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Environment and
Communications References
Committee

Optus Network Outage

September 2024

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List of recommendations

Recommendation 1

- 5.20 The committee recommends that the Australian Communications Media Authority, in collaboration with industry partners, prioritise as a matter of urgency the development of an enforceable communications standard for carriers that obliges them to communicate to government, emergency services and the public during national outages. The standard should include details outlining at what time and how certain communications need to occur.

Recommendation 2

- 5.32 The committee recommends that the Australian Communications Media Authority publish the findings of its review into Singtel Optus Pty Ltd and its subsidiaries' compliance with its obligations under the Telecommunications (Emergency Call Service) Determination 2019, the *Telecommunications Act 1997* and *Telecommunications (Consumer Protection and Service Standards) Act 1999* as soon as possible.

Recommendation 3

- 5.33 The committee recommends that the Australian Communications Media Authority:
- review the remedial action undertaken by Optus to strengthen its processes, procedures, governance controls and communications plans to ensure extensive error checking and regular audits are in place with a view to preventing similar issues reoccurring and ensuring more transparent communications and fulfilment of statutory obligations; and
 - if required, appoint an Independent Reviewer to review and assess the remedial actions undertaken by Optus.

Recommendation 4

- 5.38 The committee recommends that the Australian Government work with telecommunications carriers to examine large-scale network roaming and mutual assistance arrangements for major outages.

Recommendation 5

- 5.43 The committee recommends that the Australian Government prioritise as a matter of urgency the introduction of amendments to the *Security of Critical Infrastructure Act 2018* to clarify that telecommunications carriers are included as critical infrastructure providers.

Recommendation 6

- 5.51 The committee recommends that the Australian Government direct the Telecommunications Industry Ombudsman to expedite the development of a tailored dispute resolution mechanism to ensure appropriate compensation in the event of mass telecommunications outages.**

Recommendation 7

- 5.55 The committee recommends that the Australian Government undertake a review of the Consumer Service Guarantee with a view to considering a new, updated Telecommunications (Customer Service Guarantee) Standard, that also applies to fixed broadband and mobile telecommunications services.**

Chapter 1

Introduction

- 1.1 Digital connectivity has become essential for our livelihoods and wellbeing. But on 8 November 2023, millions of Australians were reminded just how precarious this connectivity can be as the country's second largest network provider, Singtel Optus Pty Limited (Optus), suffered a 12-hour unplanned nationwide outage. The outage began in the early hours of the morning, cutting internet, cellular and fixed-line services for a third of Australians. The outage disrupted nearly every aspect of Australian's daily lives, severing online banking, disrupting access to emergency services, bringing public transport to a halt, freezing access to government services, and derailing the ability of businesses to take payments.
- 1.2 In the early hours of the crisis, Australians were left with little in the way of proactive and timely updates on the status of the outage. It was many hours into the outage before what little information there was began to reach Optus' 10 million customers across the country. While services were eventually restored later on 8 November 2023, questions remained about the adequacy of Optus' response to the crisis and the appropriateness of the regulatory safeguards for those Australians reliant on telecommunications services.
- 1.3 The nationwide outage on 8 November 2023 serves as a stark reminder of just how fragile and vulnerable telecommunications networks are, and just how reliant modern society is on them.

Referral of the inquiry

- 1.4 On 9 November 2023, the day after the outage, the Senate referred the following matters to the Environment and Communications References Committee for inquiry and report by 9 December 2023:

The Optus network outage that occurred on 8 November 2023 and its impact on Australians and the services that they rely on, with particular reference to:

- (a) the communication from Optus to affected customers;
- (b) the steps that Optus is taking to ensure that this does not happen again;
- (c) the compensation offered to affected customers, including:
 - (i) compensation offered by Optus,
 - (ii) the role of the Telecommunications Industry Ombudsman and its compensation scheme, and
 - (iii) actions taken by the Federal Government to support affected customers to receive fair compensation;

- (d) the role of government in ensuring Australians have reliable access to telecommunications technology;
 - (e) steps taken by the Federal Government to ensure the access to essential service in response to the outage, including:
 - (i) identification of affected government services,
 - (ii) the establishment of alternative contact arrangements for affected government services, and
 - (iii) communication with Australians on those alternative arrangements; and
 - (f) actions taken by the Federal Government and the Australian Communications and Media Authority on the day of the outage; and
 - (g) any other related matters.
- 1.5 Following several extension requests, the committee was granted an extension of time to report until 27 September 2024.

Conduct of the inquiry

- 1.6 The committee advertised the inquiry on its webpage and wrote to relevant organisations and individuals, inviting submissions by 17 November 2023.
- 1.7 The committee received 39 submissions, which are listed at Appendix 1 and available on the committee's website.
- 1.8 The committee also received around 900 campaign submissions from individuals that argued the importance of cash in the economy, opposed the phasing out of cheques, and called for a government alternative to banks. The committee accepted these as correspondence and has taken into account the views expressed.
- 1.9 The committee held a public hearing on 17 November 2023 in Canberra. A list of witnesses that appeared at the hearing is available at Appendix 2.
- 1.10 Submissions published, Hansard transcripts of evidence from the hearing, tabled documents, answers to questions on notice, and other information received are available on the committee's website.

Acknowledgement

- 1.11 The committee thanks all those who made submissions and gave evidence at the public hearing.
- 1.12 The committee also acknowledges the considerable efforts of Optus staff in responding to requests for detailed information.

Note on references

- 1.13 References to the committee Hansard are to the proof Hansard. Page numbers may vary between the proof and official transcript.

Structure of the report

1.14 This report is comprises five chapters:

- This chapter provides an introduction and background to the inquiry;
- Chapter 2 provides background on the network outage, including a timeline of key events, the impact and cause of the crisis, and further details;
- Chapter 3 details Optus' response to the outage, including its communications, actions concerning the Emergency Call Service, and offer of compensation for affected customers;
- Chapter 4 describes the state of Australia's telecommunications networks, including ongoing risks and measures to improve their resilience; and
- Chapter 5 provides the committee's views on these matters and makes a number of recommendations.

Background to the inquiry

1.15 This section will provide a broad overview of the existing regulations and legislation applicable to telecommunications providers in Australia, as relevant to this inquiry.

Telecommunications Act 1997

1.16 The *Telecommunications Act 1997* is the primary regulator of the telecommunications industry. The Act, among other things:

- identifies and provides definitions for participants in the telecommunications industry who are subject to regulation;
- establishes the Emergency Call Service (Triple Zero);
- sets out the security obligations of stated industry participants; and
- provides a framework for consumer protections.

Industry participants

1.17 Under the *Telecommunications Act 1997*, there are two types of organisations that can provide carriage services (telecommunications services) to the public— carriers and carriage service providers—which are defined as follows:

- carriers own telecommunications network infrastructure and provide transmission on which carriage and content services are supplied to the public;¹ and
- carriage service providers are those industry participants that use a carrier's network to provide telecommunications services to the public.²

¹ *Telecommunications Act 1997*, s. 86.

² *Telecommunications Act 1997*, s. 87.

Triple Zero Emergency Call Service

- 1.18 The Emergency Call Service, also called Triple Zero, is a free national telephone service in Australia that allows callers to contact police, fire, and ambulance services during an emergency by dialling 000.
- 1.19 Regulatory arrangements for Triple Zero in Australia, as relevant to this inquiry, are set out in the following legislation and regulatory instruments:
- the *Telecommunications Act 1997* establishes the Emergency Call Service;
 - the *Telecommunications (Consumer Protection and Service Standards) Act 1999* provides that the Australian Communications and Media Authority (ACMA) regulates and monitors the emergency call service;
 - the *Telecommunications (Emergency Call Persons) Determination 2019* provides that Telstra is the Emergency Call Person (ECP) for 000 and 112. This means that Telstra has responsibility for providing the service which answers calls to these numbers and transfers them to the requested emergency service organisation;
 - the *Telecommunications (Emergency Call Services) Determination 2019* sets out specific obligations for telecommunications carriers and carriage service providers (CSPs), including that they must:
 - maintain emergency call networks and facilities;
 - tell ECPs and other providers that rely on them for access if there is a large network outage;
 - do a welfare check on people who have tried to call during a large network outage;
 - monitor disruptive and non-genuine calls and work out a process to stop these; and
 - put together a communications process for when disruptions happen.³
- 1.20 There are also a number of other instruments, such as the Numbering Plan 2015, and industry standards, codes and guidelines.

Security obligations of telecommunications providers

- 1.21 Telecommunications providers have security obligations under the *Telecommunications Act 1997* and the *Security of Critical Infrastructure Act 2018* (SOCI Act).
- 1.22 Part 14 of the *Telecommunications Act 1997* sets out the requirements of carriers and CSPs with regard to national security risks such as espionage, sabotage, and foreign interference in Australia's telecommunications networks and facilities.⁴

³ Australian Communications and Media Authority, [New rules for a more resilient emergency call service, 12 January 2024](#), (accessed 13 August 2024).

⁴ Department of Home Affairs, [Telecommunications sector security](#), 31 January 2024 (accessed 13 August 2024).

- 1.23 The SOCI Act establishes a regulatory framework to protect critical infrastructure sectors vital to Australia's national security by imposing security obligations on asset owners and stakeholders. It currently applies to 11 sectors.⁵ It imposes obligations on 'responsible entities' (those with operational responsibility for the asset) and 'direct interest holders' (those with significant interest or influence over the asset), with definitions varying by asset. Failure to comply with obligations under the SOCI Act may result in significant penalties for the entity, which are based on the form and level of non-compliance.
- 1.24 Not all obligations apply uniformly across specified sectors and asset classes. For example, while Optus and other carriers are considered 'responsible entities' for critical telecommunications assets, they currently do not have specific obligations, such as establishing a Risk Management Program, which is required in other sectors.⁶

Consumer protection framework

- 1.25 In Australia, telecommunications consumers have rights and protections under the Australian Consumer Law (ACL) and statutory arrangements specific to the telecommunications industry. Consumers also have access to internal and external complaints procedures, as discussed below.

Australian Consumer Law

- 1.26 The ACL sets out consumer guarantees for services including that products and services provided to consumers come with automatic guarantees. Services must be supplied with due care, skill, and be suitable for their stated purpose. If these those are not met, consumers may be entitled to a remedy.⁷
- 1.27 The Australian Competition and Consumer Commission (ACCC) submitted that the consumer guarantee may extend to the provision of a telecommunications service to a small business. Depending on the nature of the problem, consumers could be entitled to a refund, a repair or replacement, providing the service again free of charge, or compensation for 'reasonably foreseeable' damages resulting from the failure to meet the consumer guarantee.⁸ The ACCC further submitted:

If it is determined that Optus failed to provide its services with due care and skill, small businesses that have suffered loss or damage that was reasonably foreseeable due to the failure may be entitled to compensation.⁹

⁵ A full list of these sectors can be found at Department of Home Affairs, [Security of Critical Infrastructure Act 2018 \(SOCI\)](#), 6 March 2024 (accessed 13 November 2023).

⁶ Department of Home Affairs, *Submission 7*, p. 5.

⁷ Australian Competition and Consumer Commission, *Submission 3*, p. 1.

⁸ Australian Competition and Consumer Commission, *Submission 3*, p. 1.

⁹ Australian Competition and Consumer Commission, *Submission 3*, p. 1.

- 1.28 However, the Telecommunications Industry Ombudsman (TIO) published advice that the Optus outage was a one-off outage and therefore 'unlikely to be considered a major failure' under the ACL as telecommunications providers do not offer a fault free service.¹⁰

The Customer Service Guarantee

- 1.29 The Telecommunications (Customer Service Guarantee) Standard 2023 is an enforceable standard that sets out the Customer Service Guarantee (CSG) for carriers and CSPs. According to the explanatory statement issued by the ACMA:

The CSG Standard sets out the standards for connection, appointment keeping, and fault or service difficulty repair. It also specifies the compensation available to customers under the Act when these standards are not met, and sets out the circumstances in which a consumer can agree to waive their rights under the CSG Standard.¹¹

- 1.30 The CSG is intended to complement the Universal Service Obligation,¹² and applies namely to 'specified carriage services', fixed-line services. Mobile and satellite phone services and retail broadband services, including the NBN, are not covered by the CSG.¹³ There are circumstances where CSPs may be exempt from their obligations under the CSG, such as during major service disruptions caused by natural disasters, planned maintenance, or damage to the network by a third party. Additionally, the CSG does not provide for compensation to be paid when a service fault is fixed within 24 hours.¹⁴
- 1.31 The previous Instruments that set out the CSG were due to sunset in August 2023. In anticipation of this, in February 2023 consultation on the CSG was undertaken by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA). The consultation paper noted, among other things, that 'many aspects of the CSG have not significantly changed in character since 1997', when it was introduced.¹⁵

¹⁰ Telecommunications Industry Ombudsman, [Support for consumers and small businesses impacted by Optus network outage](#) 14 November 2023 (accessed 28 November 2023).

¹¹ Telecommunications (Customer Service Guarantee) Standard 2023, *Explanatory statement*, p. 2.

¹² The Universal Service Obligation is a long-standing consumer protection that supports access to phone services and payphones. See, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Universal Service Obligation \(voice services\)](#) (accessed 12 August 2024).

¹³ Australian Communications and Media Authority, [The Customer Service Guarantee](#), 20 March 2024 (accessed 12 August 2024).

¹⁴ Telecommunications (Customer Service Guarantee) Standard 2023, *Explanatory statement*, p. 11.

¹⁵ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Thematic review of the Customer Service Guarantee (CSG), Consultation Paper*, February 2023, p. 4.

1.32 Following the consultation, DITRDCA provided advice that:

[T]he Minister for Communications intends to remake the sunseting CSG instruments for at least three years, with necessary updating and some minor revisions. This will allow time to further consider the long-term future of the CSG and how consumers can best be protected, given the significant changes that have taken place in the industry over recent decades.¹⁶

1.33 The remade instrument setting out the CSG is now in force.¹⁷

Complaints handling procedures

1.34 Telecommunications service disputes can be resolved through internal and external mechanisms. In the first instance, consumers unhappy with their service can pursue internal dispute resolution by making a formal complaint with their service provider.

1.35 Telecommunications providers are bound by the Telecommunications (Consumer Complaints Handling) Industry Standard 2018 (CHS), which sets out how telecommunication providers must respond to complaints. The CHS requires providers to have, and comply with, a written complaints handling process, which must include:

- an internal process for prioritising complaints that is clear, accessible and transparent;
- an internal escalation process; and,
- a dispute resolution process allowing consumers to escalate complaints to the TIO.

1.36 Additionally, the CHS also requires providers to acknowledge all complaints within two working days, use their best efforts to resolve complaints on the first contact, and otherwise resolve all complaints within 15 working days.¹⁸

1.37 External dispute resolution is available if a consumer is unsatisfied with the outcome of their complaint with their carrier. Consumers can lodge a complaint with the Telecommunications Industry Ombudsman (TIO), which operates an external dispute resolution scheme.¹⁹ The TIO's specific function within the broader telecommunications industry is to provide:

¹⁶ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Thematic Review of the Customer Service Guarantee \(CSG\)](#), 27 March 2023, (accessed 13 August 2023).

