NSW GOVERNMENT

NSW Government Submission

Senate Environment and Communications References Committee Inquiry into the Optus Network Outage

Introduction

The NSW Government thanks the Senate Environment and Communications References Committee (the Committee) for the opportunity to provide a submission to its inquiry into the Optus Network Outage (the Inquiry).

This submission will focus on the Inquiry's references that are relevant to the NSW Government's areas of influence:

d. the role of government in ensuring Australians have reliable access to telecommunications technology; and

g. any other related matters.

In responding to these matters, this submission will address:

- The role of the NSW Government in digital connectivity, operational communications and its telecommunications services responsibility under state emergency management arrangements
- Actions taken by NSW's Telecommunications Emergency Management Unit in response to the Optus Network Outage
- The major impacts of the Optus Network Outage in NSW
- Lack of timely information from Optus
- Opportunities and initiatives

The role of the NSW Government in digital connectivity, operational communications and its telecommunications services responsibility under state emergency management arrangements

The NSW Government recognises that digital connectivity is a critical utility that is essential to driving a productive digital economy, facilitating the digital transformation of government services and enabling equitable engagement in an increasingly digital society for work, education, leisure and public safety purposes. More critically, without digital connectivity, the life-saving service of the Triple Zero hotline can fail, which is what occurred on 8 November 2023 for Optus customers.

While the telecommunications sector is regulated by the Commonwealth under its *Telecommunications Act 1997* (Cth) framework, NSW works collaboratively with the Commonwealth through the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), the Australian Communications and Media Authority (ACMA), and the National Emergency Management Authority (NEMA) on various telecommunications programs and initiatives for establishing or uplifting digital connectivity for NSW communities and for public safety purposes.

Examples include programs such as the Mobile Black Spot Program and the Strengthening Telecommunications Against Natural Disasters (STAND) program, and fora including the National Public Safety Mobile Broadband Task Force and the Mobile Telecommunications Working Group, which NSW co-chairs with DITRDCA.

Independently, the NSW Government has a range of functions, programs and projects that seek to identify and prioritise digital connectivity uplift initiatives across the state and, importantly, provide public safety and emergency management operational communications for emergency services organisations and volunteers.

NSW has several agencies with roles directly including a focus on reliable access to telecommunications technology. The Department of Regional NSW (DRNSW) leads initiatives for delivering telecommunications outcomes to regional, rural and remote areas towards reducing the digital divide. This includes its Regional Digital Connectivity Program, which involves investment and partnership with the telecommunications industry to deliver mobile and fixed network infrastructure.

The NSW Telco Authority operates the Public Safety Network, a land mobile radio network (LMR) exclusively used for public safety and emergency management purposes. It also leads whole-of-government digital connectivity programs. Key to this is the NSW Digital Connectivity Strategy, which seeks to 'enable meaningful digital connectivity across NSW that is world-class, affordable and resilient'. The Digital Connectivity Strategy has several key initiatives including a Digital Connectivity Index, a visualisation tool that measures state-wide digital connectivity by overlaying fixed and mobile connectivity data for coverage, speed and service choice against different geographical, social and administrative levels to support the coordination and prioritisation of future investment. This tool informs the 'Find and Fix' program which identifies and delivers cross-agency digital connectivity enhancements for government and communities and will inform other NSW government digital connectivity investment to ensure it is targeted and aligned to need.

Of particular significance to this submission is NSW Telco Authority's responsibility under the *State Emergency and Rescue Management Act 1989* (SERM Act) for leading the Telecommunications Services Functional Area (TELCOFA) and enacting the NSW Telecommunications Services Functional Area Supporting Plan (TelcoPlan). This function is performed by NSW Telco Authority's Telecommunications Emergency Management Unit (TEMU).

TEMU's role is to engage with telecommunications providers, including the three mobile network operators (MNOs) that are also members of the TELCOFA, and emergency services organisations (ESOs) to coordinate emergency management activities to protect, enhance and restore telecommunications infrastructure, pwarticularly relating to disaster and major public safety events. This occurs from TEMU's Operations Centre, the State Emergency Operations Centre and/or in-field operations centres.

