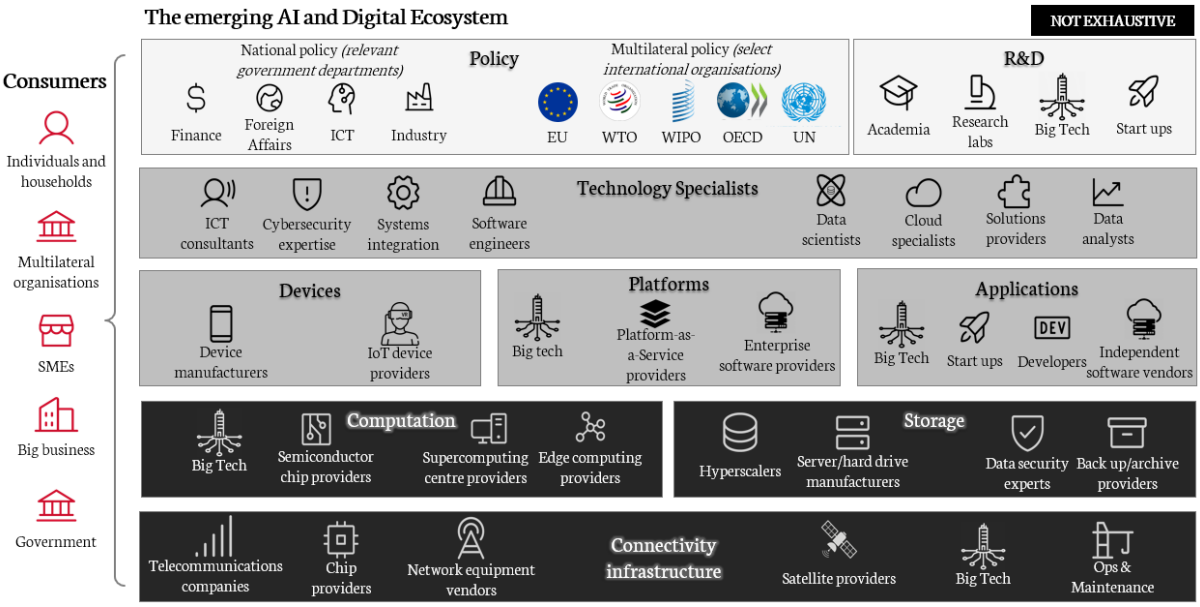
PNG could similarly demonstrate the value of connectivity through locally relevant digital services that address tangible needs. Maternal health provides one potential example. Community health workers visiting expectant mothers could use a simple smartphone or tablet application to administer algorithm-based questionnaires covering maternal health and wellbeing, using a 4G or LEO Satellite connection to securely upload the results to a cloud-based system. During the consultation, the health worker could receive personalised guidance based on the information collected and use it to provide tailored advice to the mother on appropriate health and wellbeing measures, while potentially flagging cases requiring further clinical attention.

This type of locally relevant application could help demonstrate the value of being online, particularly for first-time users, while creating opportunities for PNG developers and technology providers to build services around local needs.

Action: Develop PNG's AI and digital ecosystem

As ICT policy maker, DICT should take responsibility for ensuring the policy conditions are optimised for developing PNG's AI and digital ecosystem is critical for enabling sustainable, long-term digital transformation and adoption. The ecosystem, as depicted in Figure 47, indicates the building blocks any country needs as it pivots towards digital transformation and AI adoption.

Figure 47: Emerging AI and digital ecosystem



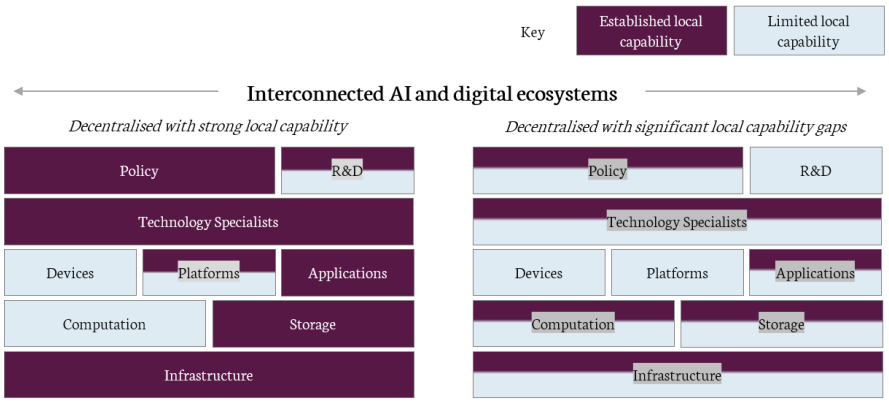
Source: Long Street Advisors

Based on the Blueprint's high-level assessment, Figure 48 illustrates the broad state of PNG's ecosystem today. The ecosystem is underpinned by connectivity infrastructure. The focus of the Blueprint has been on this layer. The layer is essential for moving ahead with inclusive digital growth.