¹⁷ See: [Telecommunications \(Customer Service Guarantee\) Standard 2023](#).

¹⁸ Australian Communications and Media Authority, [How telcos must handle complaints](#), 20 July 2023 (accessed 12 August 2024).

¹⁹ Australian Mobile Telecommunications Association, *Submission 4*, p. [2].

... fair, independent, and accessible external dispute resolution service for individual consumers, occupiers and owners of property, small businesses and not-for-profits who have been unable to resolve their complaint with a phone or internet service provider.²⁰

- 1.38 The TIO Terms of Reference provide that, in exercising its functions and developing complaint resolution procedures, it will deliver a service in accordance with the Benchmarks for Industry-based Customer Dispute Resolution.²¹
- 1.39 The TIO submitted that, under the *Telecommunications (Consumer Protection and Service Standards) Act 1999*, it has the authority to make decisions related to compensation that are binding on its members up to the value of \$100,000. In making such determinations, the TIO stated that it 'assesses what is fair and reasonable in the circumstances having regard to the law, relevant industry codes, guidelines and good practice'.²²

²⁰ Telecommunications Industry Ombudsman, [Terms of Reference](#), 1 January 2022, p. 3.

²¹ The Benchmarks for Industry-based Customer Dispute Resolution provide standards for industry-based dispute resolution in Australia and refer to principles of independence, accessibility, fairness, accountability, efficiency, and effectiveness. See The Treasury, [Benchmarks for Industry-based Customer Dispute Resolution](#), February 2015, pp. 9–10. Telecommunications Industry Ombudsman, [Terms of Reference](#), 1 January 2022, p. 3.

²² Telecommunications Industry Ombudsman, *Submission 8*, p. [1].

Chapter 2

The Optus network outage

- 2.1 This chapter outlines the major events before, during, and after the Optus network outage on 8 November 2023. It provides a detailed, chronological list of relevant events, correspondence, public statements and announcements.
- 2.2 The chapter also summarises the Australian Government's response including the reviews that were announced following the outage.

Timeline

- 2.3 Below is the committee's understanding of the timeline of key events related to the Optus network outage. It draws on public sources and evidence from submissions and witnesses. All times are in Australian Eastern Daylight Time.

8 November 2023

- 4.05am: unplanned nationwide outage of all internet, cellular, and fixed-line services using Optus network in Australia;¹
- 4.37am: Optus network team 'fully engaged and dealing with the [outage]';² begins taking media enquiries;³
- 4.38am: Optus issues nationwide alert to frontline teams;⁴
- 6.33am: Optus issues first statement on the outage;⁵
- 6.47am: Optus provides first updates via social media;⁶
- 7.00am: officials from the Department of Home Affairs reach out to Optus to offer assistance;⁷
- 7.02am: Optus informs the Australian Communications and Media Authority (ACMA) of the effect of the outage on Triple Zero calls;⁸

¹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 3.

² Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 3.

³ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 4.

⁴ Optus, *Submission 1*, p. [13].

⁵ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2; and Optus, *Submission 1*, p. [7].

⁶ Optus, *Submission 1*, p. [7].

⁷ Department of Home Affairs, *Submission 7*, p. 3.

⁸ Australian Communications and Media Authority, *Submission 5*, p. [1].

- 7.40am: Minister for Communications, the Hon Michelle Rowland MP makes a first statement on ABC Radio National and publicly urges Optus to update Australians;⁹
- 7.45am–8.30am: Optus holds internal crisis meeting;¹⁰
- 8.32am: the CEO of Optus, Ms Kelly Bayer Rosmarin, calls the Minister for Communications to provide an update on the outage;¹¹
- 10.20am: Optus 'confident' cyberattack not the cause of outage;¹²
- 10.30am: Optus begins hard reboot of network;¹³
- 10.38am: Optus consumer internet services start to come back online;¹⁴
- 10.40am: Optus CEO gives first media interview of the day;¹⁵
- 11.00am: Communications Minister holds press conference;¹⁶
- 11.32am: Optus updates Telecommunications Industry Ombudsman (TIO);¹⁷
- 12.00am: over half of Optus network sites restored;¹⁸
- 1.30pm: Optus announces gradual restoration of some services;¹⁹

⁹ ABC Radio National, [Optus outage likely a 'deep network' issue: Communications Minister](#), 8 November 2023 (accessed 17 November 2023).

¹⁰ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 3.

¹¹ Optus, *Submission 1*, p. [6].

¹² Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 4.

¹³ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2.

¹⁴ Optus, *Submission 1*, p. [6].

¹⁵ Optus, *Submission 1*, p. [7].

¹⁶ Tom Williams, [Two weeks since the Optus outage, documents show backroom scrambling and urgent meetings occurred as the emergency played out](#), *ABC News*, 22 November 2023 (accessed 26 August 2024).

¹⁷ Telecommunications Industry Ombudsman, *Submission 8*, p. [2].

¹⁸ Optus, *Submission 1*, p. [6].

¹⁹ See Benita Kolovos and Josh Taylor, [Optus outage: CEO says some services are being restored after millions across Australia lost mobile and internet](#), *The Guardian*, 8 November 2023, (accessed 26 August 2024).

- 2.00pm: National Coordination Mechanism (NCM)²⁰ meeting held, including Optus;²¹ services restored for 'vast majority' of customers;²² 98 per cent of Radio Access Network sites restored;²³
- 4.00pm: services restored for 99 per cent of customers;²⁴ Optus declares the outage over;²⁵ second National Coordination Mechanism meeting held;²⁶
- 4.35pm: Optus reports restoration of most services; slow and intermittent access continues throughout the night for some customers;²⁷
- 5.15pm: Optus CEO completes media interviews confirming restoration of services.²⁸

9 November 2023

- Optus announces it will provide customers on eligible postpaid mobile SIM and mobile data plans with at least 200GB of extra data.²⁹

17 November 2023

- Optus CEO, and the Managing Director, Networks, Mr Lambo Kanagaratnam, appear at a public hearing to discuss the outage.

20 November 2023

- Optus CEO, Ms Kelly Bayer Rosmarin, announces her resignation; Chief Financial Officer, Mr Michael Venter, appointed interim CEO.³⁰

²⁰ The NCM convenes collaborative forums to address specific impacts of a national crisis. These sectors include representatives from both federal and state and territory agencies, as well as industry bodies and the private sector as required. See Department of Home Affairs, [National Coordination Mechanism](#), 2024 (accessed 20 July 2024).

²¹ Optus, *Submission 1*, p. [8]; and Department of Home Affairs, *Submission 7*, p. 3.

²² Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2.

²³ Optus, *Submission 1*, p. [6].

²⁴ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2.

²⁵ Department of Home Affairs, *Submission 7*, p. 3.

²⁶ Department of Home Affairs, *Submission 7*, p. 3.

²⁷ Optus, *Submission 1*, p. 6. The Hon Michelle Rowland MP, Minister for Communications, ['Interview with Ben Fordham, 2GB Sydney'](#), *Media Interview*, 8 November 2023; Australian Broadcasting Corporation, ['Optus CEO answers questions on outage'](#), *Media Interview*, 8 November 2023; and Australian Broadcasting Corporation, [Optus outage updates](#), 8 November 2023 (accessed 13 November 2023).

²⁸ Optus, *Submission 1*, p. [18].

²⁹ Kate Ainsworth, ['Optus offers customers 200GB of free data as compensation for nationwide outage'](#), *ABC News*, 9 November 2023, (accessed 26 August 2024).

³⁰ Paul Smith, ['Optus' leadership up for grabs as CEO resigns'](#), *Australian Financial Review*, 20 November 2023 (accessed 26 August 2024).

The impact of the outage

- 2.4 An estimated 10.2 million Optus subscribers were affected by the outage, with its network handling up to 51.3 million mobile calls and 51 million SMS messages on a typical day.³¹ Also affected were subscribers to Mobile Virtual Network Operators (MVNOs)³² that rely on the Optus network, such as Dodo, Amaysim, and Moose.³³
- 2.5 The immediate impact of the outage was wide-ranging, affecting major banks, transport operators, healthcare providers, government departments, and the Triple Zero emergency services. Optus initially advised that during the outage, 229 calls to Triple Zero by Optus customers were unable to be connected.³⁴
- 2.6 However, on 23 January 2024, Optus advised that information it had provided to the Senate about 229 calls not reaching Triple Zero was not accurate, and the figure was at least 2697 calls.³⁵
- 2.7 The Australian Communications Consumer Action Network (ACCAN) submitted that, in its view:
- ... the most significant risk of harm arising from the Outage for consumers was the breakdown of contact with emergency services ... This had immediate and serious consequences for the safety and wellbeing of Australians across the country.³⁶
- 2.8 State Emergency Services organisations (SES) were similarly impacted. The New South Wales (NSW) SES reported that its operations were compromised as some volunteer units and operational support staff were uncontactable or unable to access vital IT services, exemplifying the 'broad ranging consequences of such network failures on the operational activities of an [emergency services organisation] and the safety of the community'.³⁷

³¹ Optus, [Submission in response to 2020-21 Pre-Budget Submission Process](#), December 2019.

³² Mobile Virtual Network Operators (MVNOs) are mobile service providers that lease phone and data services from network providers.

³³ Jenny Wiggins and Paul Smith, '[Optus CEO says "no soundbite" to explain phone outage chaos](#)', *Australian Financial Review*, 8 November 2023 (accessed 26 August 2024).

³⁴ Optus initially reported that it had been unable to connect 228 calls to Triple Zero, but subsequently revised this figure to 229. See Optus, answers to questions taken on notice (received 24 November 2023), p. [3].

³⁵ Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023, received 24 January 2024; the Hon Michelle Rowland MP, Minister for Communications, 'Triple Zero disclosure by Optus', [Media release](#), 23 January 2024, (accessed 26 August 2024).

³⁶ Australian Communications Consumer Action Network, *Submission 17*, p. 2.

³⁷ NSW Government, *Submission 19*, pp. 5–6.

- 2.9 ACCAN stated that the outage caused 'significant disruption across Australia'; specifically, '[i]t inconvenienced customers, closed businesses, and disrupted access to essential services'.³⁸
- 2.10 The Australian Chamber of Commerce and Industry (ACCI) submitted that the outage:
- ... had a significant impact on businesses across Australia, but the impacts were more keenly felt by small businesses who are so dependent on day-to-day trade and operations.³⁹
- 2.11 An estimated 400 000 small businesses were affected by the outage.⁴⁰ ACCI explained that many small businesses have become cashless and are therefore heavily reliant on phone and internet connectivity to operate and take payments. Optus told the committee that around 50 per cent of payment terminals were unable to switch to an alternative provider and could not take payments during the outage, but was unable to confirm the number of small businesses impacted.⁴¹ As a result, ACCI submitted that many small businesses had faced a 'significant loss of trade' of as much as a whole day's trade as a result of the outage.⁴²
- 2.12 ACCI expressed disappointment at what it suggested was a failure by Optus to acknowledge the extent of the impact of the outage on small businesses, and submitted that the lack of information from Optus compounded the direct impact of the outage, leading to closures, loss of trade, and other financial challenges for small business.⁴³ See Chapter 3 for a discussion of the adequacy of Optus' public communications response during the outage.
- 2.13 The outage also affected hospitals and access to emergency services across the country. Optus confirmed that landlines were unable to make triple zero calls.⁴⁴ Healthcare provider and private hospital owner, Ramsay Health Care, reported that phone services to its 70 hospitals and clinics were impacted.⁴⁵ The Royal

³⁸ Australian Communications Consumer Action Network, *Submission 17*, p. 1.

³⁹ Australian Chamber of Commerce and Industry, *Submission 9*, p. 1.

⁴⁰ Daniel Zieer and Michael Janda, '[Businesses count the economic cost of Optus network meltdown](#)', *ABC News*, 9 November 2023 (accessed 26 August 2024).

⁴¹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 18; Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 18; and Optus, answers to questions taken on notice (received 24 November 2023), p. [2].

⁴² Australian Chamber of Commerce and Industry, *Submission 9*, pp. 2–3.

⁴³ Australian Chamber of Commerce and Industry, *Submission 9*, pp. 1–2.

⁴⁴ Tom Williams, '[What caused Optus's nationwide outage, and how long was it down for? Here's what we know](#)', *ABC News*, 8 November 2023, (accessed 19 September 2024).

⁴⁵ Dominique Tassell, '[Optus outage causes commuter chaos as cost for an Uber surges before price cap implemented](#)', *7News*, 8 November 2023 (accessed 24 August 2024).

Adelaide Hospital was similarly compromised, which had a knock-on effect to the Broken Hill Base Hospital as patients were unable to be referred to their normal retrieval centre.⁴⁶

- 2.14 Banking services, including some ATMs using the Optus network, were impacted by the outage. The Commonwealth Bank, ANZ, and Westpac all reported issues with their call centres, processing EFTPOS transactions, and some online banking services.⁴⁷ ANZ reported that following the outage, scammers had commenced activities to try to obtain individuals' banking details.⁴⁸
- 2.15 Metro Trains Melbourne experienced an hour-long shutdown in the early morning due to drivers not being able to communicate with the control centre, causing hundreds of trains to be cancelled throughout the day.⁴⁹
- 2.16 Ridesharing companies, such as Uber and 13Cabs vehicles, were unable to take bookings or use their mobile applications for directions.⁵⁰
- 2.17 Australian Government departments, such as the Australian Tax Office and the Department of Home Affairs, were also affected as well as up to nine NSW Government agencies.⁵¹
- 2.18 Additionally, the Department of Home Affairs noted that the Optus outage highlighted the extent to which Australia's critical infrastructure sectors are integrated, including that disruptions in one sector may flow to other sectors.⁵² The outage highlighted issues with the resiliency of Australia's telecommunications networks, discussed further in Chapter 4.

⁴⁶ NSW Government, *Submission 19*, p. 7.

⁴⁷ Commonwealth Bank, [@CommBank], 8 November 2023, [Due to the ongoing Optus outage our call centres are unable to receive calls...](#) X (Twitter) (accessed 13 November 2023); ANZ Australia, [@ANZ_AU], 8 November 2023, [We are aware of the current nationwide Optus outage and that this may be affecting customers trying to contact us...](#) X (Twitter) (accessed 13 November 2023).

⁴⁸ Westpac Bank, [@Westpac], 9 November 2023, [Scam Alert...](#) X (Twitter) (accessed 13 November 2023).

⁴⁹ Metro Trains Melbourne, [@metrotrains], 8 November 2023, [Metropolitan trains: Trains are currently stopped due to a communications outage across the train network...](#) X (Twitter) (accessed 13 November 2023).

⁵⁰ Dominique Tassell, '[Optus outage causes commuter chaos as cost for an Uber surges before price cap implemented](#)', *7News*, 8 November 2023 (accessed 26 August 2024).