Consideration of TEMU's responsibilities is central to this Inquiry.

Major impacts of Optus outage – public safety and emergency management

In addition to the considerable and widely reported effects of the outage on private and business subscribers, of immediate central concern were the potential, significant public safety and emergency management risks that resulted. These were most critical in areas where Optus was the only service provider.

Isolated communities – Triple Zero and Emergency Alert

The Optus outage affected all its subscribers across its mobile and fixed services nationally which, in some circumstances, inhibited subscribers' ability to access emergency services. Where an alternative MNO network was available, Optus subscribers should have had the ability to make Triple Zero calls and to receive Emergency Alert broadcast SMS messages through that alternative network, although Optus reported that there were issues with some phones connecting to Triple Zero. This ability is a device-based function available in all mobile phone handsets regardless of their 'home' network to which they are subscribed but only where an alternative network is available.

Conversely, communities that had Optus as the sole MNO service provider were vulnerable and exposed to public safety and emergency management risks. In the absence of access to the Optus network, there was no alternative MNO network through which to make Triple Zero calls or receive Emergency Alert broadcasts. Similarly, there would have been no ability for Optus subscribers to access real-time, online information about the status of the outage and (although unknown) the estimated time to restoration of services.

In this specific outage, Optus landlines were also unable to make Triple Zero calls. This would leave some communities completely cut-off from communication with authorities.

Recent major natural disaster inquiries, including the 2020 NSW Bushfire Inquiry, the 2020 Royal Commission into National Natural Disaster Arrangements, the 2022 NSW Flood Inquiry and the NSW Select Committee on the Response to Major Flooding Across NSW in 2022 found that the catastrophic bush fires and floods in NSW and other jurisdictions demonstrated the community's reliance on the availability of public communications networks, particularly MNO networks, when responding to and recovering from these devasting events. Telecommunications outages resulting from the loss of electricity and/or damage to network infrastructure during natural disasters is both a frightening and inhibiting experience, with community members and ESO volunteer members who rely on these networks being uncontactable.

While acknowledging the wide and severe impact of the Optus outage on all its customers, and noting that the outage was not a catastrophic disaster of itself, the situation where there is no ability for emergency management communications, including for Triple Zero, Emergency Alert and inter-community communications, constitutes a significant, material, unmitigated risk to public safety and lives.

Fire and Rescue NSW also reported that Advanced Mobile Location (AML) Data for the Triple Zero Emergency Call Service was affected for Optus customers. AML activates a mobile device's location services functions when a Triple Zero (or 112) call is made. The device then sends an SMS containing the approximately location of that device to the Triple Zero Emergency Call Service. Approximately 78 per cent of calls to the Triple Zero Emergency Call Service are made from mobile phones.

Combat agencies and emergency services organisations – commercial MNO network use

Under the SERM Act (s 3), a 'combat agency' is the agency primarily responsible for controlling the response to a particular emergency, in accordance with the NSW State Emergency Management Plan (EMPLAN). In this role, usually performed by ESOs, there is a reliance on real-time information being communicated to and from an incident in the field. This may similarly apply at different levels to the business-as-usual operations of ESOs as they serve the community.

At present, ESOs rely on standard commercial MNO networks to communicate this data. MNO networks are not 'mission-critical', meaning that they lack the in-built resilience and redundancy systems that are features of current LMR networks, such as NSW's Public Safety Network, designed for exclusive use for public safety and emergency management. This will remain the case until a national Public Safety Mobile Broadband (PSMB) capability is developed and rolled-out to ESOs.

In order to access mobile broadband in the field with some level of operational redundancy, some ESOs may operate devices with multiple SIM cards, or may carry multiple devices, subscribed to different MNO networks. However, this is limited to particular operational functions and is not ubiquitous among ESO members.

Additionally, ESO members, and particularly the many volunteers that are called-in to support operations for disasters and major incidents, may only have access to a private mobile device which is subscribed to a single MNO provider.

Information about the effect of the Optus outage on NSW State Emergency Service (NSW SES) operations provides one example of the broad ranging consequences of such network failures on the operational activities of an ESO and the safety of the community.

