

A photograph of a fire scene. In the background, a large fire is burning, with thick white and grey smoke rising into the sky. In the foreground, a white Isuzu fire truck is parked on a gravel road. The truck has "FIRE ISUZU 3313" and "KILAMUNDA 2-4R 268019" written on it. Two firefighters in orange protective gear and helmets are standing in the foreground, one holding a hose. Another firefighter is visible further back on the left. The scene is set in a rural area with trees and a fence line.

AFAC INDEPENDENT OPERATIONAL REVIEW

A review of the management of the Wooroloo fire
of February 2021

ACKNOWLEDGEMENTS

The Independent Review team comprised the following members:

- David Nugent AFSM, Director - Fire, Emergency and Enforcement, Parks Victoria
- Assistant Commissioner Steve Yorke AFSM, NSW Rural Fire Service
- Susan Davies, Local Community Representative

The Review team wishes to thank those individuals who gave freely of their time and spoke openly with them. Information was provided by personnel from the Western Australian Department of Fire and Emergency Services (DFES), Department of Biodiversity, Conservation and Attractions (DBCA), Department of Primary Industries and Regional Development (DPIRD), Department of Communities, the Bureau of Meteorology (BoM), the State Recovery Controller, State Recovery Co-ordinator, the Western Australian Local Government Association (WALGA), Western Australian Police Force (WAPF), Western Power, Shire of Mundaring and the City of Swan. The Review team also recognises the contribution from members of the public and interest groups in providing submissions that played a key role in supporting the preparation of the report. The level of engagement was indicative of an approach that sees the Review as an opportunity for continuous learning and improvement.

The input of these individuals was of great benefit to the team in preparing this document, particularly given the COVID-19 restrictions associated with conducting the Review.

AFAC, December 2021

Cover picture:

Evan Collis

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1 SUMMARY

- 1.1 The Wooroloo bushfire started near Werribee Road, Wooroloo at around midday on Monday 1 February 2021. On that day the fire danger indices recorded by the Bureau of Meteorology, (BoM, 2021) at the Gingin Airport was 60 for Grass Fire Danger Index (GFDI) and 67 for Forest Fire Danger Index (FFDI) classified as a Severe Fire Danger Rating. Gooseberry Hill was 39 (GFDI) and 53 (FFDI) classified as a Very High Fire Danger Rating. Weather conditions were harsh with temperatures around 38°C and strong easterly winds. Because of these weather conditions, a Total Fire Ban and Harvest Vehicle Movement Ban was declared for the Perth Metropolitan, City of Swan and Shire of Mundaring from midnight on the 1 February.
- 1.2 The bushfire traversed a mosaic of private, commercial, local government and Crown land tenures and consumed approximately 10,750 hectares, within the Shire of Mundaring and the City of Swan. There were 80 properties destroyed in the City of Swan and six in the Shire of Mundaring. The hardest hit area was Tilden Park, which accounted for majority of the property losses.
- 1.3 By Saturday 6 February firefighters had contained the Wooroloo bushfire and it was downgraded from Emergency Warning to an Advice level. The Advice alert remained in place for people in the Avon Valley National Park, Brigadoon, Bullsbrook, Gidgegannup, Upper Swan and Walyunga National Park in the City of Swan.
- 1.4 On Monday 8 February DFES reported that, even though the fire was contained and controlled, DFES would continue to monitor the bushfire area for any reignitions with temperatures expected to rise in the forthcoming week.
- 1.5 The estimated insurance loss of the Wooroloo bushfire was \$93 million.
- 1.6 The Review commends the actions of those firefighters and support personnel, both career and volunteer, for their courage and commitment in the face of some of the most challenging fire behaviour in the area in recent years. The Review notes that Perth, Peel and South West Regions had also just commenced a five-day COVID-19 lockdown, which the Review found had minimal impact on the overall response and management of the Wooroloo bushfire.

RECOMMENDATIONS

This Review recommends as follows:

Recommendation 1

That DFES lead the development of a dedicated purpose-built, appropriately equipped Multi-Agency Incident Control Centre to be built in or around the Perth Hills to deal with fires and other emergency incidents in that area.

Recommendation 2

That the DFES Areas of Community Engagement Focus programs be enhanced highlighting the need for landowners, in high-bushfire prone communities, to implement mitigation strategies to protect their properties and ensure preparedness for extended stay without support after fire impact.

Recommendation 3

That DFES continues development of the bushfire risk planning framework and guidelines that will allow the implementation, coordination, and prioritisation of cross tenure Bushfire Risk Management Plans and activities across each local government.

Recommendation 4

DFES in collaboration with local government should consider the establishment of dedicated bush fire mitigation crews to work with local Bush Fire Brigades in implementing the Bushfire Risk Management Plan activities in the identified high-risk bush fire prone areas (e.g. Perth Hills) of the State.

Recommendation 5

Any determination that the Fire and Emergency Services Commissioner as the Hazard Management Authority (Bushfire) makes in respect of construction standards or subdivision developments, regarding requirements such as Asset Protection Zones, Bushfire Attack Levels etc. should be upheld by the consent authority.

Recommendation 6

DFES should promote the creation of a Bushfire Practitioners Accreditation Register to ensure State Planning Policy and bushfire building codes and standards compliance are applied by appropriately trained and accredited practitioners.



Credit: Evan Collis

Recommendation 7

In conjunction with WAPF and local government, DFES should undertake a review into the establishment and management of Vehicle Control Points and the use of Restricted Access Permits during major incidents.

Recommendation 8

DFES should consider establishment of road clearing capability to complement bushfire response, with the sole purpose of clearing roads to provide safe return of residents as soon as possible after fire.

Recommendation 9

That DFES, in consultation with the National Aerial Firefighting Centre (NAFC) and DBCA, evaluate the suitability of the ARENA HP module to contract, manage and deploy heavy plant to both operational and non-operational activities.

Recommendation 10

DFES, in consultation with local government, should review the impact assessment process to ensure information is captured and made available to relief and recovery agencies in a timely and effective way.

Recommendation 11

DFES and local government should continue discussions with telecommunications providers to explore the adequacy of current arrangements for backup power at telecommunication towers in emergency incidents.

Recommendation 12

DFES should continue improvements to the warnings platform to develop more timely and tailored information for all communities, including a focus on mapping for community, the content of messages and transition between warning levels.

Recommendation 13

DFES should embed the issuing of Emergency Alert Telephone Warning System (TWS) in the Public Information section. This will support:

- Increased capacity and improved timeliness to issue TWS in future
- Consistency in overall messaging considering the recent character limit increase via the Emergency Alert upgrade
- The consideration for the integration of Emergency Alert as a publishing function of a future Emergency WA platform.

2 ABOUT THE REVIEW

INTRODUCTION

- 2.1 The WA Government requested AFAC to undertake an independent operational review (the Review) of the fire operations leading up to and during the Wooroloo bushfire of February 2021. The WA Government is committed to enhancing community safety and minimising the impact of hazards and emergency incidents on the people, environment and economy of WA.
- 2.2 The Review provides the platform to review actions and enhance operations to proactively identify areas for improvement. It also demonstrates that the fire and emergency management industry is mature and transparent, ensuring it will draw lessons from this event to support continuous improvement in the future.

SCOPE

- 2.3 The Review focussed on the management and interactions between DFES, DBCA, local government, other supporting agencies and the local community, the DFES State Operations Centre (SOC), DFES Metropolitan Operations Centre (MOC) and the Incident Management Team (IMT), in accordance with the Terms of Reference.
- 2.4 Notwithstanding the Terms of Reference, any matters which were considered relevant and could be viewed as opportunities for improvement have also been included within the Review. State level issues were confined to the responsibilities of the fire agencies and covered areas such as policy, procedure, operational documentation / doctrine, planning and performance.
- 2.5 While the Review focussed on the operations and management of fire agencies, it also includes comments on other agencies accountable for fire management as part of their responsibilities.