⁵¹ Australian Tax Office, [@ato_gov_au], 8 November 2023, [The nationwide Optus outage may be impacting your ability to connect with us...](#) X (Twitter) (accessed 13 November 2023); O'Keefe, C. [@cokeefe9] (2023, November 8) [Australians are unable to contact the Tax Office nor the Department of Home Affairs thanks to the Optus outage.](#) X (Twitter) (accessed 13 November 2023); NSW Government, *Submission 19*, p. 7.

⁵² Department of Home Affairs, *Submission 7*, p. 4.

The cause of the outage

- 2.19 Optus initially reported that the outage had been caused by a 'technical network fault' and was the result of a 'deep network' problem.⁵³
- 2.20 Early reporting suggested that the network outage may have been the result of an accidentally misconfigured border gateway protocol (BGP), a method for networks to share addresses with one another to enable clients to reach their intended destination on the internet.⁵⁴ Some speculation suggested a cyberattack could have flooded Optus' BGP routers to bring down the network.⁵⁵ However, by 10.20am on the day of the outage, Optus reported that it was 'pretty confident' that it was not a cyberattack,⁵⁶ and Ms Bayer Rosmarin made public statements to that effect.⁵⁷
- 2.21 On 13 November 2023, Optus provided the following details on the cause of the outage:
- At around 4.05am Wednesday morning, the Optus network received changes to routing information from an international peering network following a routine software upgrade...These routing information changes propagated through multiple layers in our network and exceeded preset safety levels on key routers which could not handle these. This resulted in those routers disconnecting from the Optus IP Core network to protect themselves.⁵⁸
- 2.22 On 15 November 2023, an Optus spokesperson reportedly told the Australian Broadcasting Corporation (ABC) that the Singtel internet exchange, STiX⁵⁹ was

⁵³ Australian Broadcasting Corporation, [Optus outage updates](#), 8 November 2023 (accessed 13 November 2023); and Paul Haskell-Dowland, Mark A Gregory, and Mohiuddin Ahmed, ['Optus blackout explained: what is a "deep network" outage and what may have caused it?'](#), *The Conversation*, 8 November 2023 (accessed 26 August 2024).

⁵⁴ John Davidson, ['What early signs suggest may have gone wrong at Optus'](#), *Australian Financial Review*, 8 November 2023 (accessed 26 August 2024).

⁵⁵ John Davidson, ['What early signs suggest may have gone wrong at Optus'](#), *Australian Financial Review*, 8 November 2023 (accessed 26 August 2024).

⁵⁶ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 4.

⁵⁷ Renju Jose and Byron Kaye, ['Optus outage causes chaos in Australia before services restored'](#), *Reuters*, 8 November 2023 (accessed 26 August 2024).

⁵⁸ SBS News, ['Optus has revealed the cause of last week's massive 12-hour outage'](#), *SBS News*, 13 November 2023 (accessed 26 August 2024).

⁵⁹ STiX is one of Optus' international peering networks; that is, a method that allows two networks to connect and share internet traffic.

responsible for the outage when changes to routing information were sent to the Optus network, triggering the crash.⁶⁰

- 2.23 On 16 November 2023, Singtel clarified in a media statement that while it had conducted a 'routine software upgrade' on STiX, the upgrade was not responsible for the outage:

We are aware that Optus experienced a network outage after the upgrade when a significant increase in addresses being propagated through their network triggered preset failsafes. However, the upgrade was not the root cause.⁶¹

- 2.24 On 17 November 2023, Optus provided further details on the outage in evidence to the committee, in which it described how a scheduled update from STiX (the 'trigger event') caused Optus traffic to be routed through a set of improperly-configured Cisco branded routers (the 'root cause') that reached a pre-configured failsafe and independently shut down the network:

... key Optus routers disconnected from the network in response to a change in routing information that resulted in the shift from an alternative peering router during a scheduled upgrade on the Singtel international peering network.⁶²

- 2.25 Ms Bayer Rosmarin insisted that Optus' explanation of the outage accorded with Singtel's media release of 16 November 2023:

... our statement on the root cause that we put out was agreed and approved with SingTel. The statement that they put out is not a contradiction but rather a clarification ... They were trying to clarify the way that that statement was interpreted.⁶³

- 2.26 In response to Optus' explanation of the outage, Cisco released the following statement:

We can confirm that Cisco routers performed as configured and we continue to advise the customer and provide relevant support.⁶⁴

- 2.27 Mr Lambo Kanagaratnam, Optus' Managing Director of Networks, further explained how the update affected the Optus' network:

... there were almost 90 routers across the country that were impacted by the single issue that we had where a preset safety limit on these routers was

⁶⁰ Samuel Yang, '[Singtel responsible for Optus outage](#)', *ABC News*, 15 November 2023 (accessed 26 August 2024).

⁶¹ Singapore Telecommunications Limited, '[Media statement](#)', *Media statement*, 16 November 2023 (accessed 26 August 2024).

⁶² Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, pp. 1 and 7.

⁶³ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 7.

⁶⁴ Leonia Thorne, '[Optus CEO Kelly Bayer Rosmarin fronted a Senate inquiry today. Here's what she had to say](#)', *ABC News*, 17 November 2023 (accessed 26 August 2024).

reached or exceeded. What then happened was they all shut down, and effectively disconnected all these levels of redundancy, and effectively created the outage that we had ...

The outage was as a result of our defences for the change in routing information not working as they should have.⁶⁵

- 2.28 Ms Bayer Rosmarin stated that Optus' network should have sufficient redundancy to manage traffic being redirected from one link in the event of an upgrade, but explained:

When one of those links was being upgraded and was therefore not available, what was coming through that link needed to be diverted through another link, which happened to be configured differently. It then propagated through our network in a way that triggered these failsafes in each of the different routers.⁶⁶

- 2.29 Mr Kanagaratnam stated that around 100 devices across 14 locations had to be rebooted to restore connectivity.⁶⁷

- 2.30 Ms Bayer Rosmarin further noted:

Even though we'd done very detailed reviews into our architecture, processes and risks to make sure we could be as resilient as possible, we did not have an articulated clear risk that each one of our 90 routers would independently shut itself down at the same time, using a failsafe on those Cisco routers that our team was not aware of.⁶⁸

- 2.31 See Chapter 3 for further discussion of Optus' response to the outage and see Chapter 4 for a further discussion of Optus' level of preparedness and resilience.

The cause of the failure of Triple Zero calls

- 2.32 The reason for the inability of some of Optus' mobile customers to access Triple Zero was initially, and for a number of months after the outage, unknown. Despite significant speculation and reporting on the cause, Optus made no mention of it in its submission.

- 2.33 Asked why shared roaming arrangements failed to connect emergency calls from Optus' mobile services during the outage, Ms Bayer Rosmarin told the committee that investigations were ongoing and that it was 'too early to tell where the issue actually occurred'.⁶⁹

⁶⁵ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 10.

⁶⁶ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 10.

⁶⁷ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 13.

⁶⁸ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 19.

⁶⁹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 11.

- 2.34 Ms Bayer Rosmarin told the committee that while Optus takes accountability for the role it had in the inability of customers to access Triple Zero, investigations were ongoing, and it was too soon to determine what caused the issue.⁷⁰ She further noted that the Triple Zero system is designed to be able to 'pick up the traffic when we have an outage like this', and stated that the system was 'very complex', involving carriers, device manufacturers, as well as Triple Zero operators.⁷¹
- 2.35 Telstra confirmed to the committee that, throughout the outage on 8 November 2023, the Triple Zero network operated normally and accepted camp-on requests (a feature whereby customers who cannot access their carrier's network may make a Triple Zero call on another network), submitting that: '[a]ll calls successfully delivered to the Triple Zero Emergency Call Person Answer Point were answered'.⁷² Telstra also noted that it had received calls from Optus customers during the outage.⁷³

Australian Government response to the outage

- 2.36 The Australian Government has a role in preparing for, responding to, and recovering from national crises. Whole-of-government arrangements are set out in the Australian Government Crisis Management Framework (AGCMF), which 'provides ministers and senior officials with guidance on their respective roles and responsibilities' in responding to national emergencies. The AGCMF is designed to be applicable to any crisis, with departments and agencies assigned different responsibilities under the AGCMF, depending on the nature of the emergency.⁷⁴
- 2.37 The relevant Australian Government departments and agencies in this case were the Department of Home Affairs, the ACMA, and the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA). All three provided evidence to the committee outlining their role and involvement in responding to the outage, discussed below.⁷⁵ While the focus of each department and agency differed, all advised the committee that

⁷⁰ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 11.

⁷¹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 11.

⁷² Telstra, *Submission 16*, p. 2.

⁷³ Telstra, *Submission 16*, p. 2.

⁷⁴ Department of the Prime Minister and Cabinet, *Australian Government Crisis Management Framework Version 3.3*, September 2023, p. 5.

⁷⁵ Department of Home Affairs, *Submission 7*, p. 3; Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Submission 18*, p. 5; Australian Communications and Media Authority, *Submission 5*, pp. 1–2.

first contact with Optus was made at around 7.00am on the morning of the outage.

- 2.38 The Department of Home Affairs, the lead agency for critical infrastructure policy and the management of national cyber incidents, submitted that it maintained an active presence throughout the day as it was unable to 'categorically rule out a cyberattack or other malicious action' as being the cause of the outage.⁷⁶
- 2.39 The Department of Home Affairs also advised that the NCM, a function of the AGCMF, was convened twice during the outage. At the first meeting, Optus briefed Commonwealth, state and territory officials on its understanding of the outage, including some technical details. The second NCM meeting included other telecommunications carriers, who were 'invited to discuss any second and third order consequences or impacts of the outage, including to emergency call service availability'.⁷⁷
- 2.40 DITRDCA submitted that it 'actively engaged with a range of stakeholders to support the government response to the outage' including liaising with key government stakeholders, Optus, and co-chairing the NCM.⁷⁸ DITRDCA also 'closely monitored the situation to understand the impact of the outage on essential services'. Specifically, it had ongoing communications throughout the day with Telstra and the ACMA about the inability of some Optus customers to access Triple Zero.⁷⁹
- 2.41 As the agency responsible for oversight of the Emergency Call Service, the ACMA submitted that it worked with Optus and Telstra to 'understand how the issues were impacting Optus' customers and their ability to make emergency calls' and that this formed the basis of its communications with stakeholders during the outage.⁸⁰

Reviews into the Optus network outage

- 2.42 A number of public investigations were announced following the outage and are discussed in detail below.

⁷⁶ Department of Home Affairs, *Submission 7*, p. 3.

⁷⁷ Department of Home Affairs, *Submission 7*, p. 3.

⁷⁸ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Submission 18*, p. 5.

⁷⁹ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Submission 18*, p. 6.

⁸⁰ Australian Communications and Media Authority, *Submission 5*, pp. 1–2.

Department of Infrastructure, Transport, Regional Development, Communications and the Arts Review

2.43 On 9 November 2023, the Australian Government announced that DITRDCA would undertake a post-incident review 'to identify lessons to be learned' from the Optus outage.⁸¹

2.44 The review was published in March 2024 with a focus on:

- how Triple Zero functioned during the outage;
- the role of government in managing and responding to national service outages;
- the adequacy of requirements for customer communication during national service outages; and
- the adequacy of customer complaints and the compensation process following the outage.⁸²

2.45 Crucially, the review identified a potential cause of the Triple Zero connectivity issues during the outage and reported that:

At a meeting on 22 January, Optus provided information to the Review that the Optus network automatically wilted its 4G and 5G towers, but some elements of its 3G network and towers remained live, though unable to carry calls because of the failure of the core network. Optus suggests that it was the presence of these live towers that resulted in some Optus mobiles not seeking out alternative networks to carry calls to Triple Zero, hence customers in range of those towers did not have their calls passed through to Triple Zero.

Expert advice to the Review supports this conclusion. It is apparent that a combination of tower malfunction, core failure and the way mobile devices operate caused some calls to fail to access Triple Zero.⁸³

2.46 The review noted that the above conclusion was based on information provided by Optus and other industry participants, along with subsequent discussions with submitters to the review. The ongoing investigation by the ACMA (see below) is expected to examine the technical details of why some calls failed to connect to Triple Zero.⁸⁴

⁸¹ The Hon Michelle Rowland MP, Minister for Communications, ['Post-incident review following Optus outage'](#), *Media release*, 9 November 2023 (accessed 26 August 2024).

⁸² Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Review into the Optus Outage of 8 November 2023—Final Report*, March 2024, p. 7.

⁸³ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Review into the Optus Outage of 8 November 2023—Final Report*, March 2024, p. 19.

⁸⁴ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Review into the Optus Outage of 8 November 2023—Final Report*, March 2024, p. 19.

2.47 The review made 18 recommendations:

- mandatory requirements to more clearly and explicitly articulate exactly what is expected of network operators to ensure calls are delivered to Triple Zero;
- establish a Triple Zero custodian;
- carriers to conduct six-monthly end-to-end testing of the Triple Zero system;
- carriers be required to share real-time network information on outages with relevant emergency services organisations and other appropriate entities;
- providers be required to report to the ACMA and the Department of Infrastructure, Transport, Regional Development, Communications and the Arts within a mandated timeframe on the causes of a major outage, steps taken to resolve it, the impact on Triple Zero and a clear plan with a timeline to address issues identified and avoid similar outages in the future;
- the Department of Infrastructure, Transport, Regional Development, Communications and the Arts to review the contract under which Triple Zero is delivered;
- the ACMA to develop a standard or determination requiring carriers to communicate specific information to customers during and about outages;
- providers to implement an industry wide standardised approach to the form of resolutions available to consumers affected by a crisis or large-scale outage;
- Australian Government to follow up work currently underway on roaming during natural disasters with work on temporary roaming during outages caused by other events;
- Australian Government to require the establishment of mutual assistance arrangements between telecommunications service providers during outages;
- network operators be required to establish the ability to remotely access and activate network management tools in the event of a core network outage;
- Australian governments to review arrangements for maintaining their operations during outages; and
- the Department of Infrastructure, Transport, Regional Development, Communications and the Arts and the ACMA to establish a review of all legislation and regulation relating to Triple Zero.⁸⁵

2.48 On 30 April 2024, Minister Rowland announced that the Australian Government would implement all 18 of the recommendations.⁸⁶ It agreed:

⁸⁵ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *Review into the Optus Outage of 8 November 2023—Final Report*, March 2024, pp. 9–11.

⁸⁶ The Hon Michelle Rowland MP, Minister for Communications, [‘Improving the governance and performance of Triple Zero’](#), *Media release*, 30 April 2024 (accessed 12 July 2024).

- to establish a Triple Zero custodian after further investigation and consultation;
- in principle, to conducting work on temporary roaming during outages caused by events other than natural disasters, noting 'industry concerns about the feasibility of implementing these arrangements'; and
- to all other recommendations.⁸⁷

ACMA Review

2.49 On 13 November 2023, the ACMA opened an investigation into Optus' compliance with the Telecommunications (Emergency Call Service) Determination 2019. The ACMA advised that the investigation would focus on the obligation for carriers to provide assistance to one another in relation to Triple Zero calls, access by customers to emergency call services, welfare checks on customers unable to place emergency calls during the outage, and related matters.⁸⁸

2.50 The ACMA submitted that it has a range of enforcement powers, including issuing a formal warning, issuing remedial direction, issuing infringement notices, accepting a court-enforceable undertaking, and commencing civil penalty proceedings in the Federal Court. It also undertook to make the investigation public once concluded.⁸⁹ At the time of writing, the ACMA has not yet published the findings of its review.

