
TELSTRA CORPORATION LIMITED

Submission to

NSW Independent Bushfire Inquiry



13 May 2020



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1 Introduction

Telstra welcomes the opportunity to make a submission to the NSW Independent Bushfire Inquiry.

The 2019-2020 “Black Summer” bushfire season in Australia resulted in widespread and significant impacts to many Australian communities. Lives were lost, homes and properties destroyed, businesses decimated, and millions of hectares of land burned, affecting wildlife populations as well.

The bushfires also resulted in substantial damage to the power grid and telecommunications infrastructure, causing mass disruptions to our customers’ mobile and fixed services. It is in that context we make this submission, which outlines how we sought to minimise the impact to our network and customers and how we prioritised and restored services, and sets out some suggestions for the NSW Independent Bushfire Inquiry to consider that may improve our resilience and responsiveness in future bushfire events.

Our submission is structured in three sections:

- Section 2 identifies the impact of the fires on our network and to our customers;
- Section 3 outlines our response to the fires; and
- Section 4 contains five suggestions we wish to make to improve our resilience and ability to respond to future bushfire events.

We also wish to express our sincere appreciation to Australia’s professional and volunteer firefighters and emergency services crews, to the State Emergency Services (SES), and to the government and Australian Defence Force (ADF) personnel, for their tireless work during the 2019-2020 bushfire season, including in protecting and helping to restore telecommunications infrastructure that keeps Australians connected.

2 Impact to our network and customers

Telstra's network experienced outages and damage across the 2019-2020 bushfire season, from as early as September 2019 through until February 2020. In this submission, we focus on the six-week period from 19 December 2019 to 31 January 2020, which represents the worst period of the fires, and was when most of the damage to our network facilities occurred.

A network facility is a component of Telstra's network used to provide a service to a customer including fixed and mobile services. Examples of network facilities include mobile network radio equipment, mobile towers, fixed and mobile equipment huts, transmission infrastructure, power systems and roadside cabinets (see Figure 1), amongst other things.



Figure 1: Example of a roadside cabinet

2.1 Impacts to network facilities

Table 1 below shows the number of network facilities that experienced one or more outages of greater than four hours between 19 December 2019 and 31 January 2020, broken down by network type and state.

State	Network Type		Total
	Fixed Line	Mobile	
NSW	171	65	236
SA	23	11	34
VIC	39	35	74
Total	233	111	344

Table 1: Network facilities that experienced one or more fire-related outages of greater than 4 hours between 19 Dec 2019 and 31 Jan 2020.

To give a sense of scale to the figures in Table 1 above, Table 2 below shows the same network facilities as a percentage of total network facilities in each state.

State	Fixed	Mobile
NSW	1.3%	3.1%
SA	0.6%	1.6%
VIC	0.4%	1.9%

Table 2: Network facilities that experienced one or more fire-related outages of greater than 4 hours between 19 Dec 2019 and 31 Jan 2020 as a percentage of total facilities in the state.

Telstra is a supplier of some network facilities for the nbn, but the data in Tables 1 and 2 above do not cover these facilities because this is NBN Co information and only NBN Co is able to provide a comprehensive view of impacts to its network facilities.¹

Table 3 below shows the same network facilities, categorised by the root cause of the outage.

State	Fire damage	Loss of all power	Other ²	Total
NSW	1.4%	85.4%	13.2%	100.0%
SA	2.4%	97.6%	0.0%	100.0%
VIC	0.0%	89.8%	10.2%	100.0%

Table 3: The root causes of fire-related outages of more than 4 hours between 19 Dec 2019 and 31 Jan 2020.

As can be seen from Table 3, loss of power was the leading cause of network facility outages (over 85%). Mains power loss was due either to the proactive de-energisation of the power grid to reduce fire risk, or to power infrastructure damage caused by fire.

Table 3 also shows that, in NSW and SA, fire damage was the root cause of network facility outages in 1.4% and 2.4% of cases respectively. Figures 2 and 3 below show some of our mobile network facilities which sustained direct fire damage.



Figure 2: Fire-damaged mobile network facility, Mount Torrens SA



Figure 3: Fire-damaged mobile network facility, Surf Beach NSW

¹ In addition, the data in Tables 1 and 2 only covers common facilities serving multiple customers. It does not include other components such as copper cables serving individual customers.

² Network facilities included in this column had multiple possible contributing factors, including power outages, fluctuating power (power going on/off in quick succession), hardware failure and/or high temperature. In these instances, it is often not possible to say with any certainty which factor(s) were the root cause.



