Inquiry into Australia's response to the priorities of Pacific Island countries and the Pacific region

About Vocus

Vocus Group (**Vocus**) is a leading Australian owner and operator of critical information infrastructure, including fibre optic networks, satellite ground infrastructure and industrial wireless solutions. Vocus is privately held and backed by two well-resourced, globally scaled shareholders:

- Macquarie Asset Management (**MAM**): an institutional investor focused on critical economic infrastructure, with more than USD555B of assets under management globally to generate long-term annuity value for its stakeholders; and
- Aware Super (**Aware**): a superannuation fund manager accountable for the retirement savings of 1.1M Australians through a portfolio of investments currently amounting to USD98B.

Vocus announced a USD700M network expansion program in May 2022. USD548M has already been committed to three projects currently under construction, including a substantial submarine cable investment focused on the Pacific in collaboration with Google.

Vocus has developed unique capability and experience in the development of international submarine telecommunications cable systems, providing connectivity from Australia to South-East Asia, the Pacific, and the USA. In 2019, Vocus and its partners delivered the Coral Sea Cable System (**CS2**) for the Australian Government, a 4,700km cable from Sydney to Papua New Guinea and the Solomon Islands. Vocus is currently working to deliver the first international submarine cable to Timor-Leste, a project supported by the Australian Infrastructure Financing Facility for the Pacific (**AIFFP**).

Vocus recently announced its partnership with Google on the Pacific Connect cable system – two new cables between Australia and the US via Fiji, French Polynesia, and New Zealand. There is capacity provisioned into this system to connect other Pacific Island Countries (**PICs**) along the route.

Vocus also maintains strong wireless credentials relevant to the Pacific, including:

- Ownership of Challenge Networks, a specialist mobile infrastructure company that has designed and deployed mobile networks for telecoms operators in countries throughout the Asia Pacific, including Papua New Guinea, Fiji, Tonga, Samoa, Vanuatu, Tuvalu, Niue, Norfolk Island, Kiribati, and Myanmar; and
- As a ground station infrastructure provider to Low Earth Orbit (**LEO**) and traditional satellite operators, including capabilities as a Satellite Network Integrator (**SNI**).

Executive Summary

Vocus submits that digital infrastructure – including submarine cables, mobile networks, LEO satellites, and datacentre access – should be a key priority for Australia's development assistance in the Pacific.

The Pacific Islands Forum's 2050 Strategy for the Blue Pacific Continent lists 'Technology and Connectivity' as one of its seven key themes, with the stated goal that: "All Pacific People have access to affordable, accessible, reliable, resilient safe, secure, inclusive and interoperable ICT services, including e-services and the digital economy."

This laudable goal will require Australia's assistance – and an underlying masterplan - to achieve effective regional participation in the global information economy. PICs typically rank in the lowest-third of the United Nations International Telecommunications Union (**ITU**) 'Information and Communications Technologies (ICT) Development Index'. While Australia ranks 16th and New Zealand 34th out of 169

countries indexed, other countries in our region fall far behind - Fiji 106th, Vanuatu 119th, Samoa 128th, Tonga 132nd, and Kiribati 143rd.

Australia has had notable successes in establishing digital infrastructure in the Pacific, including the CS2 initiative with Papua New Guinea and the Solomon Islands, and other submarine cable investments and technical assistance in the region. However, much of the region continues to be connected by ageing, low-bandwidth legacy digital infrastructure, and a lack of commercial investment incentives in PICs means that, without government intervention, the digital divide will continue to grow, and economic outcomes will remain compromised.

In recent years, broader geo-political considerations in the region have made Australia increasingly attractive as a safe haven for international connectivity. International operators seeking to diversify their digital infrastructure to mitigate risks in the Asia-Pacific region are attracted to Australia's stable political, regulatory, and economic environment – leading to an increase in proposals to connect new submarine cables to Australia. These cables carry almost all international data traffic and are the backbone of the internet.

As part of its response to the priorities of PICs, Australia should seek to leverage its emerging position as a regional cable, datacentre, and LEO hub by partnering with private-sector operators to extend network infrastructure to underserved nations throughout the region. Providing this foundational infrastructure is the first step in lifting the cyber security and resilience of the region and would enhance Australia's connections – literally and figuratively – with our regional neighbours.