Other reviews

2.51 The Department of Home Affairs submitted that it was considering whether the Optus outage may have resulted from a lack of compliance by Optus with the *Security of Critical Infrastructure Act 2018* (SOCI Act) and the *Telecommunications Act 1997*—which would fall under the department's area of responsibility as the regulator for telecommunications security.⁹⁰ It advised the committee that it had not commenced a formal investigation into the Optus outage at the time of its submission to this inquiry, but stated that 'a future investigation cannot be ruled out'.⁹¹

⁸⁷ See Australian Government, *Australian Government Response to the Bean Review Final Report: Review into the Optus Outage of 8 November 2023*, April 2024.

⁸⁸ Australian Communications and Media Authority, *Submission 5*, p. 2.

⁸⁹ Australian Communications and Media Authority, *Submission 5*, p. 3.

⁹⁰ Department of Home Affairs, *Submission 7*, p. 3.

⁹¹ Department of Home Affairs, *Submission 7*, p. 6.

2.52 It also submitted that it may consider undertaking an assessment under the SOCI Act of Optus' critical infrastructure assets to determine whether they pose risks to national security.⁹²

⁹² Department of Home Affairs, *Submission 7*, p. 6.

Chapter 3

Optus' response to the network outage

- 3.1 This chapter discusses Optus' response to the outage, including its handling of public communications, offers of compensation for affected customers, and the operation of Triple Zero.

Optus' efforts to restore the network

- 3.2 Optus told the committee that it had in place a 'very clear process' to respond to a network outage and that this process was enacted.¹ From around 10.30am on Wednesday, 8 November 2023, Optus' teams undertook a 'complex' and 'coordinated' set of physical and virtual activities to reboot the network. Optus told the committee that around 100 devices across 14 locations had to be manually rebooted to restore connectivity.²
- 3.3 The network was largely restored by 4.00pm that day, at which point Optus' engineers shifted focus to identify the root cause and take preventive action to protect the network from further outages.³ Optus stated that it was working with its partners to understand the trigger and the root cause of the outage (see Chapter 2), and had put in place measures to ensure there would not be a repeat occurrence.⁴
- 3.4 Optus told the committee in answers to questions taken on notice that it had re-configured its gateway routers and networks to prevent the propagation of large routing information changes that triggered the failure on 8 November 2023 and was 'fully confident' that this type of failure could not reoccur.⁵ Ms Kelly Bayer Rosmarin, then-CEO, conceded that the network 'should have coped' with the change that occurred, but acknowledged:

... on this occasion it did not. I can confidently assure the Australian public that we have made immediate changes to our systems to ensure that this

¹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, pp. 1–2.

² Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 13.

³ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2.

⁴ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 19. For details of those measures, see Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 22.

⁵ Optus, answers to questions taken on notice at a public hearing on 17 November 2023, Canberra (received 24 November 2023), p. [5].

specific issue will not cause another outage of the nature that we experienced last Wednesday.⁶

- 3.5 Optus submitted that it believed its response time was 'analogous to historical outage restoration timeframes within the telecommunications sector'. Optus also committed to learn from the outage and to support the government review.⁷

Optus' public communications during the outage

- 3.6 At 6.33am on the morning of the outage, Optus issued its first media statement:

Optus is aware of an issue that may be impacting some of our mobile and internet customers.

We are currently working to identify the cause and apologise for any inconvenience.

In case of an emergency, customers can still call 000.⁸

- 3.7 In a media interview at around 7.40am, the Minister for Communications, the Hon Michelle Rowland MP, urged Optus to update its customers 'as a matter of urgency', stating, 'it's an absolute necessity that people have some sense of what's going on'.⁹
- 3.8 At around 10.40am, Ms Bayer Rosmarin apologised for the outage in a phone interview with ABC and stated that Optus was working to restore services. At the time, she did not provide a timeline for a fix, and did not elaborate on the reasons for the outage.¹⁰
- 3.9 In an interview with the *Australian Financial Review* later that morning, Ms Bayer Rosmarin declined to provide additional details of the outage, stating that it was 'very technical' and 'there is no soundbite that is going to do it justice'.¹¹
- 3.10 During the day of the outage, Ms Bayer Rosmarin conducted a further 11 media interviews, and Optus released nine media statements and engaged with over

⁶ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 1.

⁷ Optus, *Submission 1*, p. [12].

⁸ Optus, *Submission 1*, p. [22].

⁹ The Hon Michelle Rowland MP, Minister for Communications, ['Interview with Ben Fordham, 2GB Sydney'](#), *Media Interview*, 8 November 2023.

¹⁰ Australian Broadcasting Corporation, ['Optus CEO answers questions on outage'](#), *Media Interview*, 8 November 2023; and Optus, *Submission 1*, p. 7.

¹¹ Jenny Wiggins and Paul Smith, ['Optus CEO says "no soundbite" to explain phone outage chaos'](#), *Australian Financial Review*, 8 November 2023.

200 media outlets and journalists.¹² The following day, Optus released a statement regarding compensation for its customers, discussed further below.

- 3.11 Singtel, Optus' parent company, issued a media statement the following week to clarify its role in the outage, which appeared to contradict Optus' own messaging (see also Chapter 2). On this matter, Ms Bayer Rosmarin clarified:

We put out a statement, which then got interpreted by various commentators as being that the root cause was the SingTel upgrade, when the trigger was the SingTel upgrade but the root cause was the routers ... But I assure you [the two statements] are consistent'.¹³

- 3.12 Ms Bayer Rosmarin stated in evidence that Optus' communications protocol was to inform customers of an outage as quickly as possible.¹⁴ She told the committee that Optus had communicated directly to apologise to every Optus customer and had addressed the wider Australian community to say: 'We let you down, and for that I am deeply sorry'.¹⁵

Criticism of Optus' public communications addressing the network outage

- 3.13 Public commentary and some submissions to this inquiry suggested that Optus had not fulfilled its responsibility to keep its customers and the broader Australian community informed during the outage. For example, in an interview with ABC Radio National on 9 November 2023, the Assistant Treasurer and Minister for Financial Services, the Hon Stephen Jones MP, stated that communications from Optus to the public were 'absolutely subpar'.¹⁶
- 3.14 The *Australian Financial Review* similarly described Optus' public messaging as 'woeful', a 'stunning failure of crisis communications', and argued that 'the complete lack of communication about anything to do with the outage is baffling'.¹⁷

¹² Optus, *Submission 1*, p. [7]; and, Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 2.

¹³ Optus, *Submission 1*, p. [7]; and Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 7.

¹⁴ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 6.

¹⁵ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 1.

¹⁶ Department of the Treasury, [Interview with Patricia Karvelas, Radio National, ABC](#), *Transcript*, 9 November 2023.

¹⁷ Chanticleer, ['It's not just Optus' network that has failed'](#), *Australian Financial Review*, 8 November 2023 (accessed 26 August 2024). See also Kate Ainsworth, ['Optus defends "front-footed" communication over nationwide outage, says 'technical network fault' is to blame'](#), *ABC News*, 8 November 2023 (accessed 26 August 2024).

- 3.15 A *Sydney Morning Herald* column argued that '[Optus] communications machine is yielding little'¹⁸ and the Chief Executive of the Australian Chamber of Commerce and Industry (ACCI) publicly described the response as a 'clown show'.¹⁹
- 3.16 ACCI submitted that Optus had failed to meet its obligation to keep customers informed, stating, 'the most frustrating aspect was the lack of communication about the issue and expected resolution times'. ACCI further stated:
- Optus's initial acknowledgement of the incident was a vague statement about the significance of connectivity. Businesses and consumers were left unaware of the outage details, causing difficulties for those relying on services ... Even two days later, some ACCI members had not received any communications from Optus about the outage or compensation plans...The outage's impact was worsened by the absence of updates on services restoration times.²⁰
- 3.17 The Australian Communications Consumer Action Network (ACCAN) also argued that Optus' communications surrounding the outage had been inadequate, claiming that '[t]he lack of clear communication from Optus prompted significant anxiety and uncertainty among Optus customers, with material impacts across Australian society'. It further stated that the lack of communication about the expected duration of the outage 'made the situation more difficult for Optus consumers and those dependent upon the Optus-derived services'.²¹
- 3.18 Public commentary also pointed out that this was not the first time Optus' communications with its customers during a crisis had come under scrutiny.²² In September 2022, Optus disclosed that it had been the target of a cyber-attack in which the personal data of up to 9.8 million of its current and former

¹⁸ Elizabeth Knight, ['Message to Optus: It's better to say too much than too little'](#), *Sydney Morning Herald*, 9 November 2023.

¹⁹ ABC News, ['VIDEO: Australian Chamber of Commerce and Industry slams Optus "clown show"'](#), *ABC News*, 9 November 2023 (accessed 26 August 2024). See also Jennifer Hewett, ['Optus channels Qantas approach to crisis management'](#), *Australian Financial Review*, 9 November 2023 (accessed 26 August 2024); and Nick Bonyhady, ['DP World took longer to speak than Optus. Why hasn't it faced the same fury?'](#), *Australian Financial Review*, 13 November 2023 (accessed 26 August 2024).

²⁰ Australian Chamber of Commerce and Industry, *Submission 9*, p. 2.

²¹ Australian Communications Consumer Action Network, *Submission 17*, p. 3.

²² See, for example: Patrick Durkin, ['These are the biggest lessons from the Optus outage'](#), *Australian Financial Review*, 16 November 2023 (accessed 26 August 2024); Ian Verrinder, ['First a cyber attack, now a national outage. Can Optus boss Kelly Bayer Rosmarin survive this latest debacle?'](#), *ABC News*, 8 November 2023 (accessed 26 August 2024).

customers had been exposed.²³ Commentary at the time labelled Optus' communication as ineffective and inadequate.²⁴

- 3.19 Drawing on the two incidents, an *ABC News* analysis argued that Optus had 'once again decided to keep shtum for hours as a bewildered nation worked out for itself where the problem stemmed from' and that Ms Bayer Rosmarin seemed 'to have learned nothing'.²⁵
- 3.20 The Australian Mobile Telecommunications Association submitted that Optus should have a 'crisis management plan to communicate effectively with affected stakeholders'.²⁶
- 3.21 The NSW Government submitted that Optus had failed in its obligation to inform government departments and services that rely on its network.²⁷ It referred to the Communications Alliance's emergency communications protocol which facilitates 'efficient interactions between the telecommunications industry and relevant Australian Government agencies when events cause major disruptions to telecommunications services'.²⁸ The NSW Government claimed that under the protocol, its emergency management unit, whose role it is to coordinate with emergency services organisations, should have been notified by Optus about the outage immediately, but that it was not informed until four hours after the outage commenced.²⁹

Optus' defence of its public communications

- 3.22 On the day of the outage, Ms Bayer Rosmarin claimed Optus' communication had been 'very front-footed', stating: '[w]e had messages out early, letting our customers know of the outage'.³⁰

²³ Reuters, ['Australia's Optus says up to 10 million customers caught in cyber attack'](#), 24 September 2022 (accessed 26 August 2024); Edward Kost, ['How did the Optus data breach happen?'](#), *UpGuard*, 4 August 2023 (accessed 26 August 2024); and Paul Smith, ['Inside the Optus hack that woke up Australia'](#), *Australian Financial Review*, 22 December 2022 (accessed 26 August 2024).

²⁴ SBS News, ['Tanya Plibersek blasts Optus over 'extraordinary' lack of communication since data breach'](#), *SBS News*, 3 October 2022 (accessed 26 August 2024).

²⁵ Ian Verrender, ['First a cyber attack, now a national outage. Can Optus boss Kelly Bayer Rosmarin survive this latest debacle?'](#) *ABC News*, 8 November 2023 (accessed 26 August 2024).

²⁶ Australian Mobile Telecommunications Association, *Submission 4*, p. [2].

²⁷ NSW Government, *Submission 19*, pp. 7–8.

²⁸ Communications Alliance, *Industry Guideline G663:2022 Telecommunications – Emergency Communications Protocol*, 2022, p. i.

²⁹ NSW Government, *Submission 19*, p. 8.

³⁰ Kate Ainsworth, ['Optus defends "front-footed" communication over nationwide outage, says "technical network fault" is to blame'](#), *ABC News*, 8 November 2023 (accessed 26 August 2024).

3.23 In its submission, Optus again defended the adequacy of its public communications:

In what was a dynamic and evolving situation, our priority was restoring services to our customers as quickly as possible and ensuring they were informed of the evolving situation through the channels available to us.³¹

3.24 At the public hearing, Ms Bayer Rosmarin addressed this matter further, stating that the outage itself hindered communications but insisting that Optus did what it could on the day:

While I believe wholeheartedly that we did everything we could to provide timely, accurate and credible information, I acknowledge that there is always more we could have done. There is no question that the outage itself initially adversely affected our ability to more effectively communicate with each other, our consumers, media and government in the early hours of Wednesday morning.³²

3.25 She further stated that there was 'no intention from Optus not to communicate'.³³

3.26 Ms Bayer Rosmarin acknowledged the criticism of Optus' communications during the outage and of her for not appearing publicly sooner. However, she told the committee that she had prioritised the crisis response in the initial hours and had little information to share at first.³⁴ Ms Bayer Rosmarin also noted:

As frustrated as everybody was that we didn't have more information to give, which is what people really wanted, about what the problem was and when it would be fixed, I can't tell you how frustrating that was on our side as well. We wish we'd had something more to communicate in those early hours.³⁵

3.27 Ms Bayer Rosmarin also told the committee that she believed the public expected her to focus on resolving the issue and that it would be 'unusual' for a CEO to appear publicly during an outage. Ms Bayer Rosmarin also noted that the Optus communications team was actively providing information through the media and stated, 'the team had the view at the time that this was being covered widely and all our customers knew what we knew'.³⁶

³¹ Optus, *Submission 1*, p. [7].

³² Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 2.

³³ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 22.

³⁴ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 2.

³⁵ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 23.

³⁶ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 5.