The NSW SES receives calls for emergency assistance during flood, storm and tsunami via its 132 500 contact number, similar to other State Emergency Services agencies in other jurisdictions. NSW SES also provides advice to the community on this number and directs people to contact Triple Zero in life threatening emergencies.

NSW SES identified the following consequences of the Optus outage, reporting that its effect on operations and the community would have been more significant had they occurred during a severe weather event:

- Affected Optus customers were not able to contact NSW SES on 132 500 for emergency assistance. This may have increased the call volume to Triple Zero for non-life-threatening emergencies. However, unconfirmed media reports were that Optus customers were unable to contact Triple Zero for either life threatening emergencies or non-life-threatening emergencies, which places community members at significant risk.

- NSW SES was unable to contact and activate members who only held subscriptions to Optus. This includes volunteers and staff without NSW SES-issued mobiles, that operate on other MNO networks.

- Some operational support staff (such as mapping staff) were affected as they did not have access to Service IT systems remotely via Optus, meaning business continuity plans needed to be activated. In addition, staff with Optus subscriptions could not access multi-factor authorisation protected systems.

- NSW SES has four local volunteer units that are solely supported by Optus telephony, due to their location. These units could not communicate during the outage.

The ability for ESOs to access real-time information to support their operations, protect the community and maintain their own personal safety is greatly inhibited by a lack of telecommunications connectivity. This will occur when the only subscribed or available network suffers an outage.

This situation occurred in the specific case of the Optus outage; however, it was compounded by the lack of awareness of the outage itself, its geographical coverage and estimated time to recovery. Without this information, ESOs were unable to consider what actions might be taken to minimise operational risks.

Disruption of essential and government services

The NSW Government recognises the major effect that the Optus outage had on its customers, Optus-using businesses and service delivering entities and those attempting to communicate with Optus customers. This is of considerable concern and the NSW Government notes that there is significant interest in submissions to the Inquiry being made by these groups and their representatives. For this reason, this section of this submission will focus on the impact on essential services and the delivery of government services to the community.

The operations of all NSW Government services that access Optus networks were affected similarly to businesses and private customers. In NSW, Optus Networks Pty Ltd is a supplier under the All of Government Panel, Telecommunications Purchasing Arrangements (TPE). The main services used are mobile and fixed data services.

As an indication of the broad and diverse range of government services affected by the Optus outage, the major NSW Government customers accessing Optus services under the TPE include:

- Art Gallery of NSW;
- Department of Communities and Justice;
- Department of Planning and Environment;
- Northern Sydney Local Health District;
- NSW Ambulance;
- NSW Telco Authority;
- Service NSW;
- Taronga Conservation Society Australia; and
- Transport for NSW.

Examples that were reported to the State Emergency Management Committee include the following:

- The Royal Adelaide Hospital lost landline and mobile communications resulting in the inability of the Broken Hill Base Hospital to refer patients across the border to their normal retrieval centre. Any time-critical or time-sensitive patients from the Broken Hill would have been required transfer to Sydney during the outage.

- Transport advises that this outage resulted in a number of impacts across their organisation and operations, however Business Continuity arrangements were in place.

Lack of timely information from Optus

The Optus outage presented a temporary deficiency in the emergency management communications ecosystem, which includes commercial MNO networks due to their role in Triple Zero, Emergency Alert broadcasts and by ESOs to support operations. As members of the TELCOFA, all MNOs are aware of how the availability of their networks affects emergency communications.

Without early knowledge of this outage, the communities it affected and the estimated service restoration time, the TEMU did not have the information it needed to fully perform its TELCOFA coordination functions. Given that the outage was prolonged and occurred during the declared bush fire season when various fires were burning, risks to communities are higher.

The TELCOFA initiated its investigation into the outage when first informed by a third party, Jemena Pty Ltd, through the Functional Area network operating under the SERM Act and EMPLAN. Jemena contacted the TELCOFA at 0445 hours.

Optus responded to the TELCOFA's enquiries at 0814 hours, nearly three-and-a half hours later. Information subsequently received from Optus was that the outage commenced sometime between 0400 and 0430 hours. However, it is now understood from Optus's submission to the Inquiry that the outage was triggered at around 0405 hours, meaning Optus had contacted the TELCOFA about four hours and ten minutes after this event.

