INDIAN OCEAN TERRITORIES
Regional Development Organisation
Australia

Committee Secretary
Joint Standing Committee on the National Capital and External Territories
PO Box 6021
Parliament House
Canberra ACT 2600

Dear Committee,

Re: Submission to the Inquiry into the availability and access to enabling communications infrastructure in Australia's external territories

The Indian Ocean Territories (IOT) Regional Development Organisation (RDO) welcomes the opportunity to provide a submission to the inquiry into the availability and access to enabling communications infrastructure in Australia's external territories.

The role of the RDO is to support regional economic development in the IOT by attracting investment and facilitating economic growth. Modern and reliable communications infrastructure is crucial to the development and sustainability of the local economies, and for the provision of services. It also connects the local residents with each other, mainland Australia and the rest of the world, which has been particularly important during the COVID-19 travel and physical distancing restrictions.

The existing telecommunications infrastructure in the IOT is a variety of both new and ageing assets, including satellite and fibre internet, mobile networks, landline telephone services, digital television, radio stations and VHF radio. In addition to telecommunications, mail transported by air and sea is still an important communications modality for the IOT.

The RDO shares the aspiration of the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) for the IOT to have services and essential infrastructure that are comparable to mainland Australia. There have been improvements in telecommunications infrastructure in recent years. However, due to the rapid pace of developments in telecommunications, and the corrosive environmental conditions in the IOT, ongoing improvements in, and additions to, the infrastructure are essential to ensure that the IOT are not left behind.

Internet and mobile phone services that are reliable, fast, affordable and equitable, and that meet the needs of government, business and residential users, are essential. With a growing tourism sector, visitors to the IOT also expect high quality telecommunication services. This will enable our local economies to diversify and grow, and our residents to access government and other services, many of which have moved to an online first model.

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Please find attached the RDO's submission to the inquiry. I look forward to the report of the Committee.

Yours sincerely,

[redacted]

Mrs. Natasha Griggs
Chairperson – Indian Ocean Territories Regional Development Organisation
Administrator of Christmas Island and the Cocos (Keeling) Islands

27 January, 2021

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Indian Ocean Territories Regional Development Organisation

Submission to the Joint Standing Committee on the National Capital and External Territories

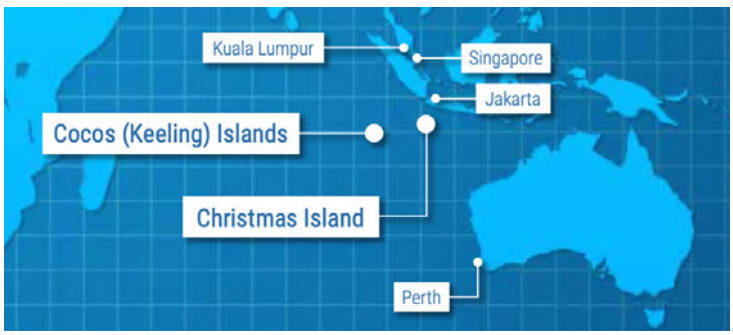
Inquiry on the availability and access to enabling communications infrastructure in Australia's external territories

About the Indian Ocean Territories

Australia's Indian Ocean Territories (IOT) comprise Christmas Island and the Cocos (Keeling) Islands. Due to their remoteness, climate and topographies, these islands have particular challenges and opportunities.

Christmas Island is located 2,605 km from Perth and 490 kilometres from Jakarta. The island is at the tip of a 5,000 metre submarine volcano. The highest point is 361 metres above sea level. The area of the island is 137.4 km, over 60% of which is national park. The island has 1,845 residents. At the 2016 Census, 51% of households reported that a non-English language was spoken at home. Languages spoken include Mandarin, Malay, Cantonese, Min Nan, and Tagalog.[1] The island has extraordinary access to the depths of the ocean and its marine creatures, as well as world-class Ramsar sites. The annual red crab migration is an internationally renowned natural event on Christmas Island between October and January.

The Cocos (Keeling) Islands are located 2,935 km from Perth and 985 km from Christmas Island. They are a group of 27 low-lying coral islands that form two atolls. The total land area is 15.6 km. The 545 residents of the Cocos (Keeling) Islands are located on two of the islands: Home Island and West Island. 80% of residents are Cocos Malay and live on Home Island. Cocos Malay, a unique dialect of Malay, is the most common language spoken on Home Island.[2] The remaining population identifies as being of European descent. The Cocos (Keeling) Islands is a tropical environment that encircles turquoise lagoon waters.