3.28 Optus stated that it had enacted its emergency protocols in response to the outage and clarified that its communications protocol included leveraging the media:

Issuing statements to the media from an Optus spokesperson that they can reiterate to reassure customers is part of our protocol and the way that we use the media to make sure our customers know what's going on.³⁷

Compensation offered by Optus

3.29 On 9 November 2023, the day after the outage, Minister Rowland publicly stated that there was a 'reasonable expectation' among Optus customers that they would be compensated for the outage.³⁸ That same day, Optus made the following offer to customers:

- (a) For postpaid mobile customers (including small business), 200GB of additional free data to use over two months: i.e. For a day's network outage, customers receive two months of additional usage.
- (b) For prepaid mobile customers, unlimited data over the weekend for the remainder of the year from 18 November: i.e. For a day's network outage, customers receive 14 days of additional usage.
- (c) For home internet customers, a speed increase on their NBN lines or 4G/5G home connections: i.e. For a day's outage our customers can get more of the network in the form of a faster connection for the next six weeks.³⁹

3.30 In its submission, Optus stated that it had assessed whether to compensate customers for a day of lost service, but found that this only amounted to between \$1 and \$2 which may not be 'meaningful to most customers'.⁴⁰ Ms Bayer Rosmarin provided a further explanation of the compensation offer:

We understand how essential our services are to our customers. We are very sorry for the outage, and we know that there is nothing we can do or say that will give people back the time that they lost and some of the things that occurred on that day. That's why we tried to do something meaningful for our customers. We agree with you that just refunding people for the day with between \$1 and \$2 was not going to cut it, and that's why we went further, to offer those data offers to our customers.⁴¹

³⁷ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 6. See also Optus, *Submission 1*, p. [7].

³⁸ The Hon Michelle Rowland MP, Minister for Communications, ['Interview with Lisa Miller, ABC News Breakfast'](#), *Media Interview*, 9 November 2023 (accessed 26 August 2024).

³⁹ Optus, *Submission 1*, p. [9].

⁴⁰ Optus, *Submission 1*, p. [8].

⁴¹ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 21.

- 3.31 Optus also acknowledged businesses that were 'uniquely impacted' during the outage may be eligible for compensation and urged them to get in contact with Optus.⁴² The Australian Communications and Media Authority (ACMA) advised impacted customers to file a formal complaint.⁴³
- 3.32 During the public hearing on 17 November 2023, Ms Bayer Rosmarin advised the committee that 8500 customers and small businesses had 'reached out' to discuss compensation. At the time of the hearing, Optus reported that it was in discussions with customers for damages amounting to \$430 000 in financial compensation and had so far paid out \$36 000.⁴⁴ Ms Bayer Rosmarin declined to commit to an overall quantum of compensation, telling the committee that Optus would 'individually engage with each customer on their unique circumstances' to determine what compensation may be warranted.⁴⁵
- 3.33 In answers to questions on notice, Optus advised that it was not yet able to determine how many small businesses were impacted by the outage, but that it had paid out both cash and account credits to affected businesses.⁴⁶

Views on Optus' compensation

- 3.34 In public commentary, ACCAN CEO, Andrew Williams, described the Optus data offer as a 'token' and a 'hollow gesture', and argued that it does not 'make up for the inconvenience' caused to customers.⁴⁷
- 3.35 The Australian Chamber of Commerce and Industry (ACCI) suggested the proposed compensation was 'woefully inadequate', arguing that free data was not what Optus customers wanted or expected:

Noting that many customers, including small businesses, have unlimited internet plans, it is unclear how this compensatory scheme serves them in any way.⁴⁸

⁴² Kate Ainsworth, '[Optus offers customers 200GB of free data as compensation for nationwide outage](#)', *ABC News*, 9 November 2023, accessed 26 August 2024. See also Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 8.

⁴³ Daniel Jeffrey, '[Optus offers customers 200GB of free data as compensation for network outage](#)', *9news*, 9 November 2023 (accessed 13 November 2023).

⁴⁴ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 18.

⁴⁵ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 17.

⁴⁶ Optus, answers to questions on notice (received 24 November 2023), p. [3].

⁴⁷ Josh Taylor, '[Optus outage: company's offer of free data as compensation criticised as "hollow gesture"](#)' *The Guardian*, 10 November 2023, (accessed 13 November 2023).

⁴⁸ Australian Chamber of Commerce and Industry, *Submission 9*, p. 3.

3.36 ACCI submitted that Optus should instead provide credits, discounts, or financial compensation commensurate with actual losses experienced by businesses.⁴⁹

3.37 In its submission to this inquiry, Optus stated that 'the approach that we have taken is commensurate with the network outage experienced and exceeds approaches taken previously in Australia'.⁵⁰ Optus argued that anything more than the compensation already offered would set a precedent with 'far-reaching' implications for other sectors:

... there is no precedent for compensation being paid by telecommunications providers to all business customers who suffer a loss of business as a result of an outage of the kind that occurred on 8 November, either here or overseas. For example, NBN Co's terms with telecommunications providers such as Optus make it clear that there is no compensation for business interruption; liability is limited to a refund of fees for the period of any outage... Similarly, there is no precedent for essential services such as electricity providers to pay compensation for business losses when there is an outage.⁵¹

3.38 In response to calls for Optus to compensate customers for consequential losses, Optus submitted:

... this would create a new precedent that would extend far beyond Optus and apply to all other telecommunications providers, as well as other providers of essential services, critical infrastructure and public services. This makes it a much broader policy question for government that would have far reaching implications across many sectors of the economy and the cost of these services for Australian consumers.⁵²

3.39 Ms Bayer Rosmarin reiterated this position in evidence to the committee:

On the issue of consequential losses, we felt that this was an issue that's much more broad and that, should government choose to look into this, we'd love to be part of that conversation. But there is no precedent for telcos or other essential providers covering consequential losses, and we are very conscious that this would have far-reaching implications not just for Optus and not just for all telcos, including the NBN, but also for other essential services, utilities and government services, so this needs to be a much

⁴⁹ Australian Chamber of Commerce and Industry, *Submission 9*, p. 3.

⁵⁰ Optus, *Submission 1*, p. [9].

⁵¹ Optus, *Submission 1*, p. [11].

⁵² Optus, *Submission 1*, p. [11].

broader conversation than us unilaterally determining how to go about that.⁵³

- 3.40 Optus submitted that 'communications services are not provided with a guarantee of continuous services', arguing that customers are consequently not granted an automatic right to receive compensation whenever they experience an outage.⁵⁴
- 3.41 The Telecommunications Industry Ombudsman (TIO) submitted that it had received complaints about the outage, with most seeking compensation in the form of account credit, refunds of service charges, and both financial and non-financial losses.⁵⁵ However, the TIO submitted that it could not provide any further insights as: the referral period for complaints had not concluded at the time of its submission; some consumers that intend to make a complaint may not yet have done so; and only initial, unverified information was available to the TIO at the time of its submission.⁵⁶

Compensation from mobile virtual network operators

- 3.42 In addition to its own customers, the Optus network hosts around a dozen major mobile virtual network operator (MVNOs) mobile services providers that pay to access the infrastructure through which their service is provided. Optus' submission to the inquiry did not mention compensation to MVNOs, nor did Optus' evidence to the committee refer to compensation for customers of MVNOs.
- 3.43 Some MVNOs, such as Amaysim and Catch Connect, have made data offers to customers.⁵⁷ To date, other MVNOs using the Optus network—such as Moose Mobile, Spintel, and Dodo—do not appear to have publicly addressed the matter of compensation.⁵⁸

⁵³ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 17.

⁵⁴ Optus, *Submission 1*, p. [11].

⁵⁵ Telecommunications Industry Ombudsman, *Submission 8*, p. [6].

⁵⁶ Telecommunications Industry Ombudsman, *Submission 8*, p. [6].

⁵⁷ Amaysim, [Simply Sorry](#) (accessed 24 November 2023); and Catch Connect, [We're very sorry for the outage](#) (accessed 24 November 2023).

⁵⁸ Josh Taylor, ['Optus resellers make few or no announcements of compensation after nationwide network outage'](#), *The Guardian*, 14 November 2023 (accessed 26 August 2024).

Optus' compliance with Triple Zero protocols

3.44 As detailed in Chapter 2, many Triple Zero calls could not be connected during the outage. Initially, at the public hearing on 17 November 2023, Optus advised the committee that 228 calls failed to connect to Triple Zero during the outage.⁵⁹

3.45 The ACMA informed the committee that telecommunications providers are required to conduct welfare checks on people who are unsuccessful in attempting to call Triple Zero following a large outage. Optus stated that it had complied with this responsibility, undertaking 228 welfare checks, and confirmed that all callers were 'okay'.⁶⁰ The ACMA confirmed that it had monitored Optus' welfare checks.⁶¹

3.46 In answers to questions on notice received on 24 November 2024, Optus revised this number to 229 Triple Zero calls.⁶² In further correspondence to the committee on 23 January 2024, Mr Michael Venter, the Interim CEO, advised that the number of Triple Zero calls was significantly revised upwards:

...an additional 2,468 unique service numbers made a call to the ECP during the outage on 8 November that were not answered. We anticipate that not all of these calls would have required a welfare check and our analysis of this is ongoing.⁶³

3.47 The correspondence also identified why the number of welfare check recipients was initially incorrect:

The file that was used to determine what welfare checks would be performed arose from a search of the system using an incorrect parameter. This human error resulted in incomplete data being extracted from that system, which then become the base data source for the subsequent 229 welfare checks to be carried out.⁶⁴

3.48 Optus also informed the committee that it would 'appoint an independent third party to undertake a review of our processes to support Optus' welfare check obligations'. It committed to implementing recommendations from the review and sharing the review's findings and Optus' response with the committee.⁶⁵

⁵⁹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 11.

⁶⁰ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 11.

⁶¹ Australian Communications and Media Authority, *Submission 5*, p. 2.

⁶² Optus, answers to questions taken on notice at a public hearing on 17 November 2023, Canberra (received 24 November 2023), p. [3].

⁶³ Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023, received 24 January 2024.

⁶⁴ Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023, received 24 January 2024.

⁶⁵ Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023, received 24 January 2024.

- 3.49 On 6 May 2024, Optus provided the committee with a copy of a report from EY, the independent third-party Optus had commissioned to review its processes for its welfare check obligations. In the report, EY examined whether Optus's Management Statement of Compliance complies with section 28 of the Telecommunications (Emergency Call Service) Determination 2019. EY found Optus's Statement to be compliant. However, it did find that Optus did not have a 'formal training plan to consistently equip staff on an ongoing basis' and had 'inadequate monitoring to ensure training completion and consistent welfare check outcomes'. EY recommended that Optus 'develop and implement a comprehensive formal training plan for the welfare check process'.⁶⁶
- 3.50 On 20 September 2024, Optus provided the committee with a copy of 'Phase 2' of EY's review in which EY reviewed the training program Optus subsequently implemented in response to Phase 1. EY determined that Optus 'sufficiently addressed the control deviation related to welfare check training'.⁶⁷
- 3.51 On the matter of whether fines or penalties should apply to Optus as a result of the inability of some customers to reach the Triple Zero network, at the public hearing on 17 November 2023, Ms Bayer Rosmarin conceded that while Optus was responsible for the network outage, it was too early to determine fault in relation to access to Triple Zero.⁶⁸ She called for an investigation into the issue by the appropriate body and committed Optus' support.⁶⁹

⁶⁶ Optus, EY independent third-party review of Optus's processes supporting welfare check obligations, received 6 May 2024, p. 6.

⁶⁷ Optus, EY independent third-party review of Optus's processes supporting welfare check obligations Phase 2 Memorandum, received 20 September 2024, p. 3.

⁶⁸ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, pp. 12–13.

⁶⁹ Ms Kelly Bayer Rosmarin, Chief Executive Officer, Optus, *Committee Hansard*, 17 November 2023, p. 13. As noted in Chapter 2, the cause of the Triple Zero issue was examined in the DITRDCA review.

Chapter 4

Risk and resiliency

- 4.1 This chapter details the steps taken by Optus to prevent and prepare for any future outage of the type that occurred on 8 November 2023. It also outlines broader risk and resiliency across the industry and discusses possible measures to enhance the resilience of Australia's telecommunications networks.

The state of Australia's telecommunications networks

- 4.2 Evidence to the committee from telecommunications carriers Optus, Telstra, and TPG Telecom (TPG) emphasised that all networks are likely to face outages. For example, Optus submitted that all telecommunications networks 'suffer from infrequent disruptions to service',¹ and stated that:

While every communications network provider wants to avoid such outcomes, it is an unfortunate reality in our reliant digital age that no communications network can completely protect against, nor prevent, these types of occurrences from ever happening – despite the investments made or resiliency efforts undertaken.²

- 4.3 Telstra advised that:

While all network operators strive to minimise network problems by building in redundancy and resiliency into their networks, all networks can, and do, suffer major outages from time to time. It is not realistic to expect that major outages can be eliminated entirely.³

- 4.4 TPG submitted that its mobile and fixed networks operate on 'separate core networks' limiting the potential for its networks to face widespread outages.⁴
- 4.5 The Australian Mobile Telecommunications Association (AMTA) cautioned that no telecommunications network is entirely resilient, arguing that the scale, complexity, and interconnectedness of today's telecommunications networks mean 'it's unrealistic to expect that major outages will never occur'.⁵ AMTA pointed to recent outages in the United States, Canada, Japan, and various European markets that had ranged from five to 61 hours in length, some of which are discussed in Box 4.1.⁶

¹ Optus, *Submission 1*, p. [9].

² Optus, *Submission 1*, p. [11].

³ Telstra, *Submission 16*, p. 2.

⁴ TPG Telecom, *Submission 6*, p. 2.

⁵ Australian Mobile Telecommunications Association, *Submission 4*, [p. 2].

⁶ Australian Mobile Telecommunications Association, *Submission 4*, [p. 2].

Box 4.1 Example of recent international network outages

Canada

On 8 July 2022, Canadian telecommunications provider Rogers Communications experienced a major service outage lasting over 16 hours. According to NetBlocks, a cybersecurity watchdog, 12 million customers (around a quarter of Canada's population) lost internet connectivity.⁷ As compensation for the service outage, Rogers issued credit to customers for 5 days of service, estimated to be valued at \$50 million CAD.⁸

Directly following the outage, the Canadian Minister of Innovation, Science and Industry, the Honourable Francois-Philippe Champagne, directed Rogers Communications and other Canadian telecommunications companies to develop a backup plan to prevent a similar outage, giving them 60 days to do so.⁹

On 7 September 2022, Rogers Communications and 13 other telecommunications service providers signed a Memorandum of Understanding (MoU) aimed to ensure and guarantee emergency roaming and other mutual assistance in the case of a major outage.¹⁰ The MoU cited the need for 'additional measures to improve network reliability and resiliency and to mitigate the impact of service outages'.¹¹

Japan

On 2 July 2022, Japanese telecommunications provider KDDI, the second largest carrier in Japan, experienced a major service outage that lasted up to 61 hours before being resolved. An incident report published by KDDI and provided to the Japanese Ministry of Internal Affairs and Communications indicated that about 30 million people were affected by the outage.¹²

⁷ NetBlocks, [@netblocks], 8 July 2022, [Update: The internet and telecommunication outage in #Canada is ongoing...](#) X (Twitter) (accessed 13 November 2023).

⁸ Rogers Communications Inc, '[Rogers Communications Reports Third Quarter 2022 Results](#)', Press release, 9 November 2022 (accessed 26 August 2024).

⁹ Government of Canada, [Statement from Minister Champagne on Canada's Telecommunications Reliability Agenda following Rogers' outage on July 8 2022](#), 7 September 2022 (accessed 13 November 2023).