Australia should also seek to leverage our well-developed digital ecosystem industry to enable our regional neighbours to store and process their data in Australia. This should include establishing a legal framework which preserves and maintains the sovereignty of the data and provides the same high standard of security that the Australian Government requires of its own data.

Response to Terms of Reference

1. **Identify the key priorities for Pacific Island countries and the Pacific region**
2. **Assess Australia's engagement in the Pacific and alignment of initiatives and policies with the identified priorities of Pacific Island nations**

'Technology and Connectivity' is one of the seven key themes of the Pacific Islands Forum's 2050 Strategy for the Blue Pacific Continent, with the stated goal that: "All Pacific People have access to affordable, accessible, reliable, resilient safe, secure, inclusive and interoperable ICT services, including e-services and the digital economy."

The four outcomes of this theme in the strategy's implementation plan include:

- Increased investment in affordable, reliable, resilient, safe, secure, inclusive and interoperable ICT infrastructure, systems and operations,
- Improved digital literacy, skills and capability for all Pacific peoples including vulnerable communities and marginalised groups,
- Strengthened enabling environment for an inclusive digital economy and e-services,
- Strengthened cyber security measures to protect systems from cyber threats.

Vocus submits that Australia can play an integral role in assisting PICs to achieve these outcomes and overcoming policy, technical and commercial barriers relating to the digital economy.

Outcome 1: Increased investment in affordable, reliable, resilient, safe, secure, inclusive and interoperable ICT infrastructure, systems and operations,

Access to digital infrastructure is fundamental to the economic and social development of the Pacific, but most PICs have limited access to high-capacity submarine cables. As the Chief Scientist at Asia Pacific Network Information Centre (**APNIC**) Geoff Huston has noted, the Pacific has long been a 'transit zone' for digital infrastructure – where the major economies located on the rim of the Pacific Ocean build point-to-

point cable systems, bypassing Pacific Islands nations and often leaving them dependent on low-capacity satellite services[1].

In recent years the Australian Government and its Quad partners have intervened to establish submarine cable connections to numerous PICs:

- In 2019, the Australian Government funded the CS2, a cable from Sydney to the Solomon Islands and Papua New Guinea (designed and delivered by Vocus)[2],
- In 2019, the Australian Government announced funding for a Front-End Engineering Design (**FEED**) study for the first international submarine cable to Timor-Leste (a project currently being progressed by Vocus)[3],
- In 2020, the Australian Government announced it was partnering with Japan and the United States to finance a cable spur (a connection off a main 'trunk' cable) to the Republic of Palau[4],
- In 2021, Australia, Japan, and the US agreed to jointly fund a new submarine cable system connecting Federated States of Micronesia, Kiribati, and Nauru[5],
- In October 2023, Australia and the US jointly announced a range of initiatives to improve digital connectivity and cyber resilience in the region, including a total of US$65 million to fund cable branching units for the Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Solomon Islands, Timor-Leste, Tuvalu, and Vanuatu[6].

The scale and scope of these initiatives will be beneficial to Australia's own interests in the region and the economic prospects of those countries connected to this infrastructure. These initiatives will also require an integrated blueprint on how this bandwidth capacity can be further leveraged, and what policy settings need to be in place to ensure that the benefits are widely distributed within local communities.

The small markets in the Pacific Islands limit commercial drivers to invest in infrastructure, despite the clear social and economic benefits they bring to recipient countries. In an address to ASPI's Sydney Dialogue in April 2023, Samoa's Prime Minister, Fiame Naomi Mata'fa highlighted that "reliable, fast, affordable international connectivity opens up huge potential for small island states. We have seen this in the Pacific once a cable was landed."[7]

An outline of the current subsea fibre infrastructure is provided for reference in the following **Figure 1**.