The economic drivers of Christmas Island and the Cocos (Keeling) Islands are distinct. Christmas Island's largest private sector employer is the phosphate mine which has a limited working life. The Cocos (Keeling) Islands economy is heavily reliant on Commonwealth funded projects and activities. The IOT has a modest tourism industry with potential for future growth. In a COVID-19 context with constrained international travel, the IOT have proven an attractive destination within the domestic tourism market. However, broader accessibility challenges, limited tourist facilities and elevated travel costs are impediments to sustained growth in tourism.

[1] Department of Infrastructure, Transport, Regional Development and Communications. (2017). *Christmas Island 2016 Census Data Fact Sheet*. Canberra: Australian Government.
[2] Department of Infrastructure, Transport, Regional Development and Communications. (2017). *Cocos (Keeling) Islands 2016 Census Data Fact Sheet*. Canberra: Australian Government.

The region is closer in proximity to our Asian neighbours than to the Australian mainland. The Australian Government underwrites flights to the IOT and has been agile in its response to fluctuating demands—however operational challenges remain with bringing people and freight to the IOT.

About the Regional Development Organisation

Across Australia, Regional Development Australia (RDA) Committees assist with economic development across regions. The RDA program is a national network of committees made up of local leaders who work with all levels of government, business and community groups to support the economic development of their regions.

The Indian Ocean Territories Regional Development Organisation (RDO) is part of the RDA network. The RDO committee is a group of community volunteers drawn from the public, private and not-for-profit sectors who represent the two communities of Christmas Island and the Cocos (Keeling) Islands. Its objective is to facilitate and promote economic development in the IOT. In undertaking this role, the RDO is conscious of the IOT's unique challenges and opportunities.

The RDO committee is chaired by Mrs. Natasha Griggs, the Administrator of Christmas Island and the Cocos (Keeling) Islands, who is the most senior Commonwealth Government representative residing in the IOT. The vision for the IOT region, captured in the Strategic Plans for Christmas Island and the Cocos (Keeling) Islands which were developed by the RDO and endorsed by the Australian Government, is to be sustainable and to ensure a high living standard for all who live here.

INTRODUCTION

The IOT face specific challenges and opportunities in the implementation and maintenance of communications infrastructure, and the delivery of communications services.

The RDO acknowledges the generous financial support of the Australian Government to the maintenance and development of the IOT over many years and, most recently, the support of the Hon Nola Marino MP, Assistant Minister for Regional Development and Territories, during the COVID-19 pandemic. It is recognised that realising the Department of Infrastructure, Transport, Regional Development and Communication's (DITRDC) aspiration for the IOT communities to have comparable services and essential infrastructure to mainland Australia is expensive and challenging.

The RDO worked closely with the IOT communities to develop the *Our Christmas Island 2030 Strategic Plan* and the *Our Cocos (Keeling) Islands 2030 Strategic Plan*. The RDO is currently working with Australian Government agencies, local government, and local businesses and community groups to implement the actions from the plans. The plans include actions to diversify the economic base of the region, and to provide the IOT with a sustainable future. Specific actions include to increase tourism, and to determine how access to fast and reliable internet can open up opportunities for the region. Examples include via accelerating telehealth, on-line training and education opportunities, and emergency and recovery responses; by enabling the development of online businesses and new business models; and by attracting new businesses to relocate to the IOT. Economic development in the IOT will be underpinned by modern and reliable communications infrastructure, and it is vital that the Australian Government continue to support ongoing improvements in infrastructure and services.

The financial investment of the Australian Government has resulted in numerous improvements in communications infrastructure in the IOT in recent years. However, there are deficiencies to be identified and addressed. In this submission, the RDO offers a number of recommendations about how this can be achieved, including by establishing governance and risk management frameworks, improving access to fast and reliable communications, and increasing the digital literacy, and improving the user experience, of consumers.