TERMS OF REFERENCE

- 2.6 The review will acknowledge the ongoing *Action Plan for the Bushfire Framework Review* and will cover the following aspects as relevant to the 2021 Wooroloo Bushfire:
1. Evaluate the first stage of the review of the Wooroloo Bushfire and undertake independent analysis across the range of focus areas examined, including response to the Wooroloo Bushfire, fuel management and processes for access into the fire affected areas.
 2. Examine the effectiveness of the use of heavy earthmoving equipment in the fire suppression effort including the systems, processes and capability that supports this.
 3. Examine the effectiveness of interagency coordination during the response and initial recovery phases of the incident.
 4. Consider the effectiveness of the impact assessment processes employed in informing early and timely recovery efforts and consider the effectiveness of the recovery function post response phase.
 5. Consider the extent, geographic range, method, effectiveness and duration of public warnings.
 6. Examine the effectiveness of the 'Animal Welfare in Emergencies' program as implemented by the Department of Primary Industries and Regional Development.
 7. Consider the meteorological aspects of the fire as examined by the Bureau of Meteorology.
 8. Provide a means for members of the public and other interested parties to make submissions to the Review and give these due regards in compiling its report.
 9. Consider any other matter that the Review Team identifies in its course of activities.

RELATIONSHIP TO OTHER REVIEW ACTIVITIES

- 2.7 The Review team was advised of the following formal investigations and other After-Action Reviews being undertaken aside from this Review. These include:
- **DFES Operational Debriefs:** Internal Operational Debriefs to review the operational aspects of the management of the bushfire and coordination from local government, metropolitan and State perspectives.
 - **DBCA Operational Debriefs:** Internal Operational Debriefs to review various operational aspects of the management of the bushfire and inter-agency coordination.
 - **DPIRD AAR:** Internal review on various operational aspects of the management of the State Support Plan for Animal Welfare and inter-agency coordination.
 - **State Recovery Controller:** The "Wooroloo Bushfire" – *Update to the State Recovery Controller's First 100 Days Report*.

- 2.8 This report is free-standing and based on the evidence that the Review team gathered during the fieldwork phase of the Review. It deliberately does not deal with detailed operational issues, and the intent has been to maintain the discussion and conclusions of this report at a more strategic level.

PREVIOUS REVIEWS

- 2.9 A number of significant reviews and inquiries have followed bushfires in WA in recent years. These include:
- 2009 Coronial Investigation into the Boorabbin bushfire deaths
 - 2010 *Major Incident Review of Toodyay Fire December 2009* (Noetic Solutions)
 - *A Review Of The Ability Of The Department of Environment and Conservation Western Australia To Manage Major Fires* (Ferguson), September 2010 (the WA Coroner recommended an independent review in his report subsequent to deaths arising from the December 2007 Boorabbin bushfire)
 - 2011 Major Incident Review of Lake Clifton, Red Hill and Kelmscott/Roleystone Fires
 - Keelty Special Inquiry (1) – *A Shared Responsibility – The Report of the Perth Hills Bushfire February 2011 Review*
 - Keelty Special Inquiry (2) – *Appreciating the Risk - Margaret River Bushfire Report November 2011*
 - 2012 Post Incident Analysis (PIA) into the response activities associated with the Margaret River bushfire - *Post Incident Analysis for Blackwood Fire 8 – Ellensbrook-Gnarabup, 23/24 November 2011* (Noetic Solutions)
 - 2012 PIA into the cause and response to the Milyeannup bushfire – *Post Incident Analysis for Blackwood Fire 11 - Milyeannup-Sollya, 23 November to 5 December 2011* (Noetic Solutions)
 - Three concurrent inquiries into the October 2012 Black Cat Creek bushfire near Albany including *Major Incident Review Black Cat Creek Fire* (Leading Emergency Services) – December 2012
 - *Parkerville Stoneville Mt Helena Bushfire Review Report* (SEMC) – June 2014
 - *O'Sullivan and Lower Hotham Review Report* (SEMC) – February 2016
 - *Report of the Special Inquiry into the January 2016 Waroona Fire* – Euan Ferguson - June 2016
- 2.10 It was not a specific term of reference of this Review to consider previous inquiries or the extent to which their recommendations remained current. The Review has, nonetheless, made comment at appropriate points in this report where a previous inquiry appears relevant.

METHODOLOGY

- 2.11 Following a request from the WA Government, AFAC invited fire and emergency services outside WA to nominate appropriate senior level personnel to assist in the Review. Officers from the NSW Rural Fire Service and Parks Victoria were subsequently attached to the Review team. These Officers were joined by a local community representative from the adjoining area but not impacted by the bushfire.
- 2.12 The Review utilised AFAC publications *Conducting Independent Operational Audits (Version 1 October 2013)* and referenced *What is Operational Success for Fire & Emergency Services (Discussion Paper 2015)*.
- 2.13 The Review focussed on the period leading up to and from the ignition on 1 February to 6 February 2021, when the Fire and Emergency Services Commissioner confirmed the fire contained and controlled although the fireground continued to be monitored. This is the period of major fire runs resulting in significant property loss.
- 2.14 Term of Reference 8 required the review team to: *Provide a means for members of the public and other interested parties to make submissions to the Review and give these due regards in compiling its report.* The Review, with support from the WA Government, provided the opportunity for community members and other groups and bodies to make submissions online. A small number of submissions were also received through interview. In total 84 submissions were received through this public process. In addition, supporting agencies listed above provided information to support the Review team's preparation of this report.
- 2.15 The Review team undertook a field visit on 14 October 2021 with video linkage to Review team members participating remotely.
- 2.16 Restrictions on travel due to COVID-19 State health directions meant that the Review team members from NSW and Victoria completed the review remotely. This method was effective in completion of the report.