GoPNG's ICT strategy, which involves digital transformation of public services led or enabled by DICT and undertaken by various government departments, plus the growth of ICT services led by the private sector, means that much is likely to happen across this ecosystem in the coming years.

Adopting an ecosystem view of PNG's AI and digital capability is important, since important gaps across the layers may not be addressed without government policy or removal of obstacles to attract private sector investment and solutions. Some areas of the ecosystem will likely be addressed through local capability development, and others through partnerships with international capability.

Figure 48: AI and digital ecosystem maturity (indicative), Australia and PNG



Example: Australia

- Strong local capability across many parts of the ecosystem
- Dependency on US Big Tech for devices, platforms and applications

Example: PNG

- Limited AI infrastructure
- Incomplete digital infrastructure
- Dependent on foreign hardware
- Limited AI and ICT related local skills

Source: Long Street Advisors

Action: Strengthen PNG's human skills base to sustain digital transformation

The Blueprint has set out steps to a significant acceleration in PNG's digitalisation over the coming years. As connectivity expands, more businesses and government agencies will move services online, cloud and data infrastructure will expand, and digital technologies will become embedded across the economy. To match this growth across the technology and AI ecosystem as shown in Figure 47, the ICT skills required to operate PNG's digital economy will grow and become more specialised. It is important that DICT pays attention to this need, seeking to collaborate with other ministries to identify and create action where needed.

As has happened in other countries undergoing rapid digital transformation, this will create growing demand for technology specialists in areas such as network engineering, systems integration, cybersecurity, cloud and data, software and digital services, many of which are currently in short supply in PNG.

This represents both a challenge and a significant opportunity. PNG has a large and largely untapped labour force some of which, with the right investment, could be upskilled to provide the people needed to design, build, operate, maintain and secure the infrastructure and services enabled by the Blueprint. The objective should therefore not simply be to fill today's ICT vacancies, but to build a workforce capable of sustaining PNG's digital transformation over the long term and allowing more of the economic value created by digitalisation to be retained within the country.

Closing this gap will require a sustained effort across government, industry and the education system, including:

- **Equip primary and secondary schools with reliable connectivity and appropriate devices**, including through programmes such as the proposed LEO Satellite Community Wi-Fi programme, so that students can access digital learning and properly engage with multi-subject curricula
- **Invest in more ICT exposure to primary and secondary school students,** so that at a younger age more PNG students can become familiar with devices and how to use them to perform digital and ICT related tasks
- **Expand and modernise ICT education** across tertiary institutions to encourage more young people to pursue ICT and technology-related career pathways

- **Strengthen partnerships between education and industry**, with operators, ISPs, technology vendors and NICTA working with academic institutions to shape curricula around the skills employers will require and provide students with practical pathways into employment
- **Expand industry-led training and upskilling**, including through learning centres and practical training programmes operated by ISPs and technology companies such as Datec
- **Establish centres of excellence for advanced ICT skills,** providing dedicated facilities for practical training in priority areas such as network engineering, cybersecurity, cloud and data, systems integration and emerging technologies

Without a heightened focus on human skills, PNG risks building the infrastructure for a digital economy it does not have the workforce to run. Treating skills development as a long-term priority is essential to securing the benefits of the Blueprint, benefits that should be sustained and owned by PNG's people.

Case studies such as these might help bring the transformative potential of digital connectivity to life and instil greater confidence amongst PNG citizens that there is value to be had in connecting to the internet, and that the internet can truly make a meaningful difference to their lives.

Annexure

Annex A: List of consulted parties

In developing the Blueprint, the team has drawn on rounds of consultations with the telecommunications sector and a diverse range of industry, business, government and community representatives in Papua New Guinea, as well as academia, international organisations and development partners. The team conducted four separate consultation rounds in Port Moresby between May and September 2026. This Blueprint has also been informed by field trips to view a Universal Access and Service (UAS) project site in Central Province and a field trip to West New Britain. We are greatly appreciative of these important contributions. These have guided and enriched the Blueprint. We also wish to acknowledge the work of DFAT and DICT, which coordinated input from stakeholders and supported the engagement activities.