2.2 Customer impacts

Table 4 below shows the number of fixed line customers affected by network outages.³

State	Fixed lines with outage ⁴
NSW	21,800
SA	2,200
VIC	3,400
Total	27,400

Table 4: Fixed services experiencing fire-related outages of more than 4 hours between 19 Dec 2019 and 31 Jan 2020.

While it is relatively straightforward to determine the number of fixed line customers affected (because of the direct correlation between a customer line and its parent network facility), it is a lot more challenging to determine loss of mobile coverage from an individual mobile customer's perspective. Loss of one mobile base station may not result in loss of mobile coverage for a given location, as there may be overlapping coverage from neighbouring mobile base station(s). Further, if a given location has coverage from only one mobile base station, and that base station experiences an outage, it is not possible to determine whether there are mobile customers in that location as the base station is off-line. Taking the last known list of connected devices at a mobile base station just prior to its outage does not provide a categoric list of affected customers, as they may have coverage from a neighbouring base station (including base stations from other network operators), or they may move from that location into an area that does have coverage. For these reasons, we are unable to provide details of the number of affected mobile customers (as we are able to do for fixed line customers).

2.3 Triple Zero call answering performance

For the December 2019 / January 2020 period, the Telstra Triple Zero team answered 12% more calls compared to the same period in the previous year; however, there was no significant impact to Triple Zero call answer times. Any impact to our call answer times was avoided through the preparatory work the Triple Zero team conducts each year prior to peak weather seasons to ensure the centres are adequately resourced, including: rostering additional shifts for casual employees; working with our staffing agency to recruit and train additional casual staff; and introducing "shift extensions" on core rostered shifts during any unplanned call volumes to extend the duration of shifts to cover peak call volumes.

A further example of activity to manage unplanned high call volumes is activating a front-end recorded message for all Triple Zero callers within a state / territory, to advise of Bushfire Information contact numbers. This was done on two separate occasions at the request of NSW Emergency Services during January 2020, with calls to the Emergency Call Service subsequently decreasing.

³ The data in Table 4 relates to fixed lines experiencing an outage as a result of the failure of a network facility, i.e. electronic equipment in an exchange or roadside cabinet experiencing an outage. It does not include the loss of individual services due to damage to copper lines to individual premises. There were other instances where overhead copper lines were damaged, but the network facility serving that customer was not damaged. These are not included in the data in Table 4 as we rely on end customers notifying us of a fault. Also, for the reasons outlined above, the data in Table 4 does not include services delivered over the nbn.

⁴ Figures to the nearest 100.

3 Telstra's response to the bushfires

3.1 Telstra's approach to restoration of services and network

In responding to the 2019-2020 bushfires, Telstra operated on a three-day, three-week and three-month time horizon for crisis response, service restoration and network recovery, as follows:

- The three-day time horizon focused on service recovery. This included the prioritisation of activities and directions to field personnel focussed on immediate service restoration.
- The three-week time horizon is broken into two elements: (1) service recovery, including prioritisation of fibre repair and decisions on the deployment of temporary replacement infrastructure such as COWS⁵ (see Figure 4) and MEOWS^{TM6}; and (2) infrastructure repair and impact assessment, including repair of minor damage to facilities, cable replacement, deployment of COWs and MEOWsTM, and assessment of rebuild requirements.
- The three-month time horizon focused on the rebuilding of permanent infrastructure, including the clean-up of fire-damaged sites and restoring the network to the desired longer-term state.



Figure 4: Cell on Wheels with fire damaged mobile network facility in the background (blue tarpaulin covering), Malua Bay NSW

To facilitate coordination with Emergency Service Organisations (ESOs), and with state and regional Emergency Control Centres (ECCs), Telstra staff are appointed as Emergency Service Liaison Officers (ESLOs) who liaise directly with the ESOs prior to and during emergencies. The ESLOs were vital to Telstra's coordination with state and federal ESOs, and with regional and state ECCs, as they provided a single point of contact between Telstra and these organisations and centres. Telstra's Government Relations team also worked closely with the Federal and State Governments to keep them informed about the impacts on our services and our response.

⁵ COWS: Cell on Wheels – by definition, a mobile base station mounted on a trailer and connected to our core network via fibre cable or microwave radio links; however, can also refer to any interim mobile solution.

⁶ MEOWS: Mobile Exchange on WheelsTM – these are portable telephone exchanges mounted on trailers that can provide temporary landline and ADSL2+ enabled broadband services.

3.2 Restoration of services

Telstra identified network impacts during the bushfires through continual network monitoring utilising both automated and manual diagnostics. This analysis was used to ascertain what, when and why network impacts were taking place.