RESPONSES TO THE TERMS OF REFERENCE

1. **The availability of, and access to communications technologies and infrastructure in each of the external territories.**

   The communications infrastructure in the IOT is a variety of both new and ageing assets, including fibre and satellite internet, mobile networks, landline telephone services, digital television, radio stations and VHF radio. The IOT are also serviced by Australia Post. A summary of communications infrastructure is provided below.

   Internet - Fibre

   Fibre internet has recently become available on Christmas Island through being a hub of the Australia-Singapore fibre optic underwater cable. Coverage across the island is limited but expanding, mostly delivered through fixed wireless and some direct fibre from the node. Fibre internet is also a possibility for the Cocos (Keeling) Islands, but details of the project are currently limited.

   Internet – Satellite

   Several satellite internet services are available for Christmas Island and the Cocos (Keeling) Islands, including NBN Skymuster. Since its launch in the IOT, NBN has continued to increase the service quality and data limits of its Skymuster plans. A new 4G LTE mobile data network was launched in December 2020 on the Cocos (Keeling) Islands, with the assistance of funding from the Australian Government's Building Better Regions Fund. The new network is a welcome addition to the communications infrastructure, and mobile internet access is now available across the majority of the main atoll and lagoon of the Cocos (Keeling) Islands. There is currently no mobile data network on Christmas Island.

   Internet – Wi-Fi Hotspots for Tourists and Business Visitors

   Tourist and business visitors can access satellite internet via Wi-Fi hotspots on West Island, Home Island and Direction Island at the Cocos (Keeling) Islands. On Christmas Island, Wi-Fi hotspots are accessible at various locations around the settled areas, and some accommodation providers offer Wi-Fi access.

   Mobile Phone Services

   A traditional 2G voice mobile network, run be Telstra, exists on Christmas Island which offers voice calls and text only. Although this GSM system is solid and quite reliable, it is a very old and outdated network that requires updating to avoid becoming obsolete. Christmas Island is one of the last places in Australia where Telstra only offers a 2G service, which Telstra is seeking to upgrade to 4G. The locally-run voice mobile network on the Cocos (Keeling) Islands was decommissioned and there is currently no voice mobile network. The 4G LTE data network does

have numerous calling options, including via the use of e-SIMs, Skype, Wi-Fi Calling, and Voice over Internet Protocol (VOIP). A trial of VOIP services in the Cocos (Keeling) Islands was recently announced by the Australian Government. The trial aims to identify new options to deliver voice calls in remote areas.[3]

Fixed Line (Landline) Services

Telstra fixed line (landline) services are available on both Christmas Island and the Cocos (Keeling) Islands. Communication is via satellite to/from the exchanges on each island, then via copper network to each property. This service is the most reliable way to make and receive clear phone calls without delays and dropouts. Ageing infrastructure and weather events sometimes result in poor line quality and connection issues, however there are local technicians on island to fix issues and provide ongoing maintenance.

Digital TV and FM radio

There are mainland comparable Digital Television and FM radio services delivered on both Christmas Island and the Cocos (Keeling) Islands. These services are sourced from the Viewer Access Satellite Television (VAST) platform and there are five 'self-help' re-transmissions sites operated by the Department of Infrastructure, Transport, Regional Development and Communications (hereafter DITRDC) for which provision of services is contracted out to a local company. These systems improve in line with advancements in technology, but heavy weather can affect these systems in the cyclone season.

VHF radio

VHF radio, along with PSTN fixed line, is the most reliable and widest covering communications technology and in the absence of complete mainland equivalent mobile services, is used in real time to get messages and command and control messages between DITRDC and emergency agencies. The Cocos (Keeling) Islands has very robust coverage, with the exception of North Keeling National Park. Christmas Island has good coverage, but there are significant black spots throughout the island and this does cause issues with coordination during search and rescue, for Parks Australia, and for other agencies in general business.

Other TV services

Some residents on Christmas Island and the Cocos (Keeling) Islands have privately installed satellite dishes to watch more culturally specific programming. There is a wide variety of services in Chinese and Malay. These services and are paid for, maintained and subscribed to privately by the residents.

Postal services and couriers

The IOT are serviced by Australia Post. Items sent via the Express Post network are delivered by air, and items sent Standard Post are delivered by sea. Mainland courier services do not offer delivery to the IOT.