¹⁰ Government of Canada, [Statement from Minister Champagne on Canada's Telecommunications Reliability Agenda following Rogers' outage on July 8 2022](#), 7 September 2022 (accessed 13 November 2023).

¹¹ Government of Canada, [Memorandum of Understanding on Telecommunications Reliability](#), 7 September 2022 (accessed 26 August 2024).

¹² KDDI Corporation, [The July 2 Communication Failure and Our Response](#), 29 July 2022, p. 3 (accessed 26 August 2024).

Like the Optus outage, affected consumers were unable to connect to the Japanese emergency service line, 110 or 119.¹³ Following the outage, the Ministry of Internal Affairs and Communications announced the establishment of a 'study group' that would assess and report on the practicality of network roaming during emergencies.¹⁴

After the outage, KDDI announced that it would compensate 2.71 million consumers 'heavily affected' affected by the network outage by refunding two days' worth of their monthly basic fees. Additionally, it would provide ¥200 to all 35.89 million subscribers, including those receiving the extra compensation, to be deducted from their bills.¹⁵

- 4.6 The Australian Communication Consumer Action Network (ACCAN) drew the committee's attention to the Canadian Rogers Outage and how the Canadian Radio-television and Telecommunications Commission responded by issuing an interim directive that required carriers, among other things, to:

- notify the Commission within two hours of becoming aware of a 'major service outage'; and,
- within 14 days of an outage, provide a comprehensive report detailing the cause, resolution steps, impact on emergency and accessibility services, and plans to prevent future outages.¹⁶

- 4.7 ACCAN suggested that this case study could guide the Australian Government in considering regulatory reform to ensure that Australian telecommunications carriers have clear guidelines for responding to outages, thereby helping consumers, businesses and governments better adapt when such events occur.¹⁷

- 4.8 The Department of Home Affairs submitted that the Optus outage highlighted the deep interconnections between Australia's critical infrastructure sectors:

Significant disruption in one sector may have severe, cascading and compounding impacts and consequences on the delivery or support of other critical infrastructure services. The Optus outage has highlighted the consequences which can occur as a result of this interdependency, with the event impacting the availability of other critical infrastructure services, including hospital services, financial services and public transport. It also

¹³ Kyodo News, '[KDDI to pay damages to 36 mil. people affected by network outage](#)', *Kyodo News*, 29 July 2022, (accessed 13 November 2023).

¹⁴ Japanese Ministry of Internal Affairs and Communications, '[Publication of the First Report of the Study Group on Roaming Among Service Providers in a Time of Emergency and Results of Solicitation of Opinions](#)', *Press Release*, 21 December 2022.

¹⁵ KDDI Corporation, '[The July 2 Communication Failure and Our Response](#)', 29 July 2022, p. 13 (accessed 26 August 2024).

¹⁶ Australian Communication Consumer Action Network, *Submission 17*, p. 3.

¹⁷ Australian Communication Consumer Action Network, *Submission 17*, p. 3.

demonstrated the flow-on impact to businesses, which also act as key third-party service providers to other sectors (as well as individuals) across the economy. This adds to the significant impact of the outage on the day-to-day operation of tens of thousands of businesses and millions of individual Australians.¹⁸

- 4.9 Optus submitted that telecommunications services are provided on a commercial basis and are consequently not regulated, and as such, there is no guaranteed return on investment for telecommunications providers.¹⁹

Optus' preparedness and resilience

- 4.10 In evidence, Optus outlined its crisis management preparedness. Optus CEO Ms Kelly Bayer Rosmarin told the committee:

Even though we'd done very detailed reviews into our architecture, processes and risks to make sure we could be as resilient as possible, we did not have an articulated, clear risk that each one of our 90 routers would independently shut itself down at the same time using a fail-safe on those Cisco routers that our team was not aware of. That specific risk that caused this outage was not identified in any of our reviews.²⁰

- 4.11 Optus reported that some of its staff had backup physical SIMs or eSIM's available to them as a redundancy measure that operated on non-Optus networks in the event of a network outage but acknowledged that most Australians do not have access to such a fallback.²¹

- 4.12 In evidence to the committee, Mr Lambo Kanagaratnam, Optus Managing Director of Networks, conceded:

We didn't have a plan in place for that specific scale of outage. It was unexpected. We have high levels of redundancy and it's not something that we expect to happen.²²

- 4.13 Mr Kanagaratnam subsequently stated that the scale of the outage was 'something that we didn't anticipate'.²³ He told the committee that Optus had the correct defence mechanism in place, and told the committee, '[f]or us to lose 90 routers in one outage is not something that we contemplated'.²⁴

¹⁸ Department of Home Affairs, *Submission 7*, p. 4.

¹⁹ Optus, *Submission 1*, p. [3].

²⁰ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 19.

²¹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, pp. 2–3.

²² Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 9.

²³ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 10.

²⁴ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 12.

- 4.14 Ms Bayer Rosmarin stated that it was Optus' intention to provide customers with connectivity 24/7 for 365 days a year, and that Optus has multiple layers of geographical, physical, and power redundancy. She insisted that it was 'highly unusual' for all of Optus' segregated networks to go down simultaneously.²⁵
- 4.15 Optus detailed a number of measures it had undertaken prior to the outage to enhance the resilience of its network, including simulating a state-outage and an assessment of a potential attack on a state's internet exchange,²⁶ and regular internal and independent third-party reviews of its resilience network architecture.²⁷ The latest major network architecture review was completed in October 2023.²⁸ Ms Bayer Rosmarin told the committee that Optus regularly tests its failover (its ability to seamlessly switch to a backup system in the event of failure), and has identified 42 tests that are performed on a regular basis to test the resilience and redundancy of its network.²⁹
- 4.16 Ms Bayer Rosmarin detailed how different areas within the company perform their own regular testing, and that Optus updates its risk process at least once a year. She also told the committee that an executive risk committee was in place to oversee measures to address risks that have been identified, which meets at least quarterly.³⁰
- 4.17 In answers to questions taken on notice, Optus claimed that it has 'an established, comprehensive risk management framework and supporting processes' which align with industry standards to facilitate the continuous identification, quantification, monitoring, and controlling of risks.³¹
- 4.18 Optus detailed the following measures intended to manage risks to its network:
- designing and maintaining a robust network architecture with multiple layers of redundancy;
 - performing exercises to identify, plan for and test risks;
 - maintaining processes and systems to identify and address incidents as quickly as possible; and

²⁵ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 5.

²⁶ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 13.

²⁷ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 14; and Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 14.

²⁸ Optus, answers to questions taken on notice (received 24 November 2023), [p. 3].

²⁹ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 14.

³⁰ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 23.

³¹ For details of these measures, see Optus, answers to questions taken on notice (received 24 November 2023), [p. 1].

- conducting regular crisis management exercises to test Optus infrastructure, systems, processes, and capabilities.³²
- 4.19 Additionally, Optus confirmed that it implemented its crisis management procedures (CMP) on the day of the outage, the objectives of which were to 'mitigate the effects of a crisis, minimise disruption to operations and recover operations'.³³
- 4.20 Ms Bayer Rosmarin also insisted that the company had invested more in network resilience.³⁴ Mr Kanagaratnam provided further details of this at the hearing:

We have multiple layers of redundancy in the network. If we look at how we connect the services to our customers, we have multiple exchanges or sites across the country and so we segregate different parts of the network according to that. At any time, if one exchange is isolated, it will only impact a certain amount of customers if the whole exchange is lost. Within that exchange we have multiple layers of redundancy in terms of connectivity ... Then what we do for mobile voice data and fixed voiced is that we provide geographical redundancy so that traffic can switch seamlessly across the country ... For all our intercity fibre between our major cities, we have at least three different routes of connectivity, and we have multiple other layers of redundancy.³⁵

Enhancing the resilience of Australia's networks

- 4.21 Submitters to the inquiry contended that the Optus network outage highlighted significant potential risks to Australia's telecommunications networks, and that reform was needed to help prevent and manage outages, as well as other threats to the networks. Key proposals for reform included:
- the implementation of mandatory network roaming in cases of emergency;
 - improvements to the Emergency Call Service, Triple Zero;
 - the introduction of legislation to class telecommunication providers as 'critical infrastructure', imposing further security obligations on them in cases of emergency; and
 - other tangential matters such as improved industry collaboration.

³² Optus, answers to questions taken on notice (received 24 November 2023), [p. 2].

³³ Optus, answers to questions taken on notice (received 24 November 2023), [p. 2].

³⁴ Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, p. 2.

³⁵ Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 9.

Roaming and network sharing

- 4.22 The outage prompted renewed calls for mandatory emergency network sharing and network roaming during outages—whereby customers from one network would be able to connect to a rival network in the event of a significant outage.³⁶
- 4.23 On 30 June 2023, the Australian Competition and Consumer Commission published a report which found that the provision of temporary mobile roaming during emergencies was 'feasible'.³⁷ The Australian Government subsequently announced that it would pursue trials to determine the feasibility of network sharing with industry.³⁸ Submitters advised the committee that these trials were already in progress.³⁹
- 4.24 However, Optus noted the potential limitations on these roaming solutions:
- Optus is working with the other [mobile network operators] to assess the viability of temporary disaster roaming. If a roaming solution was in place, it would have likely resulted in other mobile networks being unable to accommodate the extra traffic given the number of users trying to roam. If the capacity issue could have been addressed, roaming would likely not have worked as the Optus core network was down and Optus subscribers would not have been able to be authenticated for roaming.⁴⁰
- 4.25 Similarly, Telstra took the view that the temporary disaster roaming solution currently under discussion would not have compensated for the Optus outage due to the inability to authenticate users because of communications being disrupted to the Optus core network.⁴¹
- 4.26 The committee also received evidence on the viability of activating roaming during nation-wide network outages.

³⁶ See, for example, Mark Gregory, ['The Optus outage underlines the need for emergency mobile roaming'](#), *The Guardian*, 9 November 2023 (accessed 26 August 2024); Rosemary Bolger, ['Optus outage prompts calls to force telcos to switch customers onto other networks when one fails'](#), *ABC Radio Sydney*, 8 November 2023 (accessed 26 August 2024); and NSW Government, *Submission 19*, p. 12.

³⁷ Australian Competition and Consumer Commissioner, [Regional mobile infrastructure inquiry: Final report](#), July 2023, p 2.

³⁸ See, for example, The Hon Michelle Rowland MP, Minister for Communications, ['Interview with Sarah MacDonald, ABC Sydney'](#), *Media Interview*, 8 November 2023 (accessed 26 August 2024); and The Hon Michelle Rowland MP, Minister for Communications, ['Interview with Lisa Miller, ABC News Breakfast'](#), *Media Interview*, 9 November 2023 (accessed 26 August 2024).

³⁹ See, for example: Optus, answers to questions taken on notice (received 24 November 2023), [p. 4]; Telstra, *Submission 16*, p. 3; TPG Telecom, *Submission 6*, pp. 3–4; and, Australian Mobile Telecommunications Association, *Submission 4*, [p. 3].

⁴⁰ Optus, answers to questions taken on notice (received 24 November 2023), [p. 4].

⁴¹ Telstra, *Submission 16*, p. 3.

- 4.27 Ms Bayer Rosmarin told the committee that Optus had discussed whether it was possible to temporarily roam its customers to another network during its first crisis meeting but had concluded that there was currently no capability to do so at that scale in Australia.⁴²
- 4.28 Some submitters noted the 'significant technical and operational challenges' related to roaming in the event of a major outage.⁴³ For example, AMTA and Telstra cautioned that wide-scale roaming may risk the integrity of the host network, which could fail or become congested due to a surge in users.⁴⁴ Moreover, if an outage affects the core of the network, AMTA stated that roaming to other networks would not be possible as it would not be possible to authenticate devices.⁴⁵
- 4.29 Telstra submitted that solving these issues would likely be 'very expensive' and 'highly complex' and claimed that it was not aware of any countries currently implementing network roaming in this way.⁴⁶ TPG similarly advised that such a capability would require government funding.⁴⁷
- 4.30 However, other submitters noted that there was a basis for considering avenues to mandate domestic roaming—particularly for regional Australia. TPG Telecom argued that roaming would 'have the benefit of providing a much higher degree of network resilience for Australians living in regional areas', and further, that it would incentivise investment and 'reverse the trend of weakened competitive dynamics'.⁴⁸ The NSW Government similarly noted the benefits of a 'permanent, ongoing roaming capability'.⁴⁹
- 4.31 Similarly, Mr Mark Gregory of RMIT submitted that there are many positives for implementing emergency roaming and that telecommunications carriers are 'typically not in favour of domestic mobile roaming as there is a perception that it reduces competition'. He insisted that domestic roaming can be implemented

⁴² Ms Kelly Bayer Rosmarin, CEO, Optus, *Committee Hansard*, 17 November 2023, pp. 21 and 24. See also Mr Lambo Kanagaratnam, Managing Director, Networks, Optus, *Committee Hansard*, 17 November 2023, p. 24.

⁴³ Australian Mobile Telecommunications Association, *Submission 4*, [p. 3].

⁴⁴ Australian Mobile Telecommunications Association, *Submission 4*, [p. 3]; Telstra, *Submission 16*, p. 3.

⁴⁵ Australian Mobile Telecommunications Association, *Submission 4*, [p. 3].

⁴⁶ Telstra, *Submission 16*, p. 3.

⁴⁷ TPG Telecom, *Submission 6*, pp. 3–4.

⁴⁸ TPG Telecom, *Submission 6*, p. 4.

⁴⁹ NSW Government, *Submission 19*, p. 12.

despite the protests of telecommunications carriers, and further, that arguments that high cost is an inhibitor to doing so are unfounded.⁵⁰

The Triple Zero network

4.32 Evidence to the inquiry emphasized that the Emergency Call Service, also known as Triple Zero, plays a fundamental role in the safety of the Australian community and that the inability of many Optus customers to contact the service represented a critical failure and risk to public safety.

4.33 As articulated by the NSW Government, a 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.⁵¹

4.34 The Police Federation of Australia similarly submitted that the inability to contact emergency services can be the 'difference between life and death'.⁵²

4.35 The merits of integrating different technologies into the Triple Zero service were considered by some submitters. For example, ACCAN recommended that the committee consider 'innovative ways to enhance Triple Zero services', such as the facilitation of a 'next generation' Triple Zero service.⁵³ ACCAN considered that, in doing so:

...this is an opportunity for Optus and other telcos to review their redundancy and accessibility arrangements to ensure that in case of future large-scale network outages people with disability would not be at extended risk.⁵⁴

4.36 The University of Melbourne Centre for Disaster Management and Public Safety explained what a 'next generation' Triple Zero service would entail:

The current 'voice only' Triple Zero service will be upgraded to allow callers to transfer data (pictures, videos, live feeds) and enhanced location information in support of their calls for emergencies and response by Public Safety Agencies.⁵⁵

⁵⁰ Mr Mark A. Gregory, *Submission 20*, p. 11.

⁵¹ NSW Government, *Submission 19*, p. 4.

⁵² The Police Federation of Australia, *Submission 13*, p. 1.