3 THE WOOROLOO FIRE

THE RUN AND DAILY CONTROL OF THE BUSHFIRE

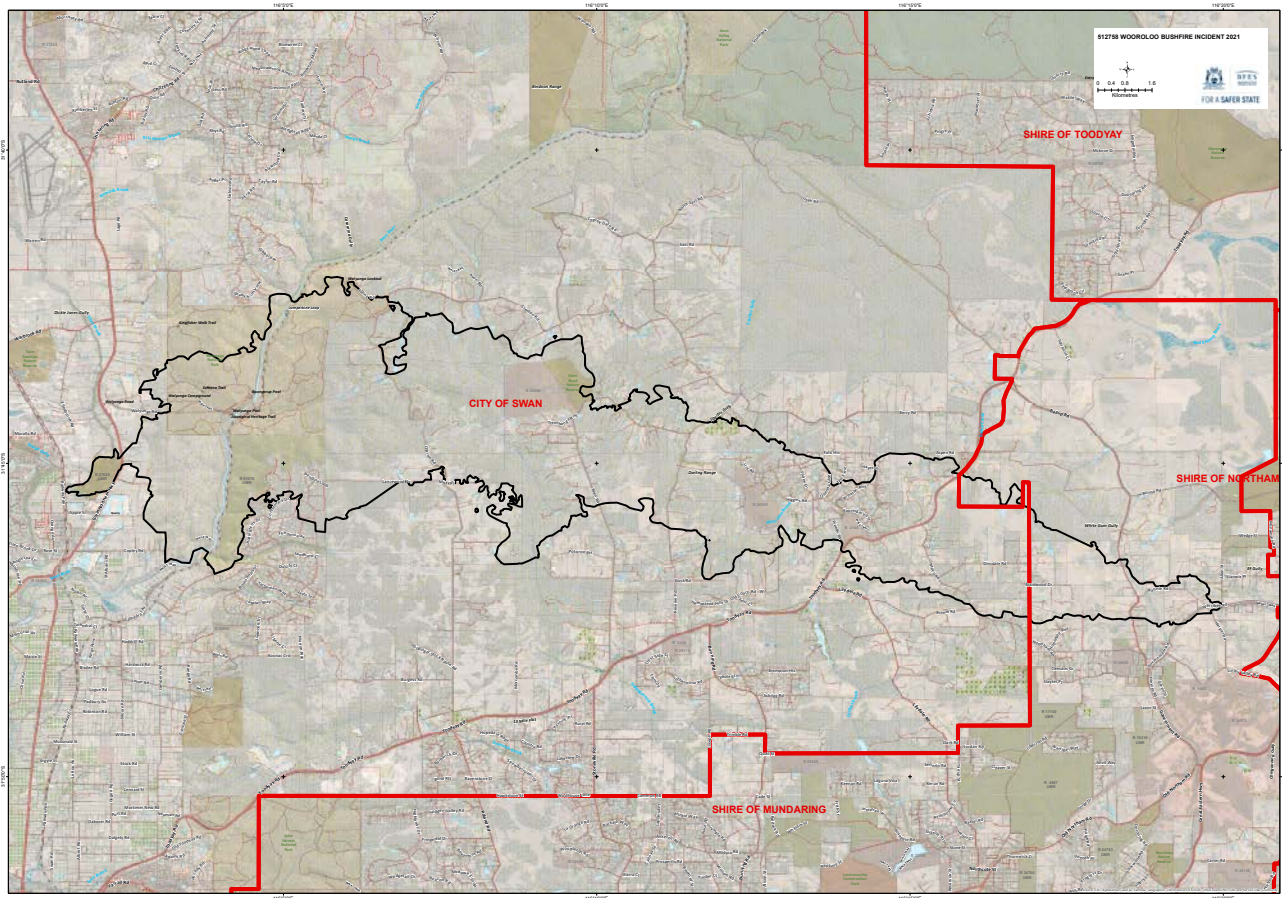


Figure 1: Wooroloo bushfire burned area map

- 3.1 The Wooroloo bushfire caused significant property loss and infrastructure damage, particularly in the first 24 hours, with initial assessment indicating 86 properties were destroyed. Subsequent analysis and assessment of the fireground has determined that there were 110 dwellings impacted, with 86 destroyed. However, there were no fatalities or significant injuries to either firefighters or members of the public.
- 3.2 The fire covered approximately 10,750 hectares, within the Shire of Mundaring and the City of Swan. The hardest hit area was Tilden Park, which accounted for 80% of the property losses.
- 3.3 The main impacts of this fire occurred on 1 and 2 February. The following narrative is limited to the key events on those days: Appendix 1 contains a more detailed chronology.

Monday 1 February

- 3.4 The fire started near Werribee Road, Wooroloo on Monday 1 February 2021, with the fire first reported at 12:02 pm.
- 3.5 A local man was subsequently interviewed days after the fire and in July was charged with one count of breach of duty and one of carrying out an activity in the open air that causes or could cause a fire. It was alleged that the man was using an angle grinder to open a locked container that started the fire during a day of Total Fire Ban.
- 3.6 The fire weather conditions were significant on the day and the days leading up to the fire with the daytime temperature at 38°C, strong winds and a falling dew point. The Mundaring Volunteer Fire & Rescue Service (VFRS) and the Mundaring Deputy Chief Bush Fire Control Officer were the first responders. They then contacted the Chidlow and Wundowie Brigades to provide support. Due to the conditions DFES State Aviation initiated an air response with one fixed wing fire bomber and two Helitac rotary wing machines.

- 3.7 The fire escalated and by 1245hrs the first warning was issued to residents of Wooroloo, Bailup and Gidgegannup, who were advised to evacuate. An evacuation centre was opened at Brown Park Complex, Swan View to accommodate those residents. The Wooroloo Bushfire Brigade Station (and adjoining hall) was established as the Incident Control Centre (ICC) to co-ordinate the firefighting activities. The first Incident Management Team meeting took place at 1515hrs with the focus on resourcing, command, and containment strategy.
- 3.8 By mid-afternoon there were 500 firefighters and 95 vehicles involved in the firefighting effort, along with fixed wing and rotary water bombers. Under the conditions the fire moved quickly and by 1545hrs 230 ha was reported burnt as the fire moved in a north-westerly direction, jumping Toodyay Road 10km from the point of ignition and threatening the Walyunga National Park. Firefighters were encountering erratic fire conditions travelling at 3-4km/h with spot fires up to 500 metres ahead of the fire front with the priority to protect life and then property. The falling dew point during the afternoon was also a significant factor in creating dangerous fire behaviour.
- 3.9 Reports of property and stock losses were beginning to be received, along with one firefighting appliance destroyed by fire and injuries to firefighters, involving burns and smoke inhalation. Over 300 horses were evacuated from the fire impacted area and relocated to the Magic Millions Complex. Plans were also developed to close the main Australian Rail Corporation link between Northam and Perth within one hour, as required. Similarly, the closure of the Great Northern Highway, Chittering Road North and West Swan Road were planned for.
- 3.10 Telephone Warning System (TWS) - Emergency Alerts were issued to Gidgegannup, Brigadoon, Upper Swan and Bullsbrook at 2300hrs as the fire intensity increased.

Tuesday 2 February

- 3.11 By 0100hrs the fire had spotted 3.5km and was burning on the north-western side of the Avon River and threatening properties. Additional resources including contract heavy machinery and strike teams were requested for five days.
- 3.12 The Incident Controller's (IC) intent of the preservation and protection of life, then property was reinforced to responding ground crews. At 0620hrs the ICC was relocated from the Wooroloo Hall and Brigade Station to the Mundaring Sporting Arena.
- 3.13 The fire continued to burn in a west-south-westerly direction under the influence of the strong winds and by 1600hrs had burnt through 7,300ha with an 80km perimeter. DFES were advising that 80% of the properties in Tilden Park had been destroyed by the fire. The Ellenbrook Nature Reserve and Twin Swamps Nature Reserve, which were habitat to the endangered Western Swamp Tortoise, were also threatened.
- 3.14 A smoke and ember alert was issued from Joondalup in the north to Fremantle in the south with ash falling in many non-fire affected suburbs including those close to the Perth CBD.
- 3.15 By 1800hrs, the reported property losses had risen to 59 with over 8,000 ha burnt and the firefighting strategy involved constructing firebreaks on the northern and southern flanks of the fire, before an expected wind change to the south-east over the following days.
- 3.16 A community meeting at the Brown Park Recreation Complex was scheduled for 2030hrs to provide residents with an update on the fire and actions to be considered.

Wednesday 3 February

- 3.17 The fire had not progressed significantly overnight, however due to the weather conditions and the hilly terrain on the north-western section of the fire, ground crews were having difficulty with containment. Their efforts were assisted by the establishment of several retardant lines set down using the Large Air Tanker (LAT) in 11 drops totalling 200,000 litres of retardant.
- 3.18 Despite these efforts the Shady Hill estate and residents on the eastern side of Bullsbrook were asked to re-locate north and those northwest of Gidgegannup and east of Walyunga National Park were advised that it was too late to leave and to prepare to seek shelter as the fire approached.
- 3.19 Due to the conditions and the eminent fire threat 69 Perth suburbs were on alert with 16 considered in immediate danger. This resulted in the establishment of two Evacuation Centres at Midvale and Beechboro by the WA Department of Communities which registered over 700 people and housed 230 people overnight.



Credit: Evan Collis

Thursday 4 February

- 3.20** Over 500 firefighters had worked throughout the night to defend Avon Ridge Estate and Shady Hills from the strong east-south-easterly winds, as daytime temperatures cooled to 28°C with stable winds east to south-easterly on the fire ground but expected to increase to 70km/h later in the day and into the evening.
- 3.21** A new fire began in the afternoon a few kilometres from Bullsbrook, 10 km north of the original fire at the intersection of Wilson and Chittering roads, however, firefighters assisted by the LATs, including the NSW RFS Boeing 737, were able to bring this under control without any further significant loss.

Friday 5 February

- 3.22** By Friday the Emergency Warning area had been reduced to include the Avon Valley and Walyunga National Parks, Belhus, Brigadoon, Bullsbrook, Ellenbrook, Gidgegannup, The Vines and Upper Swan.
- 3.23** Over 200 firefighters continued to attack the bushfire on its northern front under challenging conditions, with strong east-south-easterly winds gusting up to 80 km/h. No more properties were destroyed, and it was estimated that firefighters had saved over 200 homes within the 10,750 hectares consumed by the fire over the previous five days.
- 3.24** Some residents were permitted to return to their properties as further assessments were conducted to ensure the safety of residents was maintained. Restoration of critical infrastructure also commenced, with power and road access as a priority for the recovery which was expected to take many weeks.

Saturday 6 February

- 3.25** The Fire and Emergency Services (FES) Commissioner announced that the fire had been contained and was being downgraded to an advice level while mop up, monitoring and containment strategies continued to be maintained.
- 3.26** Several major roads, including the Great Northern Highway were re-opened and affected residents issued with 48 hour permits allowing them to visit the remains of their houses.

Sunday 7 February

- 3.27** Rain on Saturday night and Sunday saw 15 mm fall across the fire ground over the weekend.

Monday 8 February

- 3.28** The FES Commissioner confirmed that, even though the fire was contained and controlled, DFES would continue to monitor the bushfire area for any reignitions with temperatures expected to rise in the following weeks.