List of consulted parties:

Ministers

Hon. James Marape, Prime Minister

Hon. John Rosso, Deputy Prime Minister

Hon. Ian Ling-Stucky, Treasurer of Papua New Guinea

Hon. Thomas Opa, Minister for Finance

Hon. William Duma, Minister for State Enterprises

Hon. Richard Maru, Minister for Trade and Investment & Minister for PNG Power

Hon. Robert Naguri, Minister for Information and Communications Technology

Hon. Peter Tsiamalili Jr., Minister for Works and Highways

Hon. Dr. Billy Joseph, Minister for Health, HIV & National Emergency Services

Hon. Kinoka Hotune Feo, Minister for Higher Education, Research, Science & Technology

Secretaries

Chief Secretary, Ivan Pomaleu

Secretary of DICT, Steven Matainaho*

Secretary of Health, Pascoe Kase

Government Departments, SOEs, Statutory Corporations and Authorities

Reset@50 Delivery Unit – Department of Prime Minister and National Executive Council (PM & NEC) *

Department of Information and Communications Technology, Papua New Guinea (DICT)*

Department of Education, Papua New Guinea

Department of Health, Papua New Guinea

Department of Foreign Affairs, Papua New Guinea

Kumul Consolidated Holdings*

PNG National Information and Communications Technology Authority (NICTA)*

National Broadcasting Commission (NBC)

PNG Independent Consumer and Competition Commission (ICCC)

PNG Power Limited

Telecommunications Industry

Telikom PNG Limited*

Vodafone PNG*

Digicel PNG*

DataCo PNG Limited*

Datec PNG Ltd

Agri Tech Solutions

Asia Pacific Communication Specialists

Emstret

ICT Cluster

Niupay

Starlink (regional representative)

Nokia

Telstra International*

Amalgamated Telecom Holdings (ATH) Limited

Vocus

Coral Sea Cable Company

New Britain Palm Oil Company

R & A Marine Services

BSP – Kimbe Local Branch

Kimbe Market

Caritas Technical Secondary School, Kimbe

Private Sector (non-telecommunications)

Business Council of Papua New Guinea

Australia-PNG Business Council, represented by:

- Ashurst Perkins Coie
- Corrs Chambers Westgarth
- BNG Trading Company

Bank South Pacific (BSP)

Australia and New Zealand Banking Group (ANZ, Papua New Guinea)

Westpac

Kina Bank

Credit Bank

TISA Bank

Mama Bank

Nambawan Super

West New Britain Chamber of Commerce and Industry

Development Partners and Academia

Australian High Commission*

Department of Foreign Affairs and Trade, Australia*

Asian Development Bank (PNG Resident Mission)

World Bank (Digital Team, Singapore)

Embassy of Japan, Papua New Guinea

Embassy of the United States of America, Papua New Guinea

Japan International Cooperation Agency (JICA), Papua New Guinea

ICT Centre of Excellence, University of Papua New Guinea

International Organization for Migration – PNG representative on disaster communications