Network restoration was prioritised, starting with our core transmission network as this common infrastructure is essential for reconnecting services to our customers in local bushfire areas.

Telstra often relied on assistance and cooperation from ESOs during the bushfires to arrange for the safe passage of our staff into fire-affected areas. We are grateful for the assistance we received.

Once the immediate fire threat ceased and site access restrictions were lifted by emergency services, teams were deployed to determine the state of our network and its connectivity to the end customer.

Once restoration of network and exchange equipment was complete (or at least well underway), work commenced on restoring the copper Customer Access Network (CAN), which is the last mile connection between the network and the customer premises. Remediation work included restoring overhead cabling, poles supporting overhead cabling, lead-in cables and fixed radio links.

Figures 5 and 6 below illustrate some of the restoration activity at Telstra sites.



Figure 5: Field technician repairing damaged optic fibre cable, Butchers Ridge VIC



Figure 6: A generator at a mobile base station, Gelantipy VIC

3.3 Community assistance

We understand how important it is to reach out to friends and family during times of crisis, and one of our key focuses during bushfires is making sure that we support our customers, and the local communities, devastated by bushfires to stay connected.

Telstra implemented several measures to assist our customers, volunteer groups and the rest of the community affected by the 2019-2020 bushfires. These measures included:



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- **Customer Assistance Packages:** We provided a range of short- and long-term assistance packages for people affected by the fires, including account credits and call diversions to alternative numbers at no cost.
 - **Waiving mobile fees for volunteer firefighters:** We covered the cost of mobile phone bills over December 2019 and January 2020 for volunteer firefighters, SES volunteers and Farm Fighters (i.e. farmers with personal firefighting equipment / units who support their community when under threat from a bushfire).
 - **Unmetering key websites:** We unmetered key websites, such as the State Fire Authority sites, emergency services sites and the Bureau of Meteorology site for all our customers. This meant that, for the month of January 2020, any mobile data usage in accessing these sites did not count towards our customers' data allowance.
 - **Payphones and Telstra Air access at no cost:** We made our payphone network around the country available to provide local, national and standard mobile calls at no cost to users. We also allowed use of the Telstra Air Wi-Fi network at no cost to users, where available on our payphones.

4 Suggestions to help improve responses to future bushfire events

4.1 Improved information flow between energy providers and telecommunications providers

Mains power supply is critical for telecommunication providers to operate their networks. Often, we do not have detailed and timely access to information regarding power status, plans to de-energise parts of the power network, or power restoration priorities during bushfire events. Instead, we rely on general information published by energy providers on their websites which may not always be up-to-date. This causes us to respond reactively, rather than proactively, to events such as loss of mains power. Apart from the potential for wasted effort transporting and connecting a generator at a site just as power resumes, it can also put our staff at greater risk attempting to reach such sites, and / or may tie up ESOs unnecessarily in providing escorts into affected areas.

Improved information flows between energy providers and telecommunications providers would allow telecommunications providers to better manage and predict disruptions to their networks, and to coordinate the deployment of limited resources across their networks, with the aim of minimising service disruption to customers in critical times. In particular, real-time information regarding de-energisation of areas in the path of fires, and re-energisation / restoration of areas where power had been lost, is key to forward planning across a range of issues, including identification of at-risk assets, access to sites, deployment of field staff, deployment of generators, and refuelling of existing deployed generators.

Ideally, this information would be in a spatial data format from energy providers. We cover spatial data formats in more detail in section 4.2 below.

An example of the benefits of early notification of de-energisation occurred during the recent bushfires in North East Victoria. The relevant energy provider notified Telstra (through the State Control Centre) that power was going to be turned off to the town of Euroa, through which one of Telstra's inland inter-capital transmission links runs. In response to that notification, the Euroa site load (i.e. energy requirement) and battery reserves were quickly assessed, and a generator capable of supporting the network and on-site facilities infrastructure was deployed to site within 4 hours.

It is also important that we are informed when re-energisation is going to occur, to ensure we do not deploy a generator to an affected site shortly before mains power is turned back on.

We suggest the government, energy and telecommunications industries work together to improve information flows concerning electricity supply during incidents, including opening up access for telecommunications companies to real-time information about de-energising and re-energising power networks, with the possibility of creating a forum which can be invoked in times of fire emergency to work to better coordinate the sharing and use of information.