⁵³ Australian Communications and Consumer Action Network, *Submission 17*, p. 1.

⁵⁴ Australian Communications and Consumer Action Network, *Submission 17*, p. 2.

⁵⁵ University of Melbourne Centre for Disaster Management and Public Safety, *Submission 11*, p. 1.

- 4.37 However, it submitted that such an upgrade would make the 'ecosystem even more complex' which would need to be addressed by increased investment in 'risk mitigation and redundancy arrangements'.⁵⁶
- 4.38 Additionally, both the University of Melbourne Centre for Disaster Management and Public Safety and the Police Federation of Australia drew the committee's attention to a finding of the Royal Commission into National Disaster Arrangements, which called for the establishment of a Public Safety Mobile Broadband service and voiced their support for such a capability. The Police Federation of Australia emphasised that:
- Until that recommendation is finally delivered, police and other emergency services heavily rely on telco providers for broadband capabilities. When those telco services fail, not only are the lives of Australia's emergency services first responders put at risk, so are members of the Australian community who may be affected by an issue requiring emergency services.⁵⁷
- 4.39 As of May 2023, the Australian Government had committed \$10.1 million to establish a taskforce to deliver a Public Safety Mobile Broadband service.⁵⁸ The taskforce, comprised of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, and state and territory government agencies, is currently 'creating the framework that drives the delivery of a national PSMB capability'.⁵⁹

Bringing telecommunications companies under security of critical infrastructure legislation

- 4.40 As outlined in Chapter 1, the security obligations of telecommunications providers, including Optus, are articulated in the *Telecommunications Act 1997* and the *Security of Critical Infrastructure Act 2018* (SOCI Act). While there is an obligation for some entities that fall under the SOCI Act to comply with a critical infrastructure Risk Management Program (RMP), Optus and other carriers are not currently considered to be 'critical infrastructure' as defined in the SOCI Act, and therefore are not obliged to maintain an RMP.⁶⁰

⁵⁶ University of Melbourne Centre for Disaster Management and Public Safety, *Submission 11*, p. 1.

⁵⁷ The Police Federation of Australia, *Submission 13*, p. 2; and, University of Melbourne Centre for Disaster Management and Public Safety, *Submission 11*, p. 1.

⁵⁸ The Public Safety Mobile Broadband will be a discrete mobile broadband capability dedicated to emergency services, so they can communicate among themselves, with fast and secure voice, video and data communications. See National Emergency Management Agency, [Public Safety Mobile Broadband Fact Sheet](#), December 2023 (accessed 24 July 2024).

⁵⁹ National Emergency Management Agency, [Public Safety Mobile Broadband](#), 8 September 2024 (accessed 19 September 2024).

⁶⁰ Department of Home Affairs, *Submission 7*, p. 5.

- 4.41 Mr Mark Gregory submitted in favour of more stringent auditing and reporting for critical infrastructure operators, such as telecommunications carriers. He recommended the Australian Government develop more comprehensive regulations to ensure that there is 'more transparency and improved reporting to the regulator ... on network design, management practices, redundancy and resiliency'.⁶¹
- 4.42 On 13 November 2023, the Australian Government announced its intention to introduce legislation to class carriers as 'critical infrastructure' and align their obligations with the SOCI Act. The then-Minister for Home Affairs, the Hon Claire O'Neill MP, said that telecommunications companies should be required to adhere to the same standards as other critical infrastructure operators.⁶²
- 4.43 The Department of Home Affairs' submission provided further information that an obligation under the RMP rule would require an entity to assess and develop appropriate strategies to minimise or eliminate risks, implement robust procedures to mitigate the impact of hazards, and to continuously update their RMP.⁶³ At the time of writing, the legislation had not been introduced.
- 4.44 The Department of Home Affairs also noted that the Australian Government is working with the telecommunications sector to 'consider the options for developing a dedicated risk management program and broader obligations for the telecommunications sector'.⁶⁴ It submitted:
- By placing the onus of adequate risk management on the entity's Board, the RMP obligation enhances engagement and review of internal auditing risk mitigation processes. Anecdotal evidence from industry suggests the Board exposure resulting from the SOCI legislative framework, including the RMP obligation, helps to elevate risk management to the Board level.⁶⁵
- 4.45 TPG explained that it had been working with the Australian Government regarding this potential amendment and noted its intention to 'ensure that the reforms promote accountability without duplication and the addition of unnecessary regulatory burdens'.⁶⁶
- 4.46 The Internet Association of Australia welcomed new legislation addressing critical infrastructure but urged that it should only be introduced after adequate

⁶¹ Mr Mark A. Gregory, *Submission 20*, p. 9.

⁶² See Matthew Doran, '[Telcos required to report on cybersecurity measures in bid to prevent repeat of 2022 Optus hack](#)', *ABC News*, 13 November 2023 (accessed 26 August 2024).

⁶³ Department of Home Affairs, *Submission 7*, p. 5.

⁶⁴ Department of Home Affairs, *Submission 7*, p. 4.

⁶⁵ Department of Home Affairs, *Submission 7*, p. 5.

⁶⁶ TPG Telecom, *Submission 6*, p. 3.

industry consultation. It stated that the introduction of 'reactive legislation' will not contribute to substantial outcomes.⁶⁷

⁶⁷ Internet Association of Australia, *Submission 10*, pp. 4–5.

Chapter 5

Committee views and recommendations

- 5.1 This inquiry was established to investigate the nation-wide Optus network outage on 8 November 2023, and to examine whether Optus exercised its responsibilities as a telecommunications carrier and operator of crucial national infrastructure with appropriate due diligence.
- 5.2 Evidence to the committee from Optus outlined that there were three key activities undertaken by Optus on the day of the outage. Those being: identifying and resolving the cause of the outage; communicating with customers; and liaising with government and other industry stakeholders.
- 5.3 More broadly, the inquiry explored fundamental questions prompted by the outage regarding:
- the operation of the Emergency Call Service (Triple Zero);
 - the feasibility of temporary mobile roaming during mass network outages;
 - whether telecommunications networks should be bound to the same security obligations as other critical infrastructure operators; and
 - the adequacy of consumer protections regulations and dispute resolution schemes in the telecommunications sector related to mass network outages.
- 5.4 The above points form the basis of the committee's views and recommendations, which are explored in this chapter.
- 5.5 At the outset, the committee wishes to acknowledge the regulatory reform in the telecommunications sector that has been committed to by the Australian Government since the outage.
- 5.6 In particular, the committee notes that in March 2024, the Department of Infrastructure, Transport, Regional Development, Communications and the Arts completed its review of the outage and published its final report. The committee notes that the report made 18 comprehensive recommendations that were agreed to, in principle, by the Australian Government. The committee does not seek to reiterate the findings and recommendations made in that report but will draw on them where relevant to its assessment.

Adequacy of Optus' communications

- 5.7 In the event of a major service disruption, like the Optus outage, Australians expect and deserve transparent, timely and informative advice. The committee considers that it is incumbent on telecommunications carriers to provide such advice. During the outage, two aspects of Optus' communications were particularly striking.

- 5.8 First, the committee considers that the timeliness and comprehensiveness of Optus' public communications were inadequate.
- 5.9 The first public interview made by the CEO, Ms Kelly Bayer Rosmarin, was at 10.40am, over six hours after the outage began. This occurred after the Minister for Communications called on Optus to provide an update.
- 5.10 Compounding this was Optus' initial method of communication. Between 6.30am and 10.40am, Optus used social media posts and statements provided to media to communicate to its customers that an outage was occurring. This means that in the early hours of the outage, unless Optus customers were able to access social media, which many presumably could not, they were left uncertain about what was happening, and when services were expected to be restored.
- 5.11 In the committee's view, it stretches credulity that Optus did not think to update the Australian public sooner and in a more accessible way given the severity of the circumstances.
- 5.12 Second, the committee notes deficiencies in Optus' communications with government and essential service organisations.
- 5.13 Evidence to the committee suggested that emergency services organisations faced challenges responding to emergencies during the outage due to a lack of timely information from Optus. Effective crisis management should include a clear communication hierarchy and systematic response, prioritising essential services, which Optus' approach appeared to neglect.
- 5.14 Taken together, the committee concludes that Optus' public communications during the outage were manifestly inadequate.
- 5.15 Optus' actions after the outage, the resignation of its CEO, Ms Bayer Rosmarin, and subsequent reviews of its internal processes have done little to assuage the concern of the public, or indeed, this committee, that this may happen again or that Optus' response might be substantially different.
- 5.16 The failure of Optus to provide credible, honest and forthright information during the outage also reflects on Optus' own inability to improve on its past communication lapse regarding the public disclosure of a malicious breach of its customers data in 2022. This suggests that Optus' processes for learning from past incidents have not been effective.
- 5.17 More broadly, this display of poor public communication has highlighted to the committee that there are currently no standard requirements for how carriers are to communicate with stakeholders during a mass service disruption. It seems evident that the internal approaches of telecommunications carriers to public communications may not be reliable.

- 5.18 The committee notes the announcement of the Australian Government on 28 August 2024 to direct ACMA to make new rules to ensure customers are kept informed and updated about major outages and significant local outages.¹
- 5.19 While the committee considers this direction encouraging, the committee also believes that these rules should be developed quickly given the time that has already passed since the Optus outage and the completion of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts' review in April 2024.

Recommendation 1

- 5.20 The committee recommends that the Australian Communications Media Authority, in collaboration with industry partners, prioritise as a matter of urgency the development of an enforceable communications standard for carriers that obliges them to communicate to government, emergency services and the public during national outages. The standard should include details outlining at what time and how certain communications need to occur.**

Provision of Triple Zero

- 5.21 The outage was not just inconvenient but was potentially dangerous. Most concerning to the committee were the reports that many individuals could not be connected to Triple Zero during the outage.
- 5.22 At the outset, the cause of the Triple Zero issue was unknown, but has since been found to be a technical malfunction relating to the presence of live 3G towers that had not wilted, as is the normal procedure during a network outage. Given the imminent planned shutdown of 3G networks on 28 October 2024, it is unlikely that this exact issue will happen again. While the committee reserves comment on this matter as technical issues relating to the cause of the outage are outside of the scope of this inquiry, it is clear that Triple Zero measures should be strengthened to avoid future malfunctions and subsequent outages.
- 5.23 What the committee can comment on is the management of communications and visibility of the issue during the outage. Telstra, the Emergency Call Person, informed the committee that Triple Zero operated as normal on the day of the outage. This contradicted with advice from Optus that many of its consumers could not call Triple Zero.
- 5.24 It has become clear that neither Telstra nor Optus had full visibility of what caused the issue, or why it occurred, meaning no single entity had the ability to provide timely advice to key stakeholders including emergency service organisations, and to the public. The committee considers that the inability of

¹ Australian Government, [Changes afoot in response to Optus Outage review](#), 28 August 2024.

any one body to have effective oversight of the Triple Zero network presents a clear threat to the safety of the Australian community.

- 5.25 The committee notes that the Australian Government has agreed to a number of measures to strengthen Triple Zero reliability and prevent similar outages in the future, including the establishment of a Triple Zero custodian, which would assume responsibility for the network and monitor its operation. The committee notes its support for these recommendations and urges the Government to implement these measures as a matter of priority.

Compliance with statutory obligations

- 5.26 Optus has certain obligations to perform welfare checks on its customers who cannot connect to Triple Zero during a network outage. However, the inquiry highlighted that Optus' disclosure of its activities related to this obligation was not transparent.
- 5.27 Optus initially advised the committee that 228 calls failed, and that welfare checks were untaken for each of these calls. It later revised this number upwards a further two times, and ultimately disclosed in late January 2024 that 2697 Triple Zero calls were not be connected during the outage. Optus advised this was determined after an internal audit on its welfare check obligations in late November 2023.²
- 5.28 The committee is concerned by the implication that, for an extended period after the outage, Optus did not know the welfare status of 2468 of its customers who unsuccessfully called Triple Zero. Further, it is unclear to the committee whether the additional callers received welfare checks from Optus. If they did, the committee questions the value for the customer in receiving a welfare check so long after their initial Triple Zero call.
- 5.29 The committee notes that Optus has acknowledged its failings in this area. In response, Optus has made changes to its welfare check process and sought an independent review of its compliance with its obligations. According to the findings of that review, Optus has sufficiently addressed the concerns relating to improved welfare checking training.
- 5.30 The committee is further concerned that the investigation by the Australian Communications Media Authority into Optus' compliance with its obligations regarding the Emergency Call Service is still ongoing, with no indication of when it will report its findings.
- 5.31 The committee considers that Optus cannot meaningfully implement changes to its welfare check procedures without understanding the full extent to which it did or did not comply with its Triple Zero obligations. Accordingly, it is the

² Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023, received 24 January 2024.

committee's view that the Australian Communications Media Authority must expedite the findings of its review and make them publicly available as soon as possible.

Recommendation 2

5.32 The committee recommends that the Australian Communications Media Authority publish the findings of its review into Singtel Optus Pty Ltd and its subsidiaries' compliance with its obligations under the Telecommunications (Emergency Call Service) Determination 2019, the *Telecommunications Act 1997* and *Telecommunications (Consumer Protection and Service Standards) Act 1999* as soon as possible.

Recommendation 3

5.33 The committee recommends that the Australian Communications Media Authority:

- **review the remedial action undertaken by Optus to strengthen its processes, procedures, governance controls and communications plans to ensure extensive error checking and regular audits are in place with a view to preventing similar issues reoccurring and ensuring more transparent communications and fulfilment of statutory obligations; and**
- **if required, appoint an Independent Reviewer to review and assess the remedial actions undertaken by Optus.**

Feasibility of emergency roaming

5.34 Evidence to the inquiry from the carriers suggested that activating large-scale roaming during a nation-wide outage of one carrier network is not currently possible due to technical, administrative and financial constraints.

5.35 However, the committee notes that work is being progressed in this space. After a 2023 report from the Australian Consumer and Competition Commission found that temporary disaster roaming is technically feasible, carriers and the Australian Government have been working to test temporary disaster roaming within a localised area for a short, specified duration during natural disasters.

5.36 The committee recognises the critical importance of this work and the life-saving outcomes it may bring. The committee similarly recognises that implementing emergency roaming is a complex undertaking. That said, the need for emergency roaming in circumstances outside of natural disasters has only become more urgent since the outage. Australians are currently living in a time where the threat of cyberattacks is pronounced, and livelihoods are more dependent on constant connection than ever before.

- 5.37 The committee notes that the current feasibility study is focused on roaming capabilities to be implemented in times of natural disasters only, and not during major outages. The committee considers that this is just the first step and encourages continued government and industry efforts to test the feasibility and practicality of nation-wide roaming during network outages.