Australian National University (ANU), PNG research team

NB: *indicates multiple consultation sessions

Annex B: Abbreviations and acronyms

1. **ADB**: Asian Development Bank
2. **AI:** Artificial Intelligence
3. **ARPU**: Average Revenue Per User
4. **CDN**: Content Delivery Network
5. **CII**: Critical Information Infrastructure
6. **CSC**: Coral Sea Cable
7. **D2D**: Direct-to-Device
8. **DFAT**: Department of Foreign Affairs and Trade (Australia)
9. **DICT**: Department of Information and Communication Technology (PNG)
10. **FTTH**: Fiber to the Home
11. **FTTP**: Fiber to the Premises
12. **GB**: Gigabyte
13. **Gbps**: Gigabits per second
14. **GDP**: Gross Domestic Product
15. **GEO**: Geostationary Earth Orbit
16. **GoPNG**: Government of Papua New Guinea
17. **GPON**: Gigabit Passive Optical Network
18. **GSMA**: Global System for Mobile Communications Association
19. **ICCC**: Independent Consumer and Competition Commission
20. **ICT**: Information and Communication Technology
21. **IPLC**: International Private Leased Circuit
22. **ISP**: Internet Service Provider
23. **KCH**: Kumul Consolidated Holdings
24. **KSCN**: Kumul Submarine Cable Network
25. **LEO**: Low Earth Orbit
26. **LLG**: Local Level Government
27. **MEO**: Medium Earth Orbit
28. **MHz**: Megahertz
29. **MNO**: Mobile Network Operators
30. **MNP**: Mobile Number Portability
31. **MOCN**: Multi-Operator Carrier Network
32. **MOU**: Memorandum of Understanding
33. **MP**: Members of Parliament
34. **MTAS**: Mobile Terminating Access Service
35. **MTDP**: Medium-Term Development Plan
36. **MTR**: Mobile Termination Rate
37. **MWh**: Megawatt-hour
38. **NCD**: National Capital District
39. **NEA**: National Energy Authority
40. **NEC**: National Executive Council
41. **NICTA**: National Information and Communications Technology Authority
42. **NIDB**: NICTA Integrated Database
43. **NPC**: Number Portability Clearinghouse
44. **NTN**: National Transmission Network
45. **OCL**: Operator Class License
46. **P2P**: Point-to-Point
47. **PDCI:** Pukpuk Digital Connectivity Initiative
48. **PGK**: Papua New Guinean Kina
49. **PNG**: Papua New Guinea
50. **PNG-IXP**: Papua New Guinea Internet Exchange Point
51. **POP**: Point of Presence
52. **PPC-1**: PIPE Pacific Cable 1
53. **PPL:** PNG Power Limited
54. **RIO**: Reference Interconnection Offer
55. **SIM**: Subscriber Identity Module
56. **SME**: Small and Medium-sized Enterprises
57. **SMS**: Short Message Service
58. **SOE**: State-Owned Enterprise
59. **SPV**: Special Purpose Vehicle
60. **Tbps**: Terabits per second
61. **UAS**: Universal Access and Service
62. **VSAT**: Very Small Aperture Terminal
63. **WIS**: Wholesale Internet Services

Annex C: Glossary

1. **Backhaul:** Transport network that links a mobile network's radio access network to its core network
   Source: GSMA
2. **Broadband:** Broadband technology allows for high-speed transmission of voice, video and data over networks and ICT applications
   Source: ITU
3. **Caching:** The storage of data in local network storage such that it can be retrieved when requested to optimise service delivery
   Source: ITU
4. **Colocation:** The installation of telecommunications facilities on the premises of other telecommunications carriers
   Source: ITU
5. **Coverage:** The population share living in an area where mobile network signal is strong enough to use telecommunications services
   Source: GSMA
6. **Community Gateways:** Unlike individual user terminals, Community Gateways are installation that can deliver fiber-like, multi-gigabit satellite connectivity to enterprises, service providers and critical infrastructure operators in remote and underserved locations.
   Source: Speedcast
7. **LEO Community Wi-Fi Sites:** This is a term adopted for the Blueprint to refer to the shared use of LEO Satellite terminals to provide connectivity to communities or institutions. Rather than providing a dedicated connection to a single household or business, a single LEO terminal can support a shared LEO Satellite access point, allowing multiple users to access broadband services from a common location
8. **Critical Information Infrastructure:** Assets, systems, and functions essential to a nation whose disruption or destruction would severely impact the economy, government, public safety, or national security
   Source: ITU
9. **Cybersecurity:** The collection set of tools, policies, security methods, and technologies used to protect the cyber environment and organizational and user assets
   Source: ITU
10. **Data Centre:** A physical facility that stores, processes, and manages digital data for different organizations to meet their daily transaction processing needs
    Source: ITU
11. **Data Governance:** The execution and enforcement of authority over the management of data assets
    Source: ITU
12. **Data Sovereignty:** The principle that data is subject to the laws and governance of the jurisdiction in which it is collected, and more broadly that individuals and communities should have control over their own data
    Source: ITU
13. **Direct-to-device satellite service:** Connectivity between satellites and mobile phones without requiring extra hardware
    Source: GSMA
14. **Fibre:** A high capacity wired backhaul technology used to connect mobile base stations to the core network
    Source: GSMA
15. **Foreign Ownership, Control and Influence:** The extent to which a foreign interest has the ability, through ownership, control or other means, to influence an entity's management, operations, or decision-making
    Source: Australian Government Department of Home Affairs
16. **Geostationary Earth (GEO) Satellite:** A satellite operating 35,786 kilometres above the Earth's equator that appears stationary relative to the Earth
    Source: ITU