4 DISCUSSION AND CONCLUSIONS

- 4.1 This section of the report addresses in turn the terms of reference that the Review team worked to. While the report addresses the terms of reference as presented, readers of this report may reflect on the relevance of its conclusions to state-wide matters, and in places this is highlighted where it is warranted in context.
- 4.2 The comments and recommendations should be read in the spirit that they are intended, to support continuous improvement in fire management in WA, and potentially further afield. Inevitably, the report discusses some areas where things have not worked well, and there are opportunities for improvement: that is the purpose of a Review such as this one. The reader should not consider this as an exercise in the allocation of blame, or criticism of individuals.

Evaluate the first stage of the review of the Wooroloo Bushfire and undertake independent analysis across the range of focus areas examined, including response to the Wooroloo Bushfire, fuel management and processes for access into the fire affected areas (ToR 1)

- 4.3 This term of reference involved the Review team in receiving a number of briefings from personnel who had undertaken an initial review of various aspects of the fire and its aftermath. By 'evaluate' the Review did not interpret this as simply requiring an assessment of the quality of that work, although the Review wishes to place on record that it appears to have been undertaken conscientiously and thoroughly. Instead, the Review focused on the request to provide an independent analysis of the work already done, which it did both by receiving and considering the briefings already mentioned, and by conducting its own further inquiries under a number of headings as set out below.

Pre-Incident Actions

- 4.4 In the days leading up to the Wooroloo bushfire on Monday 1 February, the Bureau of Meteorology (BOM) forecast predicted a gradual deterioration in fire weather conditions, with increased temperatures, exceeding 35°C, low relative humidity, 10-14% and strong gusty easterly winds, coupled with a significant lack of rainfall resulting in a higher Soil Dryness Index (SDI). This pattern was driven by a ridge which had extended from a high-pressure system in the Great Australian Bight and a tropical low-pressure system over the north-west, which directed strong easterly winds across southern WA.
- 4.5 The All-Hazards Liaison Group (AHLG) is a DFES State Operations Centre (SOC) constituted group which allows stakeholders and agencies to exchange information, priorities and concerns in support of a specific incident or event, particularly for those agencies that may not be ordinarily present in the SOC and/or the State Emergency Coordination Group (SECG) when established.
- 4.6 The purpose of the AHLG is to ensure agency specific advice and support in relation to risk management planning is available during periods of heightened risk, including elevated Fire Danger Index (FDI), Catastrophic fire weather conditions and other severe weather predictions or emergencies. The AHLG was briefed on 29 January 2021 by the SOCMET (a BoM Severe Weather Forecaster embedded in the SOC) on the Tropical Low (12U), the current situation and the predicted weather with the potential for a cyclone in the northwest.
- 4.7 The Operational Preparedness Briefing (OPB), a bi-weekly (Monday & Thursday) briefing involving DFES Regions, DBCA, Aviation, COVID-19 Safety, SOCMET and WAPF was conducted on Thursday 28 January and also discussed the Tropical Low (12U) and the unstable weather in the southern parts of the State over the next week. The increased fire danger over the weekend Saturday 30 and Sunday 31 January 2021 in Perth metropolitan area, with hotter temperatures, dryer air, easterly fresh to gusty winds and an unstable upper air mass increasing the Haines Index, was discussed.
- 4.8 The assessments by the OPB take into account the relative preparedness levels of the regions, weather forecasts and activities that may heighten or reduce the risk exposures, for example major events bringing increased populations to a region. Based on these assessments, regional operational readiness levels are agreed and implemented.

Operational Readiness

- 4.9 DFES procedures for the SOC provide for the regional risk and readiness levels around the State to be determined by the Duty Assistant Commissioner (DAC), in consultation with regional staff and stakeholders, including DBCA through the OPB.
- 4.10 On the basis of the predicted weather and aligning to the State Heightened Risk and Readiness Actions (HRRA) the Perth Metropolitan was rated as "Moderate and Normal" with the overall State HRRA also set at "Moderate and Normal" on Friday 29 January.
- 4.11 However, as a result of the deteriorating weather conditions over the weekend and predicted weather for Monday, a Total Fire Ban was issued for several Perth suburbs, including the City of Swan and the Shire of Mundaring, who also issued a Harvest and Vehicle Movement Ban from midnight on 1 February.

- 4.12 On Monday 1 February the SOC in consultation with the DAC upgraded their Forecast Risk and Readiness Assessment to “Major” for metropolitan under the HRRRA and confirmed the SOC Team Augmentation in accordance with the WAFES Manual – Part Two- SOC – Procedure – SOC Phase Two Augmentation. The state remained at moderate. This procedure requires the *“SOC to gather and analyse information and data from the MOC and key DFES stakeholders to inform DFES State level situational awareness. This information is then utilised to undertake risk assessment, planning and preparedness actions. This includes the MOC ensuring that resources, logistics and capabilities are appropriate and that additional requirements are actioned”*. The Review supports the determination for major readiness at the regional level but observes that it could also be appropriate for the state to have been at major readiness, given the risk created for the highly populated metropolitan region. The Review concurred with the revised HRRRA assessment from Minor to Major for the metropolitan region based on the predicted conditions. However, the Review considered that under the circumstances, given previous fires in the Perth Hills, Parkerville fire (2014) and Waroona (2016), that an elevated level of response for the state was also appropriate, and that the “in situ stand up” of the SOC, MOC and local Incident Management Teams with all key stakeholders, would have been valuable.
- 4.13 Similarly, Section 13 of the *Bush Fires Act 1954* provides the Fire and Emergency Services Commissioner with certain powers to take control of fire burning on local government and/or conservation land, once burning. The Review considered that pre-emptive steps could have been taken to allow the FES Commissioner to take control immediately over any bushfire igniting in the Perth Hills that day, based on the predicted fire weather and previous fire outbreaks.
- 4.14 The activation status and response procedures were also considered against the imposed 5-day, COVID-19 lockdown, which commenced on Sunday 31 January until Friday 5 February in the Perth metropolitan area, Peel and South West. The DFES MOC staff were in the Regional Office managing COVID-19 mask distribution, while all other staff were working from home.
- 4.15 The COVID-19 lockdown meant that many first responders in the City of Swan and Shire of Mundaring were at home in accordance with the Lockdown requirements. This inevitably meant that many volunteers were better placed to respond to the Wooroloo fire than may have been the case under normal circumstances, a view held by a number of operational personnel and volunteers interviewed by the Review.

The Initial Response

- 4.16 At 1202hrs a 000 call to a report of a structure alight Werribee Road, Wooroloo was received by the DFES Communications Centre (COMCEN) who dispatched the Mundaring Volunteer Fire & Rescue Service (VFRS) and the Mundaring Deputy Chief Bush Fire Control Officer (CBFCO), who then contacted the Chidlow and Wundowie Brigades to respond. Upon arrival (1217hrs) the Mundaring VFRS reported bush alight and fire spreading rapidly. The Mt Helena, Stoneville and Sawyers Valley Brigades were responded and one SEAT fire bomber and two Helitac helicopters were dispatched as a part of the Zone 2 response.
- 4.17 Upon arrival at 1222hrs, the Mundaring Deputy CBFCO took formal incident control of the bushfire as “Wooroloo Control” at Werribee Road and requested additional resources based on the worsening situation. The Metropolitan North Strike Team was also mobilised for response. WAPF were requested attend to deal with road closures as the bushfire started in impact on local traffic.
- 4.18 During the early stages of the incident, the Incident Controller (IC) confirmed that there were some difficulties in attaining heavy plant (HP) resources, through the COMCEN, resulting in the IC directly contacting local HP contractors to assist. This issue was confirmed by COMCEN personnel when interviewed by the Review as a breakdown in transitioning the resource management of the incident from the COMCEN to the MOC. The IC confirmed that he was receiving calls from COMCEN with information from 000 callers to inform actions to be taken.
- 4.19 The COMCEN staffing levels had been increased due to the elevated level of augmentation and at the time of the Wooroloo bushfire the COMCEN was dealing with six other active incidents, including a 3rd Alarm fire at Busselton. The Review was advised that a new telephone system had been installed late in January and on the 1 February the “Caller Identification Number” (CIN) linked to the Computer Aided Dispatch (CAD) system failed.
- 4.20 The first Emergency Warning was initiated at 1245hrs by DFES to people in the Wooroloo area. It would be the first of 207 warnings issued on Emergency WA for this incident, including 131 Emergency Warnings.