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[1] The politics of submarine cables in the Pacific, Geoff Huston, APNIC, 2 June 2022, https://blog.apnic.net/2022/06/02/the-politics-of-submarine-cables-in-the-pacific/

[2] The Coral Sea Cable System: supporting the future digital economies of Papua New Guinea and Solomon Islands | Australian Government Department of Foreign Affairs and Trade (dfat.gov.au)

[3] AIFFP finance for an undersea cable study in Timor-Leste, 15 September 2020, AIFFP finance for an undersea cable study in Timor-Leste | The Australian Infrastructure Financing Facility for the Pacific (AIFFP)

[4] Australia is partnering with Japan and the United States to finance Palau undersea cable, AIFFP, 28 October 2020, https://www.aiffp.gov.au/news/australia-partnering-japan-and-united-states-finance-palau-undersea-cable

[5] Joint Statement on Improving East Micronesia Telecommunications Connectivity, U.S. Department of State, 11 December 2021, https://www.state.gov/joint-statement-on-improving-east-micronesia-telecommunications-connectivity/

[6] White House Fact Sheet, Delivering on the Next Generation of Innovation and Partnership with Australia, 25 October 2023, FACT SHEET: Delivering on the Next Generation of Innovation and Partnership with Australia | The White House

[7] Bridging the digital divide in the Pacific, Fiame Naomi Mata'fa, 5 April 2023, https://www.aspistrategist.org.au/bridging-the-digital-divide-in-pacific-island-states/