17. **High risk vendors:** Third-country vendors designated as posing potential security or resilience risks to telecommunications networks and critical infrastructure
Source: GSMA
18. **Infrastructure sharing:** The joint use of physical or active network elements by two or more telecommunications operators under commercial or technical agreements
Source: ITU
19. **International Private Leased Circuit**: Point-to-point telecommunications service that provides a private, secure, and reliable connection between two or more locations in different countries
Source: ITU
20. **International Point to Point (IP2P)**: An international submarine transmission capacity service delivered over subsea fibre, providing dedicated connectivity between two nominated points on the network.
Source: NICTA
21. **Low Earth Orbit (LEO) Satellite:** A non-geostationary satellite operating at altitudes between 200 and 2,000 kilometres above the Earth's surface
Source: ITU
22. **Medium Earth Orbit (MEO) Satellite:** A non-geostationary satellite operating at altitudes between 8,000 and 20,000 kilometres above the Earth's surface
Source: ITU
23. **Microwave:** A wireless backhaul method that mobile network operators use to connect base stations to the core network without physical cables
Source: GSMA
24. **Mobile Number Portability:** A regulated facility that allows customers to keep their numbers when changing mobile network operator
Source: GSMA
25. **Mobile Termination Rates:** Fees charged by mobile operators for connecting calls from another network
Source: GSMA
26. **Network virtualisation:** Network virtualisation abstracts elements of IT infrastructure that are traditionally delivered as hardware, including compute, network, and storage, and turns them into a software-based solution.
Source: Hewlett Packard Enterprise
27. **Neutral Internet Exchange Point:** An Internet Exchange Point located and managed in a neutral manner, where participating network operators can interconnect without any participant gaining competitive advantage
Source: ITU
28. **Pukpuk Digital Connectivity Initiative (PDCI)**: A proposed national connectivity infrastructure program between PNG and Australia that will strengthen PNG's international digital connectivity and network resilience through three new submarine cable connection
Source: DICT
29. **Point of Presence:** An access point where an ISP or carrier links its local network to larger backbone networks, enabling data traffic to enter and exit efficiently
Source: TechTarget
30. **Point to point metro fibre:** A dedicated fibre-based connectivity service that provides connection between two endpoints on the operator's network
Source: PNG DATACO
31. **Point to point long haul fibre**: High-capacity, dedicated layer-2 service connecting distance locations across PNG using DataCo's fiber network
Source: NICTA
32. **Redundancy (network):** Duplicating critical pathways to ensure that services can continue

without interruption if a primary component fails
Source: ITU

33. **Retail services:** The direct provision of fixed-telephone, mobile-cellular, internet, data, and broadcasting transmission services to end-users
Source: ITU
34. **Spectrum:** Radio-frequency resource allocated for wireless communication services, including mobile networks
Source: ITU
35. **Submarine cable:** Telecommunications infrastructure designed to transmit large amounts of data over long distances,
Source: ITU
36. **TowerCo:** A company that builds, maintains, and develops passive communications infrastructure required to host mobile network operators' network equipment
Source: GSMA
37. **Universal Access and Services Fund (PNG):** Financial mechanism managed by NICTA to expand and improve information and communication technology (ICT) services in rural and underserved areas
Source: NICTA
38. **Wholesale Internet Service (WIS):** WIS comprises a bundled combination of international submarine cable transmission capacity, wholesale broadband capacity and IP transit, delivered as a wholesale internet connectivity service to the premises
Source: NICTA
39. **Wholesale Service Declaration (PNG):** An official regulatory declaration that designates a specific wholesale telecommunications service as subject to regulatory oversight
Source: NICTA
40. **Wholesale services:** Telecommunications services supplied to other operators or service providers to enable them to provide retail services to end users.
Source: ITU

Annex D: Data sources and methodology

Impact analysis methodology

Step	What it does
Established the 2026 baseline	– Established 2026 as the baseline year against which the impact of the blueprint recommendations is measured – The baseline includes usable coverage, internet adoption, internet affordability and telecom industry revenue
Projected the baseline population and eligible mobile user base	– Provincial population projections were developed using historical population growth rates and aggregated to obtain PNG's total population from NSO data – The eligible mobile user base was estimated as how it is defined by NICTA as the proportion of the total population that has access to the mobile network coverage – Internet adoption was estimated based on eligible mobile user base
Defined the standard mobile data package and affordability benchmark	– Uses a PGK50 monthly data package as the standard benchmark – The affordability of the package was assessed against a threshold of 4 per cent of monthly income (the cost of 30GB data is below 4 per cent of monthly income in the top 50 affordable countries according to mobile data affordability index)
Estimated the impact of Recommendation 1	– Assumed a reduction in international bandwidth prices through PDCI (Note: USD6 per Mbps was used as an assumption of what prices could fall to with new cable competition introduced, based on consultations with the PDCI team) – The lower international bandwidth cost was incorporated into the operator cost structure to estimate the resulting reduction in the cost of mobile data packages – Estimates the resulting increase in internet adoption based on the improvement in affordability – An 80 per cent elasticity of mobile broadband adoption to affordability was applied to the change in affordability to estimate additional adoption – Incremental revenue was estimated by applying the standard monthly package price to the number of newly adopting users
Estimated the impact of Recommendation 2	– Estimates the number of mobile towers that could use LEO Satellite backhaul by 2031 and the additional population brought into coverage – The additional towers were assumed to extend mobile network coverage to previously underserved populations – The newly covered population was converted into additional mobile broadband users using the assumed adoption elasticity – Also models the impact of approximately 2,600 LEO Community Wi-Fi sites that would be commercialised, using assumed users per terminal and the applicable monthly service price – Calculates the resulting increase in internet adoption and industry revenue
Estimated the impact of Recommendation 3	– Estimated the number of LEO Community Wi-Fi sites that can be deployed through the proposed rural community programme based on the available grant funding and the capital and operating cost of each site (See grant allocation methodology)