[3] Fletcher, P, M.P. (22 Jan 2021). *Investing in rural and remote voice services*. Media Release. Minister for Communications, Urban Infrastructure, Cities and the Arts. Canberra: Australian Government.

2. Future opportunities in enabling communications technologies and infrastructure in each of the external territories including telecommunications services, submarine cables, satellite capabilities.

With the exception of the areas accessing fibre internet on Christmas Island, all communication in the IOT is via satellite. There are many constraints in the existing satellite networks including ongoing issues with speed, reliability and quality of service, often caused by susceptibility to weather events and old backhaul equipment. The recent introduction of fibre internet on Christmas Island via the Australia Singapore Fibre Optic Cable, and the possible availability of fibre at the Cocos (Keeling) Islands via the Oman Australia Cable, provides opportunities to improve all telecommunications services in the IOT that currently rely on satellite connections.

On Christmas Island, access to fibre internet is being provided through a local retailer. This service is in its infancy. It is currently only available in certain areas of the island, and is yet to reach many businesses and residents. However, the retailer is actively pursuing options to make the fibre internet accessible at more locations.

On the Cocos (Keeling) Islands, it is proposed that a link from the main Oman Australia cable be brought ashore on West Island. At this stage, there is little information available about whether the fibre will be made available to all Cocos residents, businesses and service providers, how the service would be retailed, and what the price of the plans will be.

3. Opportunities and barriers arising from current and potential future communications infrastructure in each of the external territories.

If residents, small businesses, service providers and government agencies in the IOT have access to fast, reliable and affordable communications via fibre they will be able to take advantage of the vast number of opportunities that are already available on the mainland.

OPPORTUNITIES

Education

Improved telecommunications at the district high schools on Christmas Island and the Cocos (Keeling) Islands will enable greater accessibility to and usability of online schooling resources for students, opening up opportunities for students via access to courses that cannot be offered in small district high schools. School staff will be able to access online professional development courses and resources. This will result in costs savings for the schools who currently pay for staff travel and accommodation to attend professional development on the mainland. It will also allow greater accessibility to and usability of online short courses and TAFE and university courses for residents, small businesses, service providers and government agencies.

Health

Improved telecommunications will enable greater accessibility to and usability of health services, including telehealth and other online health resources that require teleconferencing. Access to mental health services, which are currently lacking in the IOT, will be a particular benefit. The Indian Ocean Territories Health Service has reported an increase in the number of telehealth consultations. While COVID-19 related travel restrictions from April to June 2020 had some impact, a big driver was the establishment of dedicated telehealth equipment and rooms. Increased access to telehealth has the capacity to increase workplace productivity. When travel

to the mainland is required to access health care, patients are off-island for a minimum of three working days. Improved telecommunications will also increase the scope for health center staff to access online professional development.

Other government agencies, service providers and local businesses

Improved telecommunications will improve service provision, increase productivity, decrease staff training costs, enable greater accessibility to and usability of cloud-based software including document storage, financial software, teleconferencing, and online training options. It will also increase opportunities for innovation, for the development of online businesses and new business models, and attract new businesses to relocate to the IOT. Improved telecommunications will also significantly improve accessibility to and the reliability of emergency communications.

Residents

Improved telecommunications will give residents greater accessibility to and usability of education and health services, and other online services, including My Gov and banking. It will also increase the opportunities to attract new residents and retain existing residents, and increase opportunities for residents to gain employment with off-island, digital-based businesses, and to work-from-home. Having better communications would also reduce the feeling of remoteness and isolation of the communities, and the negative effects this can have on morale and mental health.

Tourism

Improved telecommunications will greatly improve the experience of tourists and business visitors, who expect to be able to access internet and mobile phone services relatively easily. However, there are currently numerous barriers to accessing these services in the IOT. It will also assist tourism businesses. In the Joint Standing Committee on Northern Australia tourism report in 2018 it was concluded that "*most tourists expect telecommunication access when they travel. Tourism businesses also require phone and internet access to market their products and compete with other tourist operators and destinations. Improving internet and phone coverage in many areas of Northern Australia would ensure tourists can document their travels online and enable tourism businesses to have a greater online presence, meet customer expectations and increase their market reach*".[4]