The time lag between an MNO's knowledge of a major outage and informing relevant emergency management authorities is critical in this context. However, it is also noted that the ACMA submission states that Optus made contact with the ACMA at 07:02 hours, in relation to its *Telecommunications (Emergency Call Service) Determination 2019* (Cth) obligations.

The Communications Alliance's industry guideline on its Telecommunications - Emergency Communications Protocol (G663:2022) establishes a Common Operating Model to facilitate engagement between industry and government when major disruptions occur. Based on the scale of the outage, the guideline's Severity Matrix states that agencies, including the NSW Telco Authority, should have received relevant notification when Optus became aware of the outage.

Opportunities and initiatives

The Optus outage has highlighted significant public safety and emergency management concerns that have been held by ESOs and authorities for some time. The NSW Government raises several opportunities that may alleviate some of the risks to both the community and emergency responders in the event of a similar future outage. These opportunities have been previously promoted by the NSW Government in submissions to various disaster inquiries and other fora.

Asset data sharing - access to real-time operational status information

NSW Government agencies, notably including the NSW Telco Authority in its role of TELCOFA coordinator, have limited visibility of carrier network infrastructure. This significantly compromises public safety efforts across the separate phases of emergency management.

Many widespread failures of telecommunications networks are preventable. The likelihood and consequence of these failures are significantly reduced when government agencies know where the critical parts of the network are and can take measures to both protect the infrastructure and replicate the function of the infrastructure (using mobile radio assets (MRA) such as cells-on-wheels (COW)) if it is damaged or destroyed.

This is critical during responses to natural disasters and major emergencies. For example, in NSW helicopters have been called to drop fire retardant over key communications towers that were in the path of approaching bushfires towards maintaining communications for communities under threat, including preserving the ability to make Triple Zero calls and receive Emergency Alert broadcasts to inform residents to evacuate to safe locations.

In 2022, following recommendations of the NSW Bushfire Inquiry and the Royal Commission into National Natural Disaster Arrangements, the Communications Alliance updated its Telecommunications – Facilities Information Sharing Industry Guideline (G665:2022).

This guideline works in conjunction with the Telecommunications - Emergency Communications Protocol (G663:2022) and establishes a standardised set of Specified Telecommunications Facilities information for sharing with approved government entities to support disaster and emergency management activities. This includes information of mobile base stations, fixed line exchanges, backhaul transmission systems and data centres. It includes a Minimum Facility Data Sharing Set, which include details to identify a site, its location, its site manager and an emergency contact.

There is also a section for Additional Information, which addresses issues key to emergency management operations, such as the infrastructure's criticality, information about any fire treatments and protections, details about site accessibility (access roads, air, water), primary and on-site power back-up and the estimated time for service availability following the loss of mains power, and further details. The provision of this information is optional and is caveated by a network owner's 'system limitations' and 'specific security concerns'. Providing this information helps prioritise resource allocation when the actions are required to protect key sites.

While the telecommunications industry has been increasingly cooperative in providing government agencies with data, including from its Minimum Facility Data Sharing Set, the NSW Government has not received all of the data it identifies as being critical, which includes that from the Additional Information set.

The NSW Spatial Services division leads a Telco Data Standards Working Group, involving agencies with similar roles supporting emergency management, which seeks that access to the Additional Information set be mandatory in the absence of its voluntary provision. However, should regulation instead be required to achieve this, it would fall to the Commonwealth under its telecommunications regulatory framework.

Further to this, emergency management agencies could respond more efficiently and effectively to telecommunications failures if they had access to data about the operational status of commercial telecommunications infrastructure in real time. This would ensure that any required emergency management responses could commence immediately, without the duration of delay such as which occurred with the Optus outage.

The provision of this real-time information has been sought by the NSW Government for some time, noting that its importance was also reflected in a recommendation of the NSW Bushfire Inquiry (Recommendation 30) in 2020. However, it is understood that industry may have concerns about providing this level of access, noting security and commercial considerations.