Step	What it does
	– Treats community connectivity as an affordability intervention, given that users are not assumed to pay a standard retail subscription – Estimates the resulting connectivity impact and industry revenue from payments to satellite service providers
Estimated the impact of Recommendation 4	– Models an improvement in network reliability, with the network outage ratio falling from 14.5% to 5% by 2031 – Translates improved network availability into additional internet adoption – Estimates the resulting incremental industry revenue from newly adopting users
Estimated the impact of Recommendation 5	– Applies an additional 3% adoption effect to capture users who may be more willing to use internet services as confidence and trust in digital connectivity improves – Estimates the resulting additional users and associated industry revenue
Estimated the impact of Recommendation 6	– Estimates additional network coverage from UAS site deployment and converts the resulting population coverage into additional internet adoption – The additional population brought within coverage was used to estimate new mobile broadband adoption using elasticity assumption – Incremental revenue was then estimated from the additional users purchasing the standard package – Assessed the potential impact of regulatory measures (i.e. mobile termination rates, mobile number portability, local caching (See retail tariff price falls methodology) – The combined price impact of these reforms was used to estimate improved affordability and the resulting increase in mobile broadband adoption
Combined the effects of the recommendations	– Models each recommendation individually to isolate its potential contribution – Combines the interventions into an overall scenario to estimate the total 2031 impact on usable coverage, internet adoption, affordability and telecom industry revenue

GDP growth analysis methodology

Step	What it does
Established the non-resource economy base and allocated it across provinces	– Started with PNG's total GDP and excluded the mining and quarrying sector to focus on the non-resource economy – Uses provincial GST remittance shares to estimate each province's contribution to the national non-resource economy
Allocated businesses and employment across provinces	– Used the same provincial GST shares to distribute formal employment and business numbers across provinces – Business numbers were projected to grow in line with the assumed GDP growth rate, reflecting the expected expansion of businesses as the economy grows

Step	What it does
Established the underlying GDP growth path	– Applies PNG Treasury forecasts for near-term growth and World Bank estimates for longer-term growth to establish the underlying GDP trajectory
Segmented businesses into four personas	– Groups businesses into personas and varies the mix of personas according to each province's characteristics – The segmentation was informed by findings from the DFAT–Tebbutt MSME Study
Estimated business revenue by persona	– Assigns a representative annual revenue to each business persona and combines these to estimate provincial business revenues – Applies a 20% EBITDA margin to establish the baseline business EBITDA before digitalisation – Total business revenue was used as a proxy for the economic scale of each province
Established lever impact assumptions	– Estimates adoption of key connectivity levers from 2027–2035, including lower international bandwidth costs, infrastructure sharing, LEO Satellite backhaul and LEO Community LEO Satellite Sites. – Defines the expected impact and geographic reach of each lever across POM, Urban, Rural and Remote areas – Combines these inputs to create connectivity uptake curves for each province type
Applied connectivity uptake to businesses	– Applies the uptake curves to the relevant business populations to estimate the proportion of businesses benefiting from improved connectivity – This provides the link between the connectivity investments and their potential economic impact
Established baseline business EBITDA	– Started with the number of businesses and estimated revenue for each business persona, which is calculated without any digitalisation impact – A 20 per cent EBITDA margin was applied to baseline revenue to estimate business EBITDA before the connectivity interventions
Estimated EBITDA impact of digitalisation	– Applied the assumed benefits of improved connectivity through two channels: cost reduction and revenue growth. – The total potential EBITDA uplift was calculated based on the assumed improvement in business costs and revenues resulting from greater digitalisation
Estimated GDP impact	– Converted the realised EBITDA uplift into an increase in GDP using the assumed elasticity relationship between business EBITDA and economic output – The resulting digitalisation impact was added to the underlying baseline GDP growth to estimate the province's digitalised GDP trajectory
Calculated cumulative economic impact and aggregated results to PNG level	– Annual GDP uplift was calculated throughout the forecast period and these annual impacts are summed to estimate the cumulative GDP uplift through 2035 – Results from all provinces are aggregated to produce a PNG-wide view of the impact