BARRIERS

Lack of governance and risk management frameworks

A governance framework to manage the communications infrastructure in the IOT needs to be explored. Without a managed and coordinated approach to the maintenance and upgrade of existing communications infrastructure, and to the timely addition of new infrastructure, the IOT telecommunications infrastructure will likely only see small improvements over time that will not keep pace with technologies accessible by mainland users. Risk mitigation is also an issue. In many cases a small, local provider is the only provider or retailer of a particular service, and

[4] Joint Standing Committee on Northern Australia. (2018). *Northern Horizons – Unleashing Our Tourism Potential Report on the Inquiry into Opportunities and Methods for Stimulating the Tourism Industry in Northern Australia*. Canberra: Parliament of the Commonwealth of Australia.

there is a very real risk of a service becoming unavailable if the single provider fails or otherwise exits the market as has happened in the past with internet services on Christmas Island.

Lack of access to fast, reliable communications

The three biggest issues affecting access to fast, reliable communications in the IOTs are the reliance on satellite communications infrastructure, the lack of up-to-date mobile phone networks, and the need for more communications towers to reduce the number of blackspots.

Almost all of the telecommunication in the IOT is via satellite, which is subject to ongoing issues with speed, reliability and quality of service. The deficiencies of telecommunications infrastructure in the IOT, and the difficulties of reliable telecommunications infrastructure being provided in the remote islands, was highlighted in 2017 in the report of the Joint Standing Committee on the National Capital and External Territories.[5]

Access to fibre internet

Fast and stable telecommunication is essential for many basic operations of government, service providers, businesses and residential users. Currently, only a limited area of Christmas Island has access to fibre internet. All other areas of Christmas Island, and the entire Cocos (Keeling) Islands, rely on satellite communications. There are ongoing issues with the speed, reliability and quality of the satellite services, often caused by susceptibility to weather events, old backhaul equipment, and restrictions on speeds and data usage.[6] The satellite issues also impact the voice services over the new 4G LTE network on the Cocos (Keeling) Islands, which can be subject to delays and dropouts, and cannot be relied upon for business or emergency communication.

Mobile phone networks

The mobile phone network at Christmas Island is 2G, one of the few places left in Australia where Telstra only provides a 2G service. This service offers voice calls and text messages only. There is no access to email or other services that require data, and there are numerous black spots across the island. On the Cocos (Keeling) Islands there is no mobile phone network. Calls can be made and received using services over the 4G LTE data network, but these services are less reliable and work differently to a mobile phone network, and many users cannot receive calls or text messages to a mainland mobile phone number (starting with 04).

Emergency communications

Emergency communications in the IOT are hampered by the lack of reliability in the telecommunications systems, and the large number of blackspots. On the Cocos (Keeling) Islands, landline telephone and VHF radio are generally the most reliable forms of emergency communication, neither of which are readily available to tourists and business visitors. Triple 0 calls can also be made via some, but not all, of the calling options offered via the 4G LTE data

[5] Joint Standing Committee on the National Capital and External Territories. (2017). *The strategic importance of Australia's Indian Ocean Territories.* Canberra: Parliament of the Commonwealth of Australia.

[6] For example, NBN Skymuster has a maximum upload speed of 5 Mbps and download speeds capped at a maximum of 25 Mbps. However, such speeds are routinely not experienced by users. The NBN fair usage policy caps data usage, although the recently announced NBN Skymuster Plus plans are a big improvement, with web browsing, social networking, emailing, and downloading not affecting monthly data usage.

network, and there are blackspots that affect the network. This may be confusing for some users, and hinder their ability to make an emergency call. Issues with landline telephone and the Triple 0 service were experienced recently when the Cocos (Keeling) Islands was on cyclone alert. The faults were rectified the same day, but for a period of time residents were informed that VHF radio was the only form of communication available to contact emergency services.

On Christmas Island, blackspots across the island affect both mobile telephone and VHF radio communications. While marine areas have good VHF coverage, Christmas Island is in need of an increase in infrastructure to cover more of the jungle and old growth areas. When exploring Christmas Island, tourists are advised to borrow a personal rescue beacon (PRB) from the local police station.

Quality and affordability of services

An ongoing issue for consumers in the IOT is that they pay the same or more for services as users pay on the mainland, but may receive services of significantly lesser quality. For example, the cost of Telstra mobile phone plans that can be used on Christmas Island are the same as on the mainland, however Christmas Island users are paying for 4G when only receiving 2G service, and for data that cannot be used on Christmas Island.