Recommendation 4

- 5.38 The committee recommends that the Australian Government work with telecommunications carriers to examine large-scale network roaming and mutual assistance arrangements for major outages.**

Preparedness of industry

- 5.39 The committee acknowledges evidence from Optus that the events of the outage on 8 November 2023 were initiated by a confluence of unanticipated and unlikely technical events. The committee similarly acknowledges the inherent complexity of coordinating and executing the restoration of a nation-wide telecommunication network.
- 5.40 In evidence, Optus outlined its contingency and preparedness protocols. The committee is broadly satisfied that Optus took these seriously.
- 5.41 However, despite assurances provided by Optus and other telecommunications carriers on the stringency of their redundancy and resiliency practices, the committee does not have confidence that these additional measures will ensure the appropriate management of an outage in the future.
- 5.42 Despite being crucial to the functioning of society, telecommunications carriers are not bound by the same security requirements as other critical infrastructure providers. The committee notes the Australian Government's intention to rectify this by including telecommunications carriers in the *Security of Critical Infrastructure Act 2018*. The committee supports this course of action and recommends the Australian Government do so as a matter of urgency.

Recommendation 5

- 5.43 The committee recommends that the Australian Government prioritise as a matter of urgency the introduction of amendments to the *Security of Critical Infrastructure Act 2018* to clarify that telecommunications carriers are included as critical infrastructure providers.**

Compensation for consumers

- 5.44 A key question remains for the committee. If such an outage is to occur again, how can Australians have confidence that their livelihood and safety will be protected, and that they have access to suitable recourse if it is not?

- 5.45 The committee considers it reasonable that customers expect to be adequately compensated for the inconvenience and losses incurred because of network outages.
- 5.46 Optus' compensation offer to customers did not meet customer expectations. The committee considers that Optus' offer to provide additional data to 'make more of the network' was disingenuous because few of its customers, including those already on fixed term plans, are likely to need or make use of the additional data being offered.
- 5.47 Equally, the committee considers that comments by Optus that the loss of service represented only \$1–2 a day exemplifies that it does not fully appreciate the severity of the outage on its customers. The dollar figure may represent what Optus charges for its services, but not what the loss of that service represents to its customers. The committee is of the view that Optus should have provided discounts on future bills for affected customers, as opposed to the provision of data, to more appropriately reflect the importance of connectivity to Australian consumers and businesses.

Role of the Telecommunications Industry Ombudsman

- 5.48 The committee acknowledges that Optus has recognised the unique impact the outage had on small businesses and created a specific response with a dedicated team to address it. Nevertheless, if customers do not feel they have received a satisfactory outcome from mediation with Optus, they have the option to pursue recourse through the Telecommunications Industry Ombudsman.
- 5.49 However, the committee does not believe that this scheme is the most appropriate mechanism for compensation arising from large-scale outages as it relies on customers to individually initiate a claim, and only addresses one customer at a time. Where the outage is widespread and the cause of the complaint is abundantly clear, the committee considers that customers should not be expected to assume the burden of navigating their rights and responsibilities to claim rightful compensation.
- 5.50 The committee notes that this issue was highlighted by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts' review in April 2024 and that the Australian Government agreed to implement the associated recommendation within 12 months. The committee recommends that the Australian Government expedite the processes and develop a tailored dispute resolution mechanism to be activated in instances of major service outages, operated by the Telecommunications Industry Ombudsman.

Recommendation 6

- 5.51 The committee recommends that the Australian Government direct the Telecommunications Industry Ombudsman to expedite the development of a tailored dispute resolution mechanism to ensure appropriate compensation in the event of mass telecommunications outages.**

Consumer Service Guarantee

- 5.52 The committee also considered whether current telecommunications service guarantees reflect how people need and use telecommunications services.
- 5.53 The committee notes that broadband and mobile services are not covered under the Consumer Service Guarantee. The current Consumer Service Guarantee instrument was extended for three years in 2023, with the Australian Government citing the need to do so until alternative arrangements could be developed.
- 5.54 The way consumers access telecommunications services has significantly evolved over the past decade. Many Australians now rely on internet applications or mobile services to make calls, as opposed to fixed-line phones. Given this, the committee considers that the Optus outage exemplifies the fact the current regulation is not fit for purpose and that a review of the instrument is warranted.

Recommendation 7

- 5.55 The committee recommends that the Australian Government undertake a review of the Consumer Service Guarantee with a view to considering a new, updated Telecommunications (Customer Service Guarantee) Standard, that also applies to fixed broadband and mobile telecommunications services.**

Senator Sarah Hanson-Young
Chair

Coalition Senators' Additional Comments

- 1.1 The Optus Network Outage of 8 November 2023 was significant in that more than 2700 calls to Triple Zero from Optus phones were unable to connect. However, it is the obfuscating attitude from the Minister for Communications, the Hon Michelle Rowland MP, that is of most concern. Documents obtained under Freedom of Information (FOI) reveal that as the crisis was unfolding, the Minister was specifically warned on a 10.10am teleconference with the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department), the Minister, the Minister for Communications then Chief of Staff, and Telstra that there had been issues connecting with Triple Zero from Optus phones.¹
- 1.2 Despite being directly warned that some Triple Zero calls were not getting through, meeting notes obtained under FOI show that Minister Rowland stated '(I)want to be able to say that mobiles will still connect'.²
- 1.3 Minister Rowland later held a press conference at 11.00 am where she stated that:

Calls to Triple Zero the emergency services cannot be made from Optus landline services. In relation to Optus mobiles and the ability to make Triple Zero calls, that is operating as per the protocol that is in place ...³
- 1.4 However, Minister Rowland and her then Chief of Staff had been on a teleconference at 10.10am where it was suggested by Sam Grunhald, First Assistant Secretary of Communications Services and Consumer Division from the Department in document 8 of FOI 24-166 that:

... this had been raised on a call with Telstra. Minister is calling CEO Optus to confirm.⁴
- 1.5 In evidence provided to Senate Estimates on 13 February 2024, both Mr Richard Windeyer, then Deputy Secretary of Communications, and Mr Grunhald from the Department advised that they had in fact not raised this with the Minister prior to her 11.00am press conference.

¹ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024.

² Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024, p. [14].

³ Tom Williams, [Two weeks since the Optus outage, documents show backroom scrambling and urgent meetings occurred as the emergency played out](#), *ABC News*, 22 November 2024 (accessed 27 September 2024).

⁴ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024, p. [10].

- 1.6 This was confirmed in a response to Question on Notice SQ24-000023 from the Department that they:
- ... did not provide the Minister or the Minister's office with the referred to extra anecdotal information prior to 11.00am on 8 November 2023.⁵
- 1.7 It is unclear whether the extra anecdotal information referred to was that three Departmental staff had attempted to contact Triple Zero from Optus devices, with two unable to connect—or whether Mr Grunhard had in fact raised the concern from ACMA in the email timestamped 10.18am advising:
- had staff members here test and one got a dead call (that went nowhere) and another connected to the recorded message at the start of all Triple Zero calls ... So the camp-on (roaming) capabilities may not be working for Optus customers which is a significant issue.⁶
- 1.8 It is deeply concerning that Minister Rowland didn't want to cause panic and wanted to be able to say that mobiles still connect.⁷
- 1.9 It would appear Minister Rowland was so concerned with providing specific information to the public she exercised poor judgment by failing to disclose to the public there were concerns over their ability to access Triple Zero from Optus mobile devices.
- 1.10 Less than an hour after the Minister was advised there were issues, she fronted the public and misled them regarding their ability to access Triple Zero services from Optus mobile devices.
- 1.11 This raises serious questions about not only Minister Rowland's ability to ensure telecommunications reliability and public safety, but also concerns that the Minister was so focused on stating '... that mobiles will still connect'.⁸
- 1.12 She created a situation where the public servants from the Department did not feel comfortable providing frank and fearless advice to their Minister.
- 1.13 This was either a critical failure in communications between the Department and Minister Rowland, or the Minister for Communications wilfully misled the Australian public regarding their access to Triple Zero services that could have jeopardised lives.

⁵ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, Question on Notice SQ24-000023, Senate Environment and Communications Legislation Committee Additional Estimates 2023–24, 13 February 2024 (received 5 April 2024).

⁶ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024, p. [10].

⁷ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024, p. [14].

⁸ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [FOI 24-166](#), 10 January 2024, p. [14].

- 1.14 Ensuring the reliability of Triple Zero services is paramount, yet the Optus Network outage exposed severe lapses in preparedness and response.
- 1.15 Public confidence in the government's ability to manage critical infrastructure is contingent on transparent and timely communication, especially during crises. The perception of disorganisation and the lack of a clear, authoritative response from the Minister's office added to public frustration and anxiety.
- 1.16 The Department's apparent awareness of the inability to access Triple Zero from Optus mobile devices, together with questions over whether Mr Grunhald did in fact advise the Minister prior to her 11.00 am press conference, raises concerns about both Minister Rowland and the Department's accountability and transparency.
- 1.17 Evidence suggests either the Department knew Optus mobile devices were unable to access emergency services during the outage and failed to advise their Minister in a timely manner, or the Minister had been advised on the 10.10am teleconference with Telstra and had misled the public in her 11.00am press conference. Either option is a damning indictment of Minister Rowland and a culture of fear or, ironically, a failure in communications within the department to provide frank and fearless advice.
- 1.18 The Optus network outage and the failure to ensure access to emergency services during the outage, coupled with the Department's apparent prior knowledge of the issue, paints a picture of a Ministry that is more concerned with damage control than with safeguarding the public interests.
- 1.19 It is also worth recalling the evidence of Mr James Parker, whose submission to the Optus inquiry highlighted the fact that he had warned the Minister for Communications of the looming problems of 4G phones being unable to call the triple-zero service. This was many months before the Minister's eventual announcement of the problem, in March 2024. In his submission, Mr Parker stated:

In early June [2023] I contacted the Communications Minister Hon Michelle Rowland via email regarding this issue and I did not initially receive a response. However, 4 months later after following up through my local member a few times I did end up receiving a response late in September. ... Based on the letter I received and the recent events its clear there is lack of oversight from the Government regarding both the 3G Switch-off issue and the telecommunications sector more broadly.⁹
- 1.20 We know from a response to Senate Estimates question on notice that the Government referred Mr Parker's submission to an external consultancy, Nova

⁹ Mr James Parker, *Submission 34*, p. 6.

Systems, for advice.¹⁰ However, it would not be until 17 March 2024 that the Minister would finally reveal there was a problem with the 3G switch-off impacting calls to triple zero services on 4G devices.

- 1.21 Together with her initial actions on the day of the Optus outage, as set out earlier, we see a pattern of a lack of transparency and failure of action to ensure Australians received the correct advice on critical communications matters.

Senator Ross Cadell
Member

Senator Dave Sharma
Member

¹⁰ Department of Infrastructure, Transport, Regional Development, Communications and the Arts, Question on Notice SQ24-000858, Senate Environment and Communications Legislation Committee Budget Estimates 2024–25, 19 June 2024 (received 19 July 2024).

Appendix 1

Submissions and Additional Information

- 1 Optus
- 2 Mr Andrew Jacobs
- 3 Australian Competition and Consumer Commission
- 4 Australian Mobile Telecommunications Association
- 5 Australian Communications and Media Authority
- 6 TPG Telecom
- 7 Department of Home Affairs
- 8 Telecommunications Industry Ombudsman
- 9 Australian Chamber of Commerce and Industry
- 10 Internet Association of Australia Ltd
- 11 University of Melbourne Centre for Disaster Management and Public Safety
- 12 Mr Robert Heron
- 13 Police Federation of Australia
- 14 Mr Dennis Maddock
- 15 Mr Winton Smith
- 16 Telstra
- 17 Australian Communications Consumer Action Network
- 18 Department of Infrastructure, Transport, Regional Development,
Communications and the Arts
- 19 NSW Government
- 20 Mr Mark A Gregory
- 21 Margaret Smyrnis
- 22 Name Withheld
- 23 Name Withheld
- 24 Name Withheld
- 25 Name Withheld
- 26 Name Withheld
- 27 Name Withheld
- 28 Paul Budde Consultancy
- 29 Mr David A W Miller
- 30 Cash Welcome AU/NZ
- 31 Mr Tony Keevers
- 32 Ms Kathy Ran
- 33 Ms Susan Miller
- 34 Mr James Parker
- 35 Campaign Emails
- 36 National Indigenous Australian Agency
- 37 Mr Arne Furre

- 38 The Hon Bruce Billson, Australian Small Business and Family Enterprise Ombudsman
- 39 Ms Koidu Von Reisner

Additional Information

- 1 Optus, EY independent third party review of Optus's processes supporting welfare check obligations (received 6 May 2024).
- 2 Optus, EY independent third-party review of Optus's processes supporting welfare check obligations Phase 2 Memorandum (received 20 September 2024).

Answer to Question on Notice

- 1 Optus — answers to questions taken on notice (received 24 November 2023).

Correspondence

- 1 Mr Michael Venter, Interim CEO, Optus, correspondence correcting evidence provided on 17 November 2023 (received 24 January 2024).

Appendix 2

Public Hearings

Friday 17 November 2023

Main Committee Room
Australian Parliament House
Canberra

Optus

- Mrs Kelly Bayer Rosmarin, Chief Executive Officer
- Mr Lambo Kanagaratnam, Managing Director, Networks

Friday 9 February 2024

Main Committee Room, Australian Parliament House, Canberra ACT 2600

Telstra

- Mr Channa Seneviratne, Executive, Technology Development & Innovation
- Mrs Jane Elkington, National Manager Triple Zero
- Mr James Toole, Head of Government Relations
- Mr Gerard Tracey, Principal Engineer – Network Connectivity Service, Global Networks & Technology

TPG Telecom

- Mr Giovanni Chiarelli, Group Chief Technology Officer
- Mr Trent Czinner, Group Executive Legal & External Affairs

Australian Communications Consumer Actions Network

- Mr Andrew Williams, Chief Executive Officer
- Mr Gareth Downing, Deputy Chief Executive Officer

Telecommunications Industry Ombudsman (via videoconference)

- Ms Cynthia Gerbert, Ombudsman

Department of Home Affairs

- Mr Hamish Hansford, Deputy Secretary, Cyber and Infrastructure Security
- Ms Sophie Pearce, Assistant Secretary, Risk and Assessment, Cyber and Infrastructure Security Centre
- Mr Joe Buffone, Deputy Coordinator General, National Emergency Management Agency

Department of Social Services

- Mr Pat Heatherington, Chief Operating Officer

Department of Infrastructure, Transport, Regional Development, Communications and the Arts

- Mr Richard Windeyer, Deputy Secretary, Communications and Media
- Mr Sam Grunhard, First Assistant Secretary, Communications Services and Consumer Division
- Ms Kathleen Silleri, Assistant Secretary, Consumer Safeguards Branch, Communications Services and Consumer Division
- Ms Kate McMullun, Assistant Secretary

Australian Competition and Consumer Commission

- Ms Sarah Proudfoot, Executive General Manager, Infrastructure Division
- Mr Rami Greiss, Executive General Manager, Consumer and Fair Trading

Australian Communications and Media Authority

- Mr Jeremy Fenton, A/g General Manager, Consumer Division
- Ms Nerida O'Loughlin PSM, Chair and Agency Head
- Mr Richard Bullock, Executive Manager
- Mr Paul Nicholas, Manager