Credit: Evan Collis

- 4.21 By 1300hrs 44 fire appliances were allocated to the Wooroloo fire with additional aircraft requested to support on ground firefighting operations and a request for heavy plant to assist in constructing fire breaks. By mid-afternoon there were 500 firefighters and 95 vehicles involved in the firefighting efforts. The IC reported that there was an overwhelming number of firefighting appliances on scene and the management of these resources was challenging in the initial stages. This was exacerbated in the early stages by the lack of local knowledge by a number of the “out of area” crews, and a formal operational command structure with established operational Divisions and Sectors.
- 4.22 At 1358hrs the incident level was escalated to a Level 2 Declaration and the decision was made to relocate the Incident Control Centre from the roadside on Werribee Road to the Wooroloo BFB Station and Wooroloo Hall.
- 4.23 By 1400hrs the Rate of Spread (RoS) of the bushfire was predicted at 1.8 km/h with a 10km perimeter, with the first reports of property losses and firefighting vehicle overruns, including the DFES Forrestfield Pumper destroyed, and minor burns to one firefighter. At 1408hrs the Large Air Tanker 132 made its first drop at Wooroloo bushfire.
- 4.24 In the hours leading to the Level 3 incident escalation and Declaration, the Review was advised that there was some deliberation over the incident coordination and the transition from the local government control to DFES involvement and resourcing. The Review highlights the importance of ensuring that there is clarity of control for emergency incidents. Clear communication on the appointment of the Incident Controller is critical for effective management of an incident, particularly in this escalation phase. As discussed above the pre-emptive establishment of Incident Management Teams for elevated risk conditions is worthy of consideration and would reduce the potential for confusion in appointment of the Incident Controller.



Credit: Evan Collis

Incident Control

- 4.25** At 1644hrs the incident level was elevated to a Level 3 Declaration (WebEOC 1947hrs) and a DFES Superintendent was appointed as the first Level 3 IC who arrived at 1800 and took control of the incident at 1830hrs remaining at the incident overnight. This was the first of 23 changes of nine ICs from 1 February to 1800hrs on Thursday 11 February, each requiring a separate instrument of appointment under s.13 of the *Bush Fires Act 1954*. The review does recognise that there was continuity of day and night ICs with the same individuals returning following their shift.
- 4.26** The Review considers however that for continuity of command and maintaining the Commander's Intent, one IC be appointed for the duration of the incident, supported by a number of Deputy Incident Controllers (DICs) who could fulfil the IC role, when required. This arrangement would need to be consistent with fatigue management requirements. This was an opportunity for improvement highlighted in the *SEMC - Parkerville Stoneville Mt Helena Bushfire Review June 2014*:
- 3.5.3 Future appointments to the role of Incident Controller should be limited to one for the entire duration of the incident, with nominated Deputy Incident Controllers to assist or 'take charge' in the Incident Controller's absence. This measure will provide for a single point of responsibility and control for the incident and assist with any subsequent review or enquiry. If it is not possible to implement this proposal for liability reasons, the number of Incident Controllers should nevertheless be reduced to the minimum.*
- 4.27** As the incident escalated it was evident that ICC arrangements at the Wooroloo Hall were unsatisfactory and not conducive to managing a major incident, particularly under COVID-19 restrictions. It was decided to relocate the ICC to the Mundaring Sporting Arena, utilising that sporting facility and the DBCA State Incident Control Cache. While these facilities provided sufficient capability to maintain the incident management the Review considered future and ongoing ICC requirements need to be addressed.
- 4.28** The establishment of a dedicated purpose-built, appropriately equipped, ICC to deal with the fires and other emergencies within the Perth Hills to meet the requirements of a fully resourced IMT has been highlighted in other previous reports (Parkerville, Waroona fires). Consideration should be given to the other emergency management use (and potential general community use) of such a facility.

RECOMMENDATION 1

That DFES lead the development of a dedicated purpose-built, appropriately equipped Multi-Agency Incident Control Centre to be built in or around the Perth Hills to deal with fires and other emergency incidents in that area.

- 4.29 On the busiest day, Tuesday 2 February, over 200 firefighting appliances were involved in protecting life and property, while endeavouring to contain the fire. The on-ground firefighting effort was supported by 25 fixed wing and rotary aircraft, which included three Large Air Tankers (LAT), two of which were dispatched from NSW, along with their two "Birdog" lead planes, as a part of the National Resource Sharing Arrangements (NRSC) through National Aerial Firefighting Centre (NAFC). The LAT's made 37 drops over the bushfire laying 13.8kms of retardant and foam containment lines.
- 4.30 The Review was advised that the IMT would have greatly benefitted from the addition of dedicated rotary aircraft with line scanning capability for day and night time observation. The Review agreed that the addition of this capability would have been advantageous. Although the WAPF helicopter provided some capability it was not always available to the incident due to other competing requirements. Consideration should be given to better integration and availability of the range of aerial intelligence platforms available to DFES.
- 4.31 The Review was advised that the combination of aerial and ground strategies saved many homes, particularly in Shady Hills and surrounds. The Review is of the opinion that given the fire weather conditions on Monday 1 February all that could have been done once the fire had started was done, which is evident by the fact that no lives were lost, despite the extensive property damage.

Fuel and Land Use Management

- 4.32 The mitigation of risk in bushfire prone areas is generally focused on a number of areas:
- Fuel reduction, by planned and strategic hazard reduction burning and/or mechanical fuel removal, through mulching and composting.
 - Operational preparedness related to risk management plans which provide a capability framework and pre-determine response protocol to deal with any potential ignition
 - Community engagement and direct connection with communities in high-risk area
- 4.33 The WA State Emergency Management Policy (State EM Policy), which was approved by the State Emergency Management Committee (SEMC) in May 2016, with amended updates since, provides a strategic framework for emergency management in WA. The Policy framework identifies the roles and responsibilities of emergency and hazard management agencies and public authorities for managing the adverse impact of emergencies across the four aspects of emergency management — prevention, preparation, response, and recovery (PPRR).
- 4.34 The State EM Policy also outlines the guiding principles and objectives of each organisation. DFES is the designated Hazard Management Agency (HMA) for bushfire under the Emergency Management Act 2005 and is the Controlling Agency, within gazetted fire districts or where a DFES brigade or unit is established. On land managed by DBCA, outside gazetted fire districts, DBCA have responsibility and local government in local government districts outside of gazetted fire districts and DBCA land. The Crown is not bound to comply with the requirements of the *Bush Fires Act 1954*.
- 4.35 The FES Commissioner has powers under the *Bush Fires Act 1954* and the *Fire and Emergency Services Act 1998* to perform activities, including prevention, control, and extinguishment of fires. The FES Commissioner has the primary function in leading government and non-government agencies and the community in the management and mitigation of bushfires. Section 10 of the 1954 Act includes reporting to the Minister on the best means of preventing and controlling bushfires.
- 4.36 It is also DFES responsibility to ensure that State Hazard Plans are developed for their prescribed hazards, including bushfires, and that they provide appropriate and adequate capabilities to commensurate for the risk levels of the relevant hazards. DFES also has responsibility to educate and support the community in its own preparations for bushfires. It was evident that the City of Swan and Shire of Mundaring had also provided their communities with bushfire risk awareness, information and education.
- 4.37 The Review was cognisant of the diverse landscape impacted by the Wooroloo bushfire and more particularly, the diversity of tenure and the informal arrangements between the various private landowners, State and local government bodies in planning hazard mitigation. The complications of coordinating and implementing hazard management activities in a "cross tenure" approach was highlighted during the review.



Credit: DFES

Community Engagement

- 4.38** In supporting the community education program and as a result of previous reviews and inquiries, DFES has implemented the formation of Areas of Community Engagement Focus (ACEF) which provides the framework for the Regional DFES Community Engagement Officers to targeted series of activities under the four characteristics of a disaster resilient community¹:
- Functioning well while under stress
 - Successful adaptation
 - Self-reliance
 - Social capacity.
- 4.39** The establishment of the ACEF in high-risk communities has assisted in the building capacity and a skills base in local emergency services organisations to better support their own communities. There are currently 116 (60 primary and 56 secondary) DFES ACEF.
- 4.40** The City of Swan and the Shire of Mundaring have supported these programs, in conjunction with DFES, with Community Engagement staff, and Hazard Management and Fire Protection Officers engaged in activities include bushfire mitigation and readiness workshops, property preparation, street meetings, Brigade Open Days and Bushfire Ready Action Groups.
- 4.41** While research has shown that residents in ACEF areas had significantly higher levels of exposure to bushfire information and preparedness, including a Bushfire Survival Plans, the Review considered the take up across both local government areas appeared very low, which arguably resulted in the significant loss of property.
- 4.42** The Review considers the development of specific community safeguard plans may be beneficial and implemented in high-risk areas or where access/egress was an issue to provide further guidance to the community. These plans would provide residents with advice on the most appropriate action in the event of a local emergency incident e.g. evacuation routes, neighbourhood safer locations. The Review also sees the need to provide strong advice to residents who choose to stay and defend their properties. Residents need to be mentally and physically prepared to fight the fire and support themselves for extended periods after the fire (refer 4.73-4.75).