The cost of NBN satellite service plans are similar in the IOT to the cost of the same satellite services in other remote areas of Australia. However, these plans are significantly more expensive and restrictive than the NBN fixed line service offered in many mainland locations. The newly introduced fibre services on Christmas Island offer faster speeds than the NBN satellite services for a similar price.[7] The cost of the monthly 4G LTE mobile data plans for local residents and small businesses, and pre-paid vouchers for visitors on the Cocos (Keeling) Islands, are significantly more expensive than data plans on the mainland due to the high costs incurred to implement the network, and the small user base.[8]

Lack of competition

There is a lack of competition amongst service providers and retailers in the communications sector of the IOT. It is a high-risk, low-return investment, making it an unviable option for many mainland providers. The small market size means a small subscriber base for digital and communication services, which makes some business models and/or technologies difficult or unviable without ongoing government funding assistance.

Compliance requirements and access restrictions

Management of compliance requirements and access restrictions is also needed. Current telecommunications infrastructure (for example towers and submarine cables) is controlled by large, off-island entities. The compliance requirements to access the infrastructure are onerous, making it very difficult for local service retailers to expand their existing services and/or to offer new services. In some cases, the controlling entity is unable to sub-lease space on the infrastructure due to limitations contained in government agreements.

[7] https://ipstarbroadband.com.au/products/ipstar-nbn-fixed-line-broadband, https://regionaltechhub.org.au/wp-content/uploads/2020/11/sky-muster-plus-price-comparison.jpg, https://iott.cc, http://www.cifi.com.au.
[8] https://iott.cc/index.php/4g-lte-info, https://www.telstra.com.au/mobile-phones/sim-only-plans.

Environment

The topography of Christmas Island and the Cocos (Keeling) Islands poses many challenges for access to, and the installation and maintenance of, communications infrastructure. In addition, the IOT environment is highly corrosive. These factors increase the costs of installation, materials (higher-grade materials must be used to extend the life of the asset), and ongoing maintenance costs. Historically, shorter term, lower cost constructions have been opted for and this has led to assets needing to be replaced well before projected.

Consumer digital literacy and experience of services

There is a disconnect between getting the maximum benefits and usage of the telecommunications infrastructure available in the IOT, and the digital literacy of the end users. This is an issue for all users, and even more difficult for people whose first language is not English, which is a large percentage of the IOT population. The lack of competition amongst providers and retailers means there is often no choice for consumers. It is difficult to access reliable services with efficient customer service and transparent information, and users are often not advised of faults and outages. There is a lack of clarity around the protections and standards for consumers of the newer technologies, and little recourse when the customer service or assistance offered by a provider or retailer is substandard.

Lack of services for tourists and business visitors

Tourists and business visitors face numerous barriers to accessing internet and mobile phone services in the IOT. With limited Telstra 2G mobile phone coverage on Christmas Island, no mobile phone network on the Cocos (Keeling) Islands, and the very restrictive and expensive Wi-Fi hotspot data options, communications are a constant source of frustration and complaints.

Postal services and couriers

Due to the remoteness of the IOT, and the lack of road and rail connections to metropolitan locations, the region is heavily reliant on air and sea postal services delivered via the Australia Post network. Items sent via the Express Post network are delivered by air usually within a few weeks, and items sent Standard Post are delivered by sea within a few months. The cost of sending items to and from the IOT via Australia Post are the same as on the mainland. However, it is not uncommon for air mail to be off-loaded due to freight limits, causing significant delays in Express Post items, sometimes by many weeks. There have also been instances of Express Post items being sent by sea, which can take many months to arrive. Despite the delays, Express Post is very popular and economical, and significantly cheaper than sending items direct via the air freight company. Mainland courier services do not offer delivery to the IOT.

4. Examining the economic benefits of improving the availability of, and access to communications infrastructure in each of the external territories.

The new fibre internet service on Christmas Island, and the proposed fibre internet service for the Cocos (Keeling) Islands, are welcomed developments that are expected to bring many benefits. Expected economic benefits of improving communications infrastructure in the IOT include higher productivity of existing businesses, reduced costs of travel and accommodation for staff to attend training, reduced costs in service delivery, access to opportunities for the development of new internet-based businesses, increased ability to run or gain employment with a digital-based business, increased attraction and retention of new businesses and

residents, and improved services for tourists and business visitors. Improved communications will also encourage innovation and the development of new business models.