Importantly, the provision of operational status information is a key element of the future mission-critical PSMB capability proposed to be used for the operational communications of ESOs.

The Public Safety Mobile Broadband Strategic Review recommended that the PSMB National Objectives, previously agreed by states, territories and the Commonwealth, be expanded to include criteria for 'Transparency'.

Recommendation 3 includes that 'Transparency defines the need for PSAs [Public Safety Agencies] to have visibility of the planned and operational status of an MNO's network to enable effective planning and operational management (which is critical when a PSMB solution is hosted on commercial networks)'. The Commonwealth's response to the review includes agreement in principle to this recommendation, stating also that '[t]he Government understands the need for Public Safety Agencies to have visibility over the planned and operational status of a Mobile Network Operator's network that they rely on'.

PSMB is planned to operate in tandem with current mission-critical LMR voice and narrow-band data networks, such as NSW's Public Safety Network, and thereby also provide a level of redundancy until it eventually replaces LMR when this technology reaches its end-of-life. The availability of such network performance information is similarly an important element available in existing mission-critical LMR networks.

With the requirement for network transparency in the PSMB capability the commercial MNO elements of PSMB will be required to share their operational status information. As development of the PSMB capability progresses and the technical aspects of this requirement are established, it may be determined as to whether this should occur through commercial agreements and/or whether it will require regulation to ensure conformity.

Temporary and ongoing mobile roaming – further consideration

The NSW Government supports the establishment of temporary mobile roaming (emergency roaming) during natural disasters and emergencies, which was recommended by the NSW Bushfire Inquiry and the 2022 NSW Flood Inquiry. Emergency roaming was subsequently recommended by the 2021 Regional Telecommunications Review for feasibility consideration by the ACCC's Regional Mobile Infrastructure Inquiry, which found that further work was required to design and develop the capability.

On 23 October 2023, the Commonwealth Minister for Communications and Minister for Emergency Management jointly announced that DITRDCA and NEMA were to engage with mobile carriers to progress this work and report back by March 2024.

The case supporting emergency roaming during natural disasters is clear. The ability for any community member, including emergency services organisation members, to access any available MNO network during a natural disaster or major emergency will help save lives.

The NSW Government submission to the ACCC's Regional Mobile Infrastructure Inquiry and the NSW Government submission to the 2021 Regional Telecommunications Review provide further references demonstrating the value of emergency roaming in these circumstances.

The extent and duration of the Optus outage raise further considerations about the potential advantages of roaming beyond strictly defined natural disasters and major emergencies.

The fact that the outage meant members of the community could not communicate with emergency services for a prolonged period, understood to be approximately 12 hours in some locations, constitutes a significant public safety risk. This is noted in the context of evidence given to the Committee by Optus on 17 November 2023 which included that 228 known Triple Zero calls were unable to be connected. The outage similarly meant that community members could not use the Optus network to contact each other for any urgent assistance that may have been required.

While the outage was itself not the result of a natural disaster, it would be reasonable to conclude that the public safety risks it caused constituted an emergency situation.

The previously cited inquiries and review considered emergency roaming in the context of specific, localised, time-limited emergencies. However, the experience of the Optus outage demonstrates that broader consideration of the triggering threshold and parameters for enacting emergency roaming would be advantageous. For example, the inclusion of a trigger based on the duration and dimensions of a major outage, which would include the Optus outage, would reasonably be considered to be in the public interest.

The NSW Government notes that the Commonwealth House of Representatives Standing Committee on Communications and the Arts published its Connecting the country: Mission critical - Inquiry into co-investment in multi-carrier regional mobile infrastructure report in November 2023, including:

> Recommendation 23 - The Committee recommends the Australian Government establish a working group involving state and territory governments, emergency services agencies, and mobile network operators to develop protocols for temporary roaming arrangements in declared disasters and emergencies.

At the time of making this submission, the Commonwealth had not yet published a Government Response to this report. However, the NSW Government supports this recommendation and looks forward to further consultation with the Commonwealth and the telecommunications sector on this important issue.