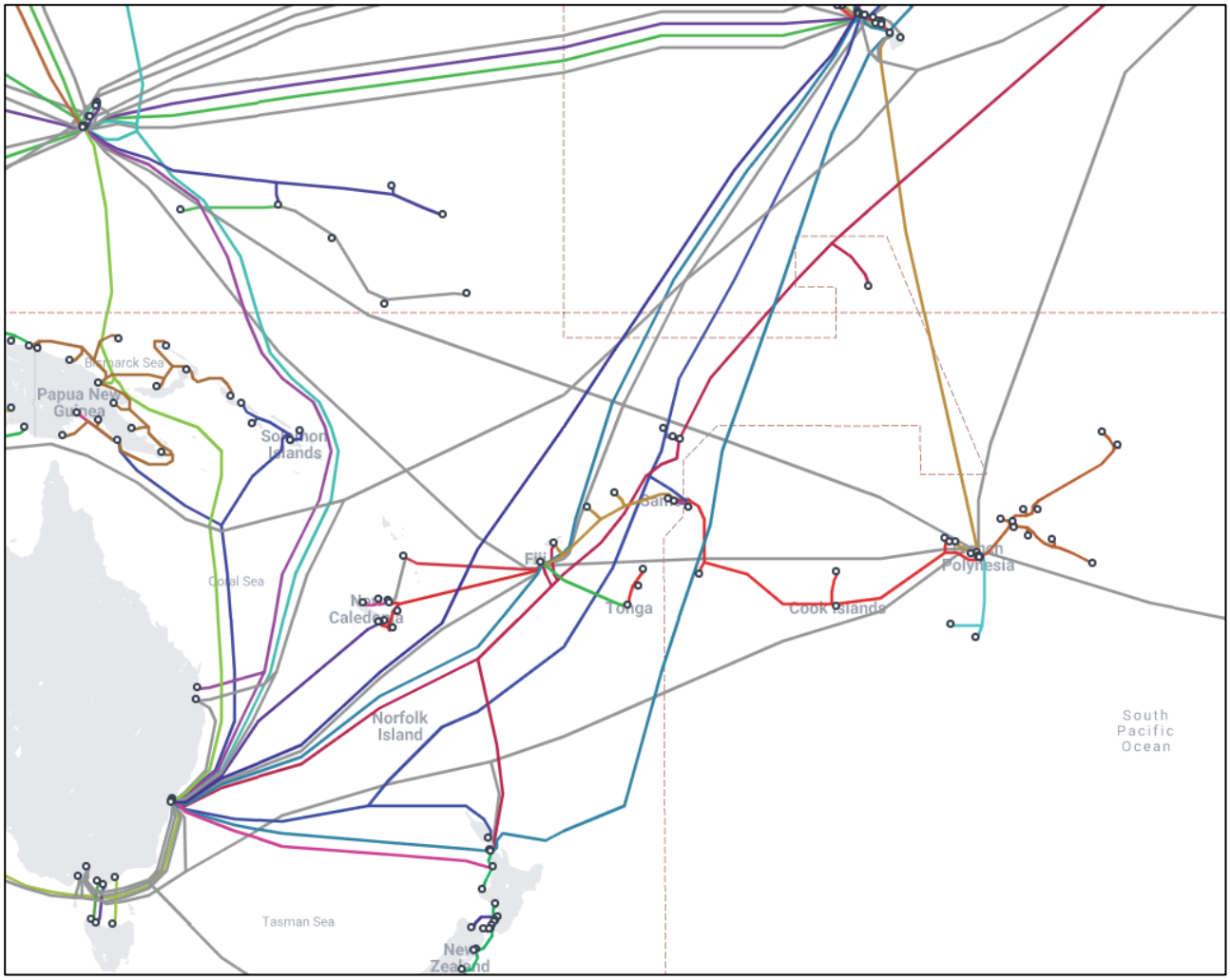

Figure 1: Map of existing and planned submarine cables in the Pacific (Source: SubmarineCableMap.com)

The Australian Government should use its emerging position as a regional cable hub by continuing to partner with private-sector operators to extend cable infrastructure to underserved nations throughout the region. This partnership could include funding for FEED studies and technical assistance, branching units (a piece of equipment used to split the cable to serve an additional destination, which must be built-in prior to deployment) on commercial cables as they are being planned and the Engineering, Procurement and Contracting (**EPC**) for the related cable spurs.

Vocus notes that the current AIFFP Deed of Standing Offer Panel for Client-Side Project Management (**CSPM**) services represents a pre-existing mechanism to support these types of activities.

In April 2024, Vocus signed contracts with Google to cement a partnership delivering the Pacific Connect cable system[8] - a trans-Pacific subsea ring between Australia and the US via diverse landings and an interlink cable between Fiji and French Polynesia as illustrated in the following **Figure 2**. The system will also include pre-positioned branching units to enable other Pacific nations to connect in the future.

[8] Vocus and Google sign contracts to deliver Pacific Connect, expanded with Sydney to Melbourne and New Zealand routes, 30 April 2024, https://www.vocus.com.au/news/vocus-and-google-sign-contracts-to-deliver-pacific-connect

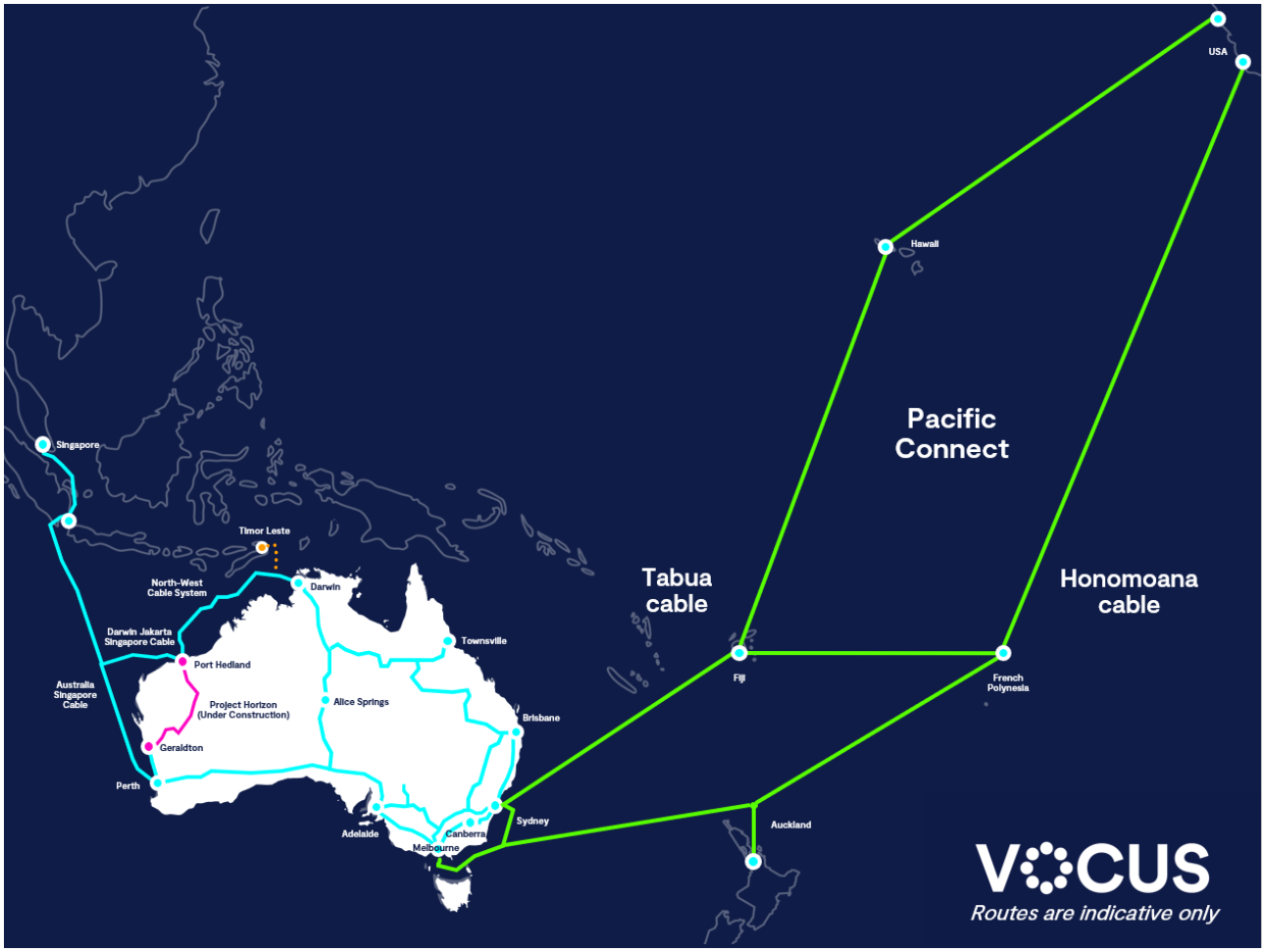

Figure 2: Map of Tabua and Honomoana cables on the Pacific Connect system.

Outcome 2: Improved digital literacy, skills and capability for all Pacific peoples including vulnerable communities and marginalised groups

Like Australia, many PICs face the policy problem of how to extend connectivity to remote communities. This lack of connectivity outside major population centres is often coupled with other social issues such as lower incomes, poor employment opportunities, and lower levels of education.

While many PICs have competitive mobile networks available, including the Telstra-owned Digicel networks, mobile coverage is unlikely to ever extend to many remote communities due to low populations and the economically unviable costs of deploying mobile infrastructure.

Australia is well-positioned to support improved connectivity in vulnerable communities throughout remote areas of the Pacific.

First, LEOs are a breakthrough technology capable of providing metro-comparable broadband speeds and performance characteristics to any location, no matter how remote. Starlink is the first commercially available LEO service, with others including One Web, Amazon Kuiper and Telesat are due to come to market in the near future. Starlink services offer high-speed broadband and voice connectivity with typical speeds in excess of 100 megabits per second – faster than most metropolitan broadband services in Australia.

Today the only PIC where Starlink is widely available is Fiji, where the company was recently granted a carrier licence and has established a local 'gateway' (meaning, a ground station where data from satellites connects back into the broader internet – typically via submarine cables). These gateways – which are operated by Vocus in Australia and New Zealand – enable the high speeds available via Starlink.

Australia has the opportunity to fund LEO services in remote areas of the Pacific Islands, which could be done through a combination of supporting end-user services (i.e. Starlink terminals/dishes and associated

connectivity costs) and the establishment of more gateways in PICs, which would enable greater network capacity throughout the region.

When PICs are impacted by natural disasters, a lack of connectivity can hamper recovery efforts – as was experienced during the Tongan volcanic eruption of 2022. In response to Tonga's only submarine cable being cut, Starlink rapidly deployed infrastructure freighted from Vocus depots – in neighbouring Fiji to enable communications in Tonga within a matter of weeks[9].

Second, Australia would also be well positioned to support rapid-deployment mobile networks for Humanitarian Aid and Disaster Relief (**HADR**) efforts in the Pacific. A priority area of the Quad partnership[10], HADR efforts can be slowed by a lack of reliable communications infrastructure, particularly following natural disasters. Australian-made technology developments such as the drone-mounted 'mobile network in the sky' demonstrated by Vocus would be ideally suited as a standing regional solution to disaster relief efforts[11], and could be stationed in Australia (or a central location in the Pacific). A fleet of these drone base stations could be maintained in preparation for rapid deployment to PICs when disaster strikes to rapidly restore communications.

Vocus is currently working with the Australian Government as a successful applicant to the Innovation Round for the Telecommunications Disaster Resilience Innovation (**TDRI**) Program and an expansion of this capability to our Pacific partners would represent a strong export opportunity and a catalyst for dramatically improving the robustness of networks when they are most needed.

Outcome 3: Strengthened enabling environment for an inclusive digital economy and e-services

Australia also has the opportunity to leverage its well-established datacentre infrastructure and cloud services industry to be utilised by PICs. Similar to submarine cables, smaller PICs are unlikely to attract commercial investment in datacentres of sufficient scale to enable a local cloud market (for services such as Microsoft Azure, Google Cloud, Amazon Web Services, etc. where online applications are increasingly hosted). A lack of in-country datacentre infrastructure is limiting the development of online Government services as well as the development of the broader digital economy such as online banking, etc.

Rather than seeking to develop their own in-country datacentres, there is an opportunity for PICs to utilise Australian datacentres to host their own Government data and online services. Under the *Hosting Certification Framework,* Australia has established high security standards for the storage and processing of Australian Government and citizen data, and this type of framework could be made available to PICs with underdeveloped datacentre infrastructure.

To ensure that these nations maintain sovereignty over their data, Australia should seek to develop a legal or contractual framework which would allow this data to be stored and processed in Australian datacentres with protections in place to prevent access by anyone other than the nation which 'owns' the data. As has been pointed out by Google[12], there can be added security benefits of having this data stored in another jurisdiction, such as avoiding the impact of localised events like natural disasters, cyber-attacks or civil unrest.

This approach has been conceptualised as a 'Data Embassy', where data belonging to the Governments of PICs is stored in Australia and provided with similar protections as their physical Embassies (or High Commissions). The security of data held and processed in Australia would also be dependent on the data being securely transmitted between PICs and Australia via high-capacity trusted submarine cables.

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[9] ABC News, Elon Musk's SpaceX helps to restore Tongan internet, 10/2/2022 https://www.abc.net.au/news/2022-02-10/musk-helps-restore-tongan-internet-amidst-covid-outbreak/100819172

[10] Fact Sheet: Guidelines for Quad Partnership on Humanitarian Assistance and Disaster Relief (HADR) in the Indo-Pacific https://www.dfat.gov.au/international-relations/regional-architecture/quad/fact-sheet-guidelines-quad-partnership-humanitarian-assistance-and-disaster-relief-hadr-indo-pacific

[11] Vocus and NSW Telco Authority demonstrate Starlink-connected 'mobile network in the sky' for disaster relief connectivity, 6/7/23 https://www.vocus.com.au/news/vocus-and-nsw-telco-authority-demonstrate-starlink-connected-mobile-network-in-the-sky-for-disaster-relief-connectivity

[12] 'How data embassies can strengthen resiliency with sovereignty', 12/11/22, https://cloud.google.com/blog/products/identity-security/data-embassies-strengthening-resiliency-with-sovereignty

Outcome 4: Strengthened cyber security measures to protect systems from cyber threats

Security policy experts have recommended that Australia continue to fund and co-fund strategic submarine cable projects in the Pacific, working together with Quad partners, the United Kingdom, and the European Union.[13] A report by the Australian National University National Security College suggested that Australia should also consider co-funding new submarine cables in the Indian Ocean with India and France.[14] These critical connections are a vital enabler for improved cyber resilience as well as economic and national security in our region. An under-developed datacentre industry – lacking necessary investments in security – could increase cyber risks for PICs.

The Pacific Islands Forum's desire to strengthen cyber security should not overlook the physical elements of the Internet. Access to, and influence over, submarine cable infrastructure has a direct impact on security. Submarine cables are subject to natural threats and threats caused by intentional and unintentional human activity. Potential threats posed by malicious actors include deliberately cutting cables, tapping them, and cyber-attacks, such as the crashing of Government networks in Vanuatu in 2023.[15] Multiple parts of the submarine cable supply chain can potentially be compromised, enabling the interception of data, surveillance, and traffic disruption.[16] There are also a range of potential risks to the reliability of cables including damage caused by seismic activity, fishing, and vessel anchors. Countries with only one cable are especially vulnerable to outages, as was seen in Tonga when its sole submarine cable was damaged by a volcanic eruption in 2022, taking almost 6 weeks to repair.

A comprehensive – and regionally integrated – approach to cyber security involves considering the specific threats at each layer of the technology stack, including the infrastructure by which data is transmitted. In October 2020, the NATO Secretary General, stressed the "crucial importance" of undersea cables, their role in strengthening resilience and the importance of being able to protect this infrastructure.[17]

The implications of disruption to submarine cables are significant, and the most common cause of damage to submarine cables is human error and negligence. Activities that pose the greatest threat are sea-bottom trawl fishing, dumping, sand dredging, and anchoring. According to International Cable Protection Committee statistics, fishing and anchoring accounts for approximately 70 per cent of global damage to submarine cables[18].

Vocus supports the Australian Government's ambition to improve submarine cable resilience throughout the region, an agenda which is being pursued through the establishment of a Cable Connectivity and Resilience Centre (**CCRC**) by the Department of Foreign Affairs in support of the Quad Partnership for Cable Connectivity and Resilience announced at the 2023 Quad Leaders' Summit[19][20].

As noted by DFAT, "Australia can play a more active role in supporting partner governments' policy and regulatory development and reforms, shaping regional and global norms, as well as strengthening engagement between the public and private sector on new cable projects. To be effective, the Centre will

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[13] Options for safeguarding undersea critical infrastructure, Australia and Indo-Pacific submarine cables, Samuel Bashfield and Anthony Bergin, Policy Options Paper No 25, June 2022, https://nsc.crawford.anu.edu.au/sites/default/files/publication/nsc_crawford_anu_edu_au/2022-06/nsc_pop_undersea_critical_infrastructure_no.25_web-1.pdf

[14] Submarine Cable Security in the Indian Ocean, National Security College Report, https://nsc.crawford.anu.edu.au/department-news/20995/submarine-cable-security-indian-ocean

[15] Invisible and vital: undersea cables and Transatlantic security, Center for Strategic and International Studies, 11 June 2021, https://www.csis.org/analysis/invisible-and-vital-undersea-cables-and-transatlantic-security

[16] Security threats to undersea communications – cables and infrastructure – consequences for the EU, Policy Department for External Relations, European Parliament, June 2022, https://www.europarl.europa.eu/RegData/etudes/IDAN/2022/702557/EXPO_IDA(2022)702557_EN.pdf

[17] Online press conference by NATO Secretary General Jens Stoltenberg, 20 October 2020 https://www.nato.int/cps/en/natohq/opinions_178946.htm?selectedLocale=en

[18] Government Best Practices for Protecting and Promoting Resilience of Submarine Telecommunications Cables' United Kingdom: International Cable Protection Committee, updated 18 November 2022, https://www.iscpc.org/publications/icpc-best-practices/

[19] https://www.pmc.gov.au/resources/quad-leaders-summit-2023/infrastructure

[20] The White House, Quad Leaders' Joint Statement, 2/5/2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/05/20/quad-leaders-joint-statement/

need to work with a wide range of partners in Indo-Pacific governments, the private sector, regional and multilateral organisations, academia and think tanks, and across the Australian Government."[21]

Please direct any questions regarding this submission to:

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[21] DFAT tender documents for the Cable Connectivity and Resilience Centre 21/2/2024, https://www.tenders.gov.au/Atm/ShowClosed/78aaf5f3-0d99-477e-9d9b-4e49a071f182?PreviewMode=False