RECOMMENDATION 2

That the DFES Areas of Community Engagement Focus programs be enhanced highlighting the need for landowners, in high-bushfire prone communities, to implement mitigation strategies to protect their properties and ensure preparedness for extended stay without support after fire impact.

1 Community Engagement Framework, DFES

Bushfire Risk Management Plans

- 4.43** The Keelty Perth Hills Bushfire Review in 2011 and the SEMC Parkerville, Stoneville Mount St Helena Review in 2014 identified the critical importance of land management and risk mitigation to limit the exposure of communities and assets by bush fire in the Perth Hills. As a result of the Waroona bushfire in January 2016, the WA Government initiated significant reform in bushfire mitigation, which included the development of the DFES Bush Fire Risk Management Planning program. However, the Review understands that only 54 of the 85 LGs across State have an endorsed BFRMP.
- 4.44** The Wooroloo bushfire impacted across multiple land tenures, which included 80 percent on private property, Crown lands, including the DBCA, specifically the Walyunga National Park and local governments of the Shire of Mundaring and City of Swan.

Overview of land tenure and management within the Shire of Mundaring (Shire of Mundaring, 2019).

Land Manager/Authority	Area (ha)	% of Shire of Mundaring
Private	33,128	51.44
Water Corporation	14,735	22.88
Department of Biodiversity, Conservation and Attractions	10,419	16.18
Department of Planning, Lands and Heritage	2,799	4.34
Shire of Mundaring	1,732	2.69
Department of Corrective Services	1499	2.32
Other Government Agencies	97	0.15
TOTAL	64,409	100

Source: DFES – Wooroloo Bushfire 2021 – Review of existing bushfire mitigation activities

Overview of land tenure and management within the City of Swan (City of Swan, 2019).

Land Manager/Authority	Area (ha)	% area of City of Swan
Private Land Holdings	62,173	59.66
Department of Biodiversity Conservation and Attraction	11,041	10.60
Department of Planning Lands and Heritage (incl. Whiteman Park)	10,060	9.65
Remainder misc. ownership	8,087	7.76
Roads incl. verges	4,429	4.25
Commonwealth of Australia	2,716	2.61
Australian Wildlife Conservancy	2,105	2.02
Unallocated Crown Land	1,993	1.91
Crown Land Other	561	0.54
City of Swan - Free hold	555	0.53
Department of Housing	488	0.47
TOTAL	104,210	100

Source: DFES – Wooroloo Bushfire 2021 – Review of existing bushfire mitigation activities



Credit: Morten Boe

- 4.45 In accordance with the State EM Plan, it was primarily the LGA's responsibility to ensure mitigation strategies and risk treatments, including the development and maintenance of risk treatment plans, are established and enforced. The Review was advised that Bush Fire Risk Management Plans (BRM Plans) were developed for both City of Swan and Shire of Mundaring, however the implementation of the risk treatments in these Plans seemed variable.
- 4.46 Both the City of Swan and the Shire of Mundaring BRM Plans had been endorsed by the Office of Bushfire Risk Management (OBRM). This endorsement provides access to Mitigation Activity Funding (MAF) to assist in conducting the identified mitigation activities highlighted within the Plan. The Review was advised that the City of Swan was allocated \$60,000 from the MAF in 2019/20 for 9 areas identified high risk or above in the BFRMP. In 2018/19 the Shire of Mundaring BFRMP identified 52 mitigation activities and the MAF allocated \$650,000 to support these activities. Despite some of these activities occurring within the fire area, there seemed little effect on the bushfire as it spread rapidly, primarily through private land and road and rail reserves.
- 4.47 The DBCA has a significant role to play in fuel management on their land, which includes 118 million hectares of parks, reserves, and forests across WA. Consequently, the DCBA has a well-established approach to fuel management and fire mitigation on their tenure. Notwithstanding, the Walyunga National Park, which was impacted by the Wooroloo bushfire resulted in significant damage to the Park's, infrastructure, flora and fauna, such was the intensity of the fire.
- 4.48 The Review was concerned that while the BRM Plans were endorsed by the Office of Bushfire Risk Management (OBRM), they were not necessarily binding and/or endorsed by all stakeholders within the LG. Nor was it necessary for stakeholders to input their mitigation strategies within the Plan. A consolidated Plan, which clearly identifies the mitigation activities and priorities across all tenures within a LG would result in a better outcome. DFES recognises the need for continued development of the bushfire risk management planning framework (including the guidelines), including a broad risk landscape approach.

RECOMMENDATION 3

That DFES continues development of the bushfire risk planning framework and guidelines that will allow the implementation, coordination, and prioritisation of cross tenure Bushfire Risk Management Plans and activities across each local government.

Roadside verges

- 4.49 On a site visit to the bushfire affected area by the Review team, it was clear that many of the road verges, not impacted by the fire, carried a significant vegetation fuel load (25 -30t/ha). During the fire similar road verges would have aided in the fire spread. This was despite many landowners complying with the 3m boundary firebreaks required and the predominant strategy applied by local governments to reduce the fire risk and spread. Although this strategy has some benefits, it doesn't consider the surrounding landscape, vegetation and fire weather conditions. The Review received a number of Public Submissions relating to this issue.
- 4.50 Notwithstanding the LGs role in fire mitigation, the Review considered that there was a significant lack of responsibility and apathy by many private landowners in bushfire preparation and mitigation, which also contributed to the fire spread. Despite local governments having responsibility under the *Bush Fires Act 1954* (s33) to provide both guidance and a means to enforce actions on landowners and occupiers to undertake bushfire mitigation activities, their seemed a reluctance to enforce these powers. While it is recognised that local governments provide resources and undertake a level of enforcement, the Review considers that the use of these powers should be more strongly applied following appropriate consultation and negotiation.
- 4.51 The Review concludes that while it is potentially unrealistic for the LGs to mitigate the fire risk across every road verge within their LG, that within the BRM Plans, strategic fire advantage areas, including road verges, be identified based on historical fire paths and for those verges to be treated on a regular basis. To assist with these mitigation strategies the Review proposes the formation of dedicated bushfire mitigation crews in identified high-risk bushfire prone areas e.g. Perth Hills to assist LG and local bushfire brigades in implementing the BRM Plan activities. The use of DFES career personnel to assist bushfire brigades and DBCA in hazard reduction planning and burning was also considered advantageous to enhanced bushfire behaviour appreciation and training experience.

RECOMMENDATION 4

DFES in collaboration with local government should consider the establishment of dedicated bush fire mitigation crews to work with local Bush Fire Brigades in implementing the Bushfire Risk Management Plan activities in the identified high-risk bush fire prone areas (e.g. Perth Hills) of the State.

Development Control

- 4.52 The Review considered the outcomes of the Wooroloo fire on development controls and building code requirements, as applied under the State Planning Policy 3.7 and the associated Guidelines, in bushfire prone areas of WA. It was noted that of the 86 properties destroyed by the Wooroloo bushfire, some were constructed to the AS3959 requirements. However, the Review was not able to ascertain the exact number, circumstances and/or the conditions in which these properties were impacted, but was of the view that further investigation needed to be conducted to ascertain the impact of the fire on these properties and any changes that may need to be applied to the current Standard as a result.
- 4.53 The Western Australian Local Government Association (WALGA) in their submission to the Review highlighted: *WALGA State Council supports state-wide, minimum bushfire mitigation standards, specifically to:*
- Give legislative effect to bushfire guidelines
 - Improve guidance on design of subdivision and buildings
 - Provide policy guidance, model subdivision and development conditions
 - Establish an accreditation system for BAL Assessments
 - Establish a training and education program.
- The local government sector does not support the Department of Fire and Emergency Services' transferring of responsibility to the local government sector for the clearance of a subdivision condition for Bush Fire Management Plans, when the condition has been requested by DFES. The sector requires adequate and effective consultation on any review of the model subdivision condition relating to clearance.*
- 4.54 The Review concurs with the need to ensure that the requirements outlined in the State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and associated Guidelines are upheld. The Review has also been advised that the Department of Planning, Lands and Heritage are currently undertaking a staged review of the Guidelines, and these will be released on a periodic basis.
- 4.55 Currently, the provisions relating to bushfire risk management refer to the FES Commissioner's power to make orders to designate bushfire prone areas of WA. This designation requires the application of appropriate bushfire construction standards for applicable building classes (i.e. residential buildings) under the Building Code of Australia, AS 3959. However, local government may apply other bushfire risk management conditions for the site to any development approval granted for non-residential buildings.