NEMA is currently leading a PSMB taskforce, involving collaborative work with the state and territory jurisdictions towards development of a nationally interoperable PSMB capability. It is appreciated that this will take time and that a PSMB capability will likely be an iterative solution, with essential elements being introduced over time as improvements in phases. In the interim, the Optus outage has highlighted the importance of redundancies to maintain the operational communications of ESOs, including for broadband data in the field, as they protect lives and property.

NSW supports the current work being undertaken on developing an emergency roaming capability for the community. However, the Optus outage demonstrates the advantages that would exist from the implementation of a permanent, ongoing roaming capability for ESOs across all MNO networks.

NSW supports the current work being undertaken on developing an emergency roaming capability for the community. However, the Optus outage demonstrates the advantages that would exist from the implementation of a permanent, ongoing roaming capability for ESOs across all MNO networks. In any future outages for any MNO network, this would mean that ESOs could maintain communications through any remaining accessible MNO networks, regardless of their cause and duration. This becomes increasingly important as the duration of the outage increases.

Therefore, NSW proposes that the Commonwealth considers the commercial and regulatory factors required to introduce a permanent, 'always-on' roaming capability for ESOs, which would also constitute an early step in the evolution of a PSMB capability that will otherwise take longer to implement. This may occur as part of the work being undertaken by DITRDCA with the telecommunications sector.

Active and passive sharing of infrastructure – diversity of coverage

The NSW Government supports and promotes active sharing within its current digital grant and investment program, led by DRNSW. Active sharing models reduce reliance on single MNOs in the event of outages, improve access and competition, improve mobile coverage in regional and remote areas, and reduce the digital divide between rural communities and metro equivalent centres.

Active and passive sharing of mobile network infrastructure can play a significant role in the resilience of the emergency management communications ecosystem, providing redundancy for emergency communications carried over commercial networks in the event of a network outage affecting a single MNO.

In the circumstances of the Optus outage, its subscribers within coverage range of only a single, shared telecommunications site would have had access to Triple Zero and Emergency Alert services through alternative MNO networks operating at that site.

Additionally, upon the implementation of an emergency roaming function, subscribers of a network suffering an outage, caused by circumstances similar to those that resulted in the Optus outage, would also be able to access alternative MNO networks on the shared site through emergency roaming.

Regional, rural and remote communities are most exposed to the risks associated with an MNO outage, where non-contiguous coverage and no option to choose a preferred carrier network remain central issues. Rural coverage continues to be economically unviable for MNO providers and as a result, over 63 per cent of NSW has access to only one provider or no mobile connectivity at all.

In many regional, rural and remote locations across NSW, there is only one MNO network available at one location, with a different MNO network available at another location within the same region. This patchwork of non-complementary coverage affects how people can move across the regions and access mobile coverage, making them vulnerable to a reliance on one MNO in the event of an outage.

In the absence of alternative solutions, education may be required for regional and rural communities to ensure they understand their situation in the event of a mobile network outage or emergency where there is a reliance on a single MNO.

Governments may play a role in advancing infrastructure sharing by creating a supportive regulatory environment. This might include mandating types of sharing or providing financial incentives to do so. For example, active sharing could be mandated nationally for all government-funded telecommunications infrastructure and embedded in future policy settings, as occurs in NSW funded projects. Governments may also help to facilitate infrastructure sharing by providing mediation and arbitration services to assist MNOs to resolve any disputes.

NSW supports the Commonwealth House of Representatives Standing Committee on Communications and the Arts Connecting the country: Mission critical - Inquiry into co-investment in multi-carrier regional mobile infrastructure report:

> Recommendation 6 - The Committee recommends the Australian Government work with the New South Wales Government to develop more extensive trials of active infrastructure sharing solutions in regional New South Wales, including along road corridors and in remote Indigenous communities.

Further contextual information on active and passive infrastructure sharing is available in the NSW Government submission to the ACCC's Regional Mobile Infrastructure Inquiry, the NSW Government submission to the 2021 Regional Telecommunications Review and the NSW Government submission to the Commonwealth House of Representatives Standing Committee on Communications and the Arts Inquiry into co-investment in multi-carrier regional mobile infrastructure.