Mobile internet retail tariff falls methodology

Step	What it does
Established operator-level network cost inputs and a comparable retail data package for each operator	– Collected operator-specific cost information through consultations with PNG mobile operators – Selected one standard 30-day, 25-40GB data package for each operator's website to establish a comparable retail price benchmark – Calculated retail price per GB dividing it with data allowance of selected packages
Derived the current network cost stack	– Used the international bandwidth and domestic transit costs obtained from operators to calculate the transit cost per GB for each operator – Applied a 35% margin assumption, based on a global telecommunications sector benchmark – Subtracted transit costs and the assumed margin from the retail price to derive the non-transit cost per GB covering access, network and customer-related costs
Estimated the impact of lower international bandwidth costs and domestic transit costs	– Current international bandwidth costs are USD13-30/Mbps/month were modelled to decline to USD6 Mbps/month across operators (Note: This USD6 value is an assumption of what prices could fall to with new cable competition introduced, based on consultations with the PDCI team) – Each operator's domestic transit costs were benchmarked against NICTA's 2030 price glide path – Assumed 75% of the domestic transit savings would be passed through to consumers
Estimated economies of scale from subscriber and data-traffic growth	– Based on the Blueprint's recommendations, mobile internet users are projected to increase by 2.4× by 2031 – Data consumption per connection is assumed to increase by 2.9×, reflecting PNG's currently low level of consumption and international growth benchmarks (150 per cent of global data consumption growth benchmarked by Ericsson Mobility report and Statista data) – Together, these assumptions imply approximately 6.8× growth in total mobile data traffic by 2031
Estimated the impact of higher traffic volumes on non-transit costs	– Broke non-transit costs into major categories, including access networks, power, marketing, distribution and other costs – Applied different cost elasticities to reflect how each category responds to higher traffic volumes – Used the resulting weighted elasticity to estimate how non-transit cost per GB falls as more traffic is carried over existing infrastructure
Estimated the impact of regulatory reforms	– Mobile Termination Rates (MTR): • NICTA's current MTR was taken as 7 toea/minute, with the 2030 target declining to approximately 1.3 toea/minute • Evidence from Sub-Saharan African countries indicates that a 10 per cent reduction in average MTR can reduce average mobile retail prices by approximately 2.5 per cent • 10 per cent of the estimated reduction was assumed to pass through to mobile data packages as MTR primarily affect voice interconnection

Step	What it does
	– Mobile Number Portability (MNP): • ITU evidence based on a sample of 145 countries indicates that the introduction of MNP can reduce retail prices by approximately 6 per cent • 25 per cent of the estimated price effect was assumed to pass through to data packages – Local caching: • PNG's current in-country caching was assumed to increase from approximately 2 per cent to 32 per cent by 2031 (Internet Society reports that Nigeria and Kenya increased local caching from roughly 30 per cent to 70 per cent in 8 years) • 50 per cent consumer pass-through assumption was applied to the resulting international bandwidth cost saving
Combined the effects to estimate the 2031 retail price	– Applied each cost reduction sequentially to the current retail price – This captures the cumulative effect of cheaper international bandwidth, lower domestic transit costs, economies of scale and regulatory/network reforms – The combined model estimates that the price of the standard monthly package could decline by approximately 25–35% by 2031

LEO Community Wi-Fi Sites grant allocation methodology

Step	What it does
Established the size and timeline of the grant	– The Community Grant Programme is sized at AUD50 million/USD35 million/PGK153 million – The grant is assumed to fund both the initial deployment of each site and its connectivity and running costs for 2 years (24 months), after which the sites are assuming a transition to other funding arrangements for example commercialisation of the site or the institution assuming the operating costs
Defined the site types to be funded	– Three deployment types were defined, reflecting different equipment requirements and usage patterns: schools, health centres and tokenised terminals – Assumes each site uses a single LEO Satellite gateway to provide shared or institutional community connectivity
Derived the capital cost per site type	– Gateway acquisition cost was taken at USD500 (PGK2185) per site sourced from consultation – Solar power systems were differentiated by load: USD4,000 (PGK17,480) for schools and health centres, and USD1200 (PGK5,244) for tokenized terminals – Installation and deployment have been taken at USD5,335 (PGK23,314) per site, derived as a weighted average across three site-access tiers: surface access by road, river or coast (55 per cent of sites), fixed-wing airstrip plus porters (35 per cent share of sites) and helicopter-only access (10 per cent of sites) – Total device cost per health centre was estimated to be USD1,922 (PGK8,400) (two full setup computers) and school was estimated to be USD4005 (PGK17,502) (one central computing unit with 20 sets of monitor, keyboard and mouse)