- 4.56 The Review was provided a number of submissions relating to residential development in high bushfire risk areas. The Wooroloo bushfire highlighted the risks that are present for people living in areas where fuel and fire conditions create a real threat to both life and property. Thorough assessment is needed for any future developments to ensure that all necessary plans and provisions adequately consider community safety. It is also critical that the FES Commissioner advice is adopted wherever possible. This advice reflects the highest level of expertise in bushfire risk assessment.

RECOMMENDATION 5

Any determination that the Fire and Emergency Services Commissioner as the Hazard Management Authority (Bushfire) makes in respect of construction standards or subdivision developments, regarding requirements such as Asset Protections Zones, Bushfire Attack Levels etc. should be upheld by the consent authority.

- 4.57 The Review was concerned that despite the accreditation by the WA Government of the Fire Protection Association Australia (FPAA) as an accrediting body for Bushfire Practitioners, in accordance with the Bushfire Accreditation Framework, there seemed no regulatory requirements or governance regarding the qualifications or experience held by bushfire and mitigation consultants.
- 4.58 The FPAA Bushfire Planning and Design (BPAD) scheme is supported by a national framework that includes three categories:
- Bushfire Attack Levels (BPAD Level 1)
 - Bushfire Planning Practitioners (BPAD Level 2)
 - Bushfire Planning and Design Practitioner (BPAD Level 3)
- 4.59 Practitioners must demonstrate that they have the relevant professional skills and experience to undertake BPAD services, commensurate with the whole of WA Government requirements.

RECOMMENDATION 6

DFES should promote the creation of a Bushfire Practitioners Accreditation Register to ensure State Planning Policy and bushfire building codes and standards compliance are applied by appropriately trained and accredited practitioners.

Traffic Management, Access and Egress

- 4.60 There is a Legislative and Policy framework which provides guidance to traffic management in WA. The legislative basis for traffic management during a bushfire is derived from section 14B (2) of the *Bush Fires Act 1954*. This provides that under section 13, an authorised person or a member of WAPF may do all or any of the following:
- (a) direct, or by direction prohibit, the movement of persons, animals and vehicles within, into, out of or around the affected area or any part of the affected area;
 - (b) direct the evacuation and removal of persons or animals from the affected area or any part of the affected area; or
 - (c) close any road, access route or area of water in or leading to the affected area.
- 4.61 The policy underpinning any traffic management by an IC during an emergency is detailed in SEMP 'Traffic Management During Emergencies' May 2016, in accordance with State EM Policy, Section 5.8 and State EM Plan Section 5.3.3.
- 4.62 This policy outlines the overall responsibility of the IC for the management of all traffic within the incident area, including vehicles, people and animals. The policy outlines the following objectives:
- Objective 1 - To ensure the safety of road users and responders by:
- Establishing and maintaining vehicle control
 - Restricting access to the area through the use of road closures
 - Establishing controlled transit of the incident site
- Objective 2 - To provide unrestricted road egress for casualty or community evacuations.
- Objective 3 - To provide unrestricted road access for emergency responders.
- Objective 4 - To establish detours to by-pass the incident area.
- Objective 5 - To promote driver behaviour to avoid the incident area.



Fallen power lines obstruct a road after the fire. Credit: Evan Collis

- 4.63 The policy prescribes that Objectives 1, 2 and 3 be initiated immediately for safety and response requirements based on the IC's risk assessment and Objectives 4 and 5 initiated as soon as practicable to avoid traffic congestion.
- 4.64 The issue of traffic management and access and egress from the fire affected area was highlighted throughout the Review and was reflected in many public submissions. This issue has also been the subject of outcomes from previous inquiries not only in WA, but across all states and territories. At every major fire, particularly where there is significant property loss, it is only natural for individuals living in those areas to want to return to their homes to assess the damage and/or collect and protect valuables.
- 4.65 The problem for any Controlling Agency is assessing the safety and welfare of those individuals wishing to return to their properties against the associated dangers, which include falling trees, powerlines and asbestos, while often continuing to deal with the incident.
- 4.66 Resources to support road clearing to provide return access to properties should be considered a priority. Road clearing could be undertaken concurrently with the firefighting effort where resources are available. The bushfire mitigation crews identified as part of recommendation four could potentially support the clearing of roads after fire to reinstate community access as soon as possible.
- 4.67 Submissions to the Review highlighted issues with the establishment and ongoing management of Vehicle Control Points (VCPs), particularly once WAPF handed their management back to the Main Roads and local government contractors. There was evidence of inconsistencies in the access and egress provisions from one VCP to another. Many comments received were highly critical of the difficulties in regaining access to the affected area.
- 4.68 This circumstance potentially leads to individuals circumventing VCP's to gain access without authority and for all sorts of people other than residents gaining access in and out of the fireground. While the introduction of the Restricted Access Permits, a result of previous inquiry recommendations, has merit, the Review was advised of issues with availability, timeliness and overall administration.
- 4.69 The Review was also concerned that in a number of areas road access was by a single-entry point, one way in and out, which had the potential of being blocked, isolating residents from exiting the area and restricting emergency services from gaining access.
- 4.70 The Review was provided with copies of the Road Opening Checklists as required under the SEM Policy and was satisfied that the necessary risk assessments were undertaken by the IMT in consultation with WAPF, to open the roads into the fire affected areas, as required.

- 4.71 However, in the case of the VCPs, the Review was concerned that communications between the IMT and the operators were not always effective or understood, which led to a lack of compliance and oversight. Further, that VCP operators may not have had any basic bushfire training or fire awareness which could potentially have safety issues.
- 4.72 It was clear that this matter continues to be an issue and needs further examination to resolve.

RECOMMENDATION 7

In conjunction with WAPF and local government, DFES should undertake a review into the establishment and management of Vehicle Control Points and the use of Restricted Access Permits during major incidents.

RECOMMENDATION 8

DFES should consider establishment of road clearing capability to complement bushfire response, with the sole purpose of clearing roads to provide safe return of residents as soon as possible after fire.

Residents who remained

- 4.73 There were several instances where residents, despite the DFES advice to relocate, remained with their properties, to either defend, tend to animals or simply refused to leave. Whatever the reason this became an ongoing issue for the IMT to manage, particularly when these residents exited the fire affected area and then endeavoured to return and were refused entry by VCP operators.
- 4.74 Conversely, there was an expectation from some of those remaining residents that the IMT would provide ongoing provisions, food and water etc. while they remained in situ. This created another burden for the IMT who were still dealing with an ongoing fire event and had the added expectation to provide ongoing welfare to unprepared residents.
- 4.75 The Review received several submissions from those residents who stayed, one of whom said that he felt that he and his property were well prepared for the fire, so he decided to remain. Since experiencing the fire firsthand, he confirmed that he was not prepared for the experience and if in similar circumstances in the future would leave well beforehand. This shows the need for ongoing work with communities so residents understand the high-risk situation that may arise when fire impacts their properties. Residents need to be prepared.