4.2 Earlier and better visibility of predicted fire movements

Earlier and better visibility of predicted fire movements is critical to informing telecommunications providers of potential impacts to their networks. If and where available, access to fire-movement forecasts spanning periods greater than 24-hours could allow us to better:

- manage resource movements before and after a fire event, to prepare for recovery works;
- provide improved safety messaging to our staff and contractors;



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- manage supply of equipment and construction material into areas likely to be impacted so that it is ready for deployment, thereby reducing restoration timeframes; and
 - allow proactive deployment of generators / backup power to ameliorate mains power failures.

This type of information should be provided in an agreed geospatial “vector” data format identifying unambiguous locations. Data providers also need to clearly indicate the status and nature of events, given that some data providers use their data feed for incidents that are non-fire related. All incident location data and attributes need to be machine-readable as large scale events cannot be effectively analysed by humans.

Telstra suggests fire service providers, telecommunications providers, and energy providers (and other utilities) work together to achieve this outcome.

4.3 Access to our infrastructure during and after fires

Telstra appreciated the valuable support it received from government (state and federal) agencies across the bushfire regions. We dispatched over 280 field visits to deploy generators, and most of these field visits were under escort from ESOs and ADF convoys. However, road closures and other challenges delayed access to sites and service restoration in some instances.

Telstra suggests consideration be given to measures to improve telecommunications providers’ ability to access infrastructure sites during and after bushfires. Issues to consider include: permit requirements to travel to impacted sites; better coordination / communication of road access issues (particularly when roads cross state boundaries); assistance via aerial escorts when roads are closed; access to fuel for technicians’ vehicles; and help assessing whether trees are safe and whether there is asbestos or other hazardous material associated with damaged infrastructure.

4.4 Improved information flow regarding evacuation centres

During the bushfire events, we sought to focus on ensuring that communications were not compromised in evacuation and recovery centres.

During the 2019-2020 fires, through the NSW Telco Authority, Telstra was provided with an online government site for awareness of evacuation and recovery centres in NSW. Daily distributed updates also contained these locations with occupancy numbers provided. However, this level of information was not consistent across all states, and real-time information was lacking in some regions about when evacuation and recovery centres were being stood-up and closed down.

Not having real-time intelligence, including occupancy numbers, makes our response activity more challenging. Real-time information about where evacuation and recovery centres are operating, including their occupancy numbers, helps Telstra to ensure that displaced / impacted residents have access to telecommunications services during this critical time. For example, it allows us to proactively and closely monitor the network supporting the operations at these sites, for both emergency agencies and the public who are relying on the service. If, for example, a mobile site was to fail for any reason, knowledge that it is supporting an operational evacuation / recovery centre would trigger an escalated response.

Further, with real-time information the telecommunications industry can work better together to support evacuation and recovery centres. For example, at the height of the NSW and Victorian fires, Telstra and NBN Co worked together closely to support the known evacuation and recovery centres.



For these reasons, we suggest that industry be provided with access to a single online source for each state and territory, that provides information about the plans for evacuation and recovery centres, including their current status. If no online presence can be supported, then it would be helpful if this information could be incorporated into each state's written situation report communications to industry.

4.5 Better community preparedness for natural disasters

While telecommunications providers build resiliency and redundancy into their networks, terrestrial network infrastructure located in bushfire zones may sometimes be damaged or impacted by fires, leading to potential interruption to telecommunications services. For this reason, it is important for government, first responders, support organisations (e.g. hospitals, medical centres, community facilities), businesses and consumers to take steps to prepare for possible impacts to telecommunications services during bushfires and other natural disasters.

For example, during the 2019-2020 bushfires, Telstra received numerous requests for satellite phones from organisations who were not already equipped with these devices. Because satellite phones do not rely on infrastructure on the ground, they can be particularly useful during bushfire events when terrestrial infrastructure is not operational.

While Telstra was able to distribute some satellite phones during the recent bushfires, we recommend that government and industry encourage organisations, local councils and businesses, particularly those involved in responding to bushfires and/or located in bushfire zones, to consider whether they are adequately prepared for possible impacts to their telecommunications services during future bushfires (and other natural disasters), and to take steps to improve their preparedness where necessary, including addressing telecommunications services in their disaster recovery plans. For example, these entities could put in place their own satellite phones to use in the event of a natural disaster (which must be ready to be used when required and able to dial relevant numbers), or consider whether back-up satellite services may be appropriate (which relevant personnel must be trained to use correctly).

ACMA compliant mobile repeater devices may also be of assistance to improve coverage in marginal coverage areas.

We would welcome government support for a public awareness campaign and other community engagement about possible impacts to telecommunications services during bushfires and other natural disasters, and possible steps that can be taken to improve telecommunications preparedness where necessary and appropriate.