Step	What it does
Derived the operating cost per site over the funded period	– Connectivity subscription was taken at the business-grade LEO service price of PGK270 (USD61.8) per month – An operator stipend was included to fund a local person responsible for the site, benchmarked against PNG's projected minimum wage of PGK5.5 per hour – Maintenance and spares were taken at 2.5 per cent of capital cost per year – Training was included as a one-off cost of USD1,000 (PGK4,370) per site, covering initial operator and maintenance training
Allocated the grant across site types	– Schools were funded first, at the full requirement of 758 sites (39.5 per cent of grant) – Health centres were funded next, at the full requirement of 732 sites (33.5 per cent of grant) – The residual 27 per cent of the grant was allocated to funding 594 tokenised community Wi-Fi sites – The allocation therefore establishes 2,084 LEO Community Wi-Fi sites in total
Estimated the population reached by the allocation	– PNG has 6,912 wards and each funded site was assumed to serve the average population of one ward – Estimates the population reached through health centres, schools and tokenised terminals based on the number and type of sites funded
Tested the commercial viability of the site after conclusion of the grant funding	– Calculates the annual cost of operating a gateway, including annualised upfront investment, operating costs and financing costs – A 100 per cent markup was applied on top of total cost to provide a commercial return to the site operator
Determined the required price to a community user	– Assumes 300 users per gateway, with each user purchasing five sessions per month – Divides the total annual cost, including the commercial markup, by the total number of annual sessions to estimate the required price per session – This results in an indicative price of approximately PGK3 per session

Backbone investment analysis methodology

Step	What it does
Established backbone cost assumptions	– Established cost assumptions for new fibre, fibre upgrades, new microwave and microwave upgrades based on NICTA benchmarks and consultations – Applied a 20 per cent uplift to the benchmark costs to reflect inflation and potential variation between benchmark and actual project costs – Applied a 10 per cent cost of capital and 15-year amortisation period, consistent with the NICTA assumptions, to assess the annualised cost of backbone investment
Estimated backbone operating costs	– Assumes annual operating expenditure (OPEX) of 30% of CAPEX, consistent with the NICTA benchmark – Applies this OPEX assumption over the first five years of operation

Step	What it does
Identified priority backbone corridors and estimated corridor length range	– Identifies the priority backbone corridors requiring new deployment or upgrades across the four regions – Estimates the length of each corridor and develops a low- and high-case range, with the high case applying a 20% uplift to measured distances
Allocated technology mix by corridor	– Estimated the proportion of each corridor requiring new fibre, fibre upgrades, new microwave or microwave upgrades based on a map provided by DICT – Applied the assumed technology split to each corridor to determine the number of kilometres associated with each deployment type
Calculated backbone CAPEX required	– Multiplied the kilometres allocated to each technology and deployment status by the corresponding CAPEX per kilometre – Summed the costs across the four technology categories to calculate the total CAPEX required for each corridor – Aggregated the CAPEX requirements across all identified corridors to estimate the total investment required for backbone deployment and upgrades
Estimated five-year OPEX	– Applied the assumed 30 per cent of CAPEX annual OPEX to the total backbone CAPEX) – The resulting annual OPEX was applied over five years to estimate the total operating expenditure associated with the investment
Estimated total backbone investment requirement	– Combined the required CAPEX and five years of OPEX to estimate the total funding requirement for the backbone programme

List of data sources

Below is a list of publicly available data sources which have been consulted for the Blueprint development. Please note that a significant proportion of the analysis also draws on data points and information provided directly by stakeholders during the consultation process. Given the commercially sensitive nature of some of this information, these data points have been treated as confidential and are therefore not reproduced or attributed in this annex.

The availability and quality of data in Papua New Guinea (PNG) is a significant constraint to analysis. In a number of areas, quality data is not available. Where official data was unavailable, we have sought to identify and apply defensible proxy assumptions, drawing on reputable international and industry sources where appropriate. These proxies are intended to provide reasonable indicators where direct PNG-specific data is unavailable, rather than to imply a level of precision that the underlying data does not support.

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