Examine the effectiveness of the use of heavy earthmoving equipment in the fire suppression effort including the systems, processes and capability that supports this (ToR 2)

Heavy Plant Contracts and Engagement

- 4.76 DFES utilises two State Contract panels, established under the State Supply Commission guidelines, to manage heavy plant (HP) contractors, these include Contract 1661/163 for mitigation works and Contract 1595/15 for operational incidents. Each contract has a three to five-year term and requires certain conditions to be met, with particular reference to work, health, and safety requirements. Currently, there are 67 HP Contractors engaged under these arrangements.
- 4.77 DBCA also has HP contracts, which operate independently from the DFES Contract arrangements. HP contractors may operate under multiple contracts with DFES, DBCA and/or WA local governments.
- 4.78 In October 2020, DFES was provided with the outcomes of a commissioned Internal Audit report, conducted by Ernest and Young (E&Y) on the Evaluation of Earth Moving Equipment Contractors. The scope of the Internal Audit included:
- Governance over contracting earth moving equipment, including policies, procedures and/or guidelines
 - Definition of roles and responsibilities; and of delegation of authority
 - Contracting and tendering processes, including obtaining quotes and approvals in accordance with the delegation of authority
 - Management of earth moving equipment during mitigation and operational response, such as equipment operation and use, record keeping and appropriate health and safety safeguards for equipment operators in place
 - Adequacy of available training, safe work procedures, and management of equipment operators while operating under control of DFES
 - Fuel management, including management of fuel tax credit claims
 - Management of insurance claim process and recoveries
 - Off-boarding and debrief of contractors and operators
 - Timely and accurate capturing, recording, monitoring, and reporting of machinery use
 - Invoicing of earth moving equipment expenditure.

- 4.79** The E&Y Audit made eight Recommendations as an outcome, aligned to an assigned Risk Rating, which included:
- An assessment of all earth moving contractors under both contracts to ensure adequate insurances were in place (Major)
 - Formalised training for all DFES personnel involved in the coordination and supervision of earth moving equipment (Major)
 - Consideration to updating Contract Terms and Conditions to include fire-line training as a pre-requisite for all earth moving contractors (Major)
 - Implement revised Purchase Order processing, including agreed rates (Moderate)
 - Centralised management of earth moving machinery, like State Air Desk (Moderate)
 - Review and update IMToolbox and procedures for engagement (Minor)
 - Establish formal process to assess contractor performance against KPIs (Minor)
 - Review and assess fuel usage in accordance with ATO requirements (Opportunity).
- 4.80** The Review was provided with evidence that by June 2021, DFES had addressed five of the eight recommendations, two others were in progress and one is awaiting completion of the Review..
- 4.81** Currently, DFES Contract 159515, *"Equipment for Emergency Operations including Earthmoving, Water Tankers and Mobile Refuelling"*, has 40 Contractors listed for fire related work. The equipment provided by Contractors ranges from Wheel/ Track Loaders, Bulldozers, Graders Excavators, Backhoes, Skid Steers Low loaders, Tippers, Water Tankers and a Mobile Refueller.

Heavy Plant suppression activities

- 4.82** During the Wooroloo Fire, 25 pieces of HP were provided by 12 Contractors and two pieces of HP (CAT D6) supplied by DBCA. Neither the Shire of Mundaring or the City of Swan have any suitable HP within their council fleet to assist in firefighting operations. All HP were provided with Automatic Vehicle Locators (AVL) and DFES portable radios to ensure that each machine could be "tracked" and communication maintained by the IMT during operational taskings.
- 4.83** Of the 12 Contractors engaged by the IC/IMT during the incident, four contractors with 12 machines, are currently on the DFES Contract 159515, one contractor, with two machines, is listed on the DBCA and two contractors, with four machines, were on the DFES Contract 166116 for mitigation work only. The other five contractors, which involved nine machines were not on either the DFES or DBCA Contracts.
- 4.84** The concern with engaging contractors and associated HP not on State Government contract is that the governance applied under the contract arrangements is absent, with potential liability on both DFES and the contractor. Potentially, the same could apply for contractors under DFES 166116 for mitigation being involved in fire work.
- 4.85** The Review was advised of at least one additional piece of HP (CAT D10) which was involved in the Wooroloo fire operated by a landowner whose property was under threat. While it is not uncommon for the landowners to "spontaneously" volunteer to assist in firefighting operations, the consequence of untrained, ill-prepared (PPC/ PPE) and un-coordinated personnel and equipment on the fire ground can lead to serious consequences.
- 4.86** In reviewing the firefighting activities of the DBCA and contracted HP during the Wooroloo bushfire it appeared that the combination of HP, on ground firefighting resources and aerial support, given the difficult terrain and adverse fire weather condition in the initial stages of the fire, mitigated against more significant loss.
- 4.87** Notwithstanding, the Review understands that there were issues with the initial requests to the COMCEN for HP not being fulfilled and a limited appreciation of the availability of HP to support the firefighting efforts going forward. This was despite having the State Contracts arrangements in place. There also seemed to be limited access to appropriately trained HP Supervisors with the capability to deal an incident of this magnitude.

Heavy Plant oversight and operational capability

- 4.88** The issue of HP contractual arrangements, compliance and availability is not unique to WA, as was the experience in NSW during the Black Summer fires. The shortcomings of the NSW RFS HP processes were highlighted during that bushfire season, these included:
- a lack of transparency in the engagement and allocation of HP both "on and off" the HP Contract Register
 - an inadequate level of detail on Purchase Orders aligned to tasking and hourly rates
 - a lack of appropriate approvals on completion of tasking/s to expedite payment
 - a lack of assessment and appropriateness of HP equipment to fulfil the task, "Fit for Purpose"
 - limited personnel and expertise within the IMT's to engage and manage HP contractors
 - an inequity in hourly rates across the range of HP equipment available

- 4.89 These shortcomings were evident despite having established contractual arrangements in place for 600 HP Contractors and 4,000 pieces of machinery in NSW. Similar issues are highlighted in the E&Y Internal Audit commissioned by DFES.
- 4.90 As a result of the experiences from the Black Summer Bushfires, the NSW RFS in collaboration with the National Aerial Firefighting Centre (NAFC) have developed the ARENA Heavy Plant module. ARENA HP is a derivative of the ARENA Aviation module commonly utilised by agencies across Australia to locate, deploy and track aviation assets.
- 4.91 The introduction of ARENA HP software has enhanced the maintenance of the NSW RFS HP Contract Register, improved the management of contractual compliance, better facilitated the identification and tasking of appropriate localised HP Contractors to incidents. It has also supported the overall management of HP operational processes, enabling documented justification for supplier selection, KPI assessments of HP management and suppliers and improve the management of various safety compliance requirements. ARENA HP can be used to support an overall capability assessment of machinery use for firefighting.

RECOMMENDATION 9

That DFES, in consultation with the National Aerial Firefighting Centre (NAFC) and DBCA, evaluate the suitability of the ARENA HP module to contract, manage and deploy heavy plant to both operational and non-operational activities.

Examine the effectiveness of interagency coordination during the response and initial recovery phases of the incident (ToR 3)

- 4.92 The preparation, response and recovery to emergency events requires interaction between many public agencies, community and volunteer organisations and individuals. The best protection and resilience of communities will be achieved when everyone works effectively together. The co-ordination between agencies involved in the Wooroloo fire was overall very effective and allowed the focus to remain on supporting community safety and recovery from the fire. A significant factor in this effective co-ordination was the established relationships that were in place between individuals and agencies involved in the fire.

Co-ordination in Preparedness – the Days Leading up to the Wooroloo Fire

- 4.93 As part of the standard procedures during high bushfire risk periods agencies worked together to receive relevant weather briefings, implement readiness arrangements, and maintain situational awareness. This occurred at the state and regional levels in the days leading up to Monday 1 February. Prior to the ignition of the Wooroloo fire there were other incidents occurring in the state and regions around Perth. This situational awareness was important to allow agencies to respond appropriately to any new incident.
- 4.94 DFES led the readiness coordination with local governments and other agencies providing information in the days leading up to Monday 1 February.
- 4.95 The All Hazards Liaison Group (AHLG) is convened at the state level to *ensure agency specific advice and support in relation to risk management planning is available during periods of heightened risk, including elevated Fire Danger index (FDI), catastrophic fire weather conditions and other severe weather predictions or emergencies*¹. The AHLG met in the days leading up to the Wooroloo Fire.
- 4.96 The State Emergency Management Arrangements outline the role of the Operations Area Support Group (OASG) to provide strategic support to an emergency response, when multiple agencies need to be co-ordinated at a district level of multiple incidents are occurring simultaneously within one operational area². In the metropolitan regions the OASG members participate in the AHLG. Agencies included in the AHLG/OASG structure include:
- DFES
 - WA Police Force
 - Bureau of Meteorology
 - Dept. of Biodiversity, Conservation and Attractions – Parks and Wildlife
 - State Recovery Co-ordinator
 - WA Local Government Association (WALGA)
 - Dept. of Communities
 - Western Power

1 WAFES Manual Part 2

2 WAFES Manual Part 4

- Horizon Power
- ATCO Gas
- Water