5. Recommendations for any future communications technologies and infrastructure for each of the external territories.

Governance and risk management frameworks

5.1. It is recommended that a communications infrastructure management strategy for the IOT is developed, that includes transparent governance and risk management frameworks, and a roadmap for equitable access to communications technologies.

5.2. It is recommended that, as part of the management strategy, an inventory of communications infrastructure in the IOT is developed to:

i. detail all communications infrastructure assets and ownership of and responsibility for the assets;
ii. identify gaps where local service providers and retailers are unable to access assets that are needed to make services available to more users;
iii. identify where existing communications infrastructure requires maintenance and/or upgrades to allow for future technologies;
iv. prioritise access to the communications infrastructure; and
v. identify where additional communications infrastructure may be required, for example, additional communication towers to reduce mobile phone and VHF blackspots, and fibre distribution points in strategic business and residential locations.

5.3 It is recommended that standard site access agreements are developed to enable access to communications infrastructure by the various government agencies and businesses, and that compliance requirements for access to local communications infrastructure is reviewed to determine its applicability in the IOT context. Modifications to the requirements may increase interest among private investors, and assist local communications providers and retailers to more easily access enabling infrastructure such as direct connect access to fibre, communications towers, government-owned conduit, and exchanges.

Access to fast, reliable communications

5.4 It is recommended that the Australian Government supports the implementation of fibre internet (via cable) on Christmas Island and the Cocos (Keeling) Islands, to provide equitable and affordable access to fast and reliable internet by all government agencies, service providers, businesses and residents. This requires not just fibre to the islands, but fibre to the node, or fibre to over-the-air providers, or fibre to the house. The feasibility of moving existing services that rely on satellite communication to fibre should be explored.

5.5 It is recommended that detailed information is provided to the Cocos (Keeling) Islands community about the Oman Australia cable, and whether the fibre will be made available to all Cocos residents, businesses and service providers, how the service would be retailed, and what the price of the plans will be.

5.6 It is recommended that the Australian Government supports the implementation of mobile phone services on Christmas Island and the Cocos (Keeling) Islands that are comparable to standard mainland mobile phone services. The services should, at a minimum:

i. be 4G (with 5G explored to ensure the services are not quickly outdated);
ii. be always available and unaffected by adverse weather conditions;
iii. have voice calls of a high quality and with no distortion or delay;
iv. be able to make emergency calls;
v. have good coverage;
vi. have data services;
vii. have the ability to send and receive SMS;
viii. have standard mainland mobile numbers (starting with 04);
ix. be able to be used with a standard mainland retailer sim card;
x. be roamable; and
xi. have good technical and customer support.

5.7 It is recommended that the Australian Government continues to support the ongoing provision of fixed voice services (landline) on Christmas Island and the Cocos (Keeling) Islands, and facilitates upgrades and improvements in infrastructure to ensure that these services are in no way limited or reduced. Landlines remain the most reliable form of communication in the IOT.

Economic benefits, including investment options

5.8 It is recommended that an IOT-specific study is conducted to quantify the social and economic benefits and opportunities from having access to fast, reliable and affordable internet and mobile services; to evaluate the business cases for different infrastructure options for the IOT; and to investigate how private investment in communications infrastructure in the IOT can be supported.

Consumer digital literacy and experience of services

5.9 It is recommended that annual basic training in the use of VHF radio and the appropriate use of the emergency channels is offered to both Christmas Island and Cocos (Keeling) Island communities. A level of competency is necessary to ensure that when these services are required that they are able to be utilised.

5.10 It is recommended that communications service providers in the IOT provide an annual information session and document pack, translated into the main IOT languages, to educate all residents on the services available, how to access the services, and how to report faults. Specific instructions should be provided about how emergency calls can be made using the various technologies. Communications service providers should also be required to notify the IOT communities of delays, network outages, and timeframes for the services to be rectified.

5.11 It is recommended that annual surveys be undertaken to quantify customer satisfaction with the various communications services, and to determine where improvements in the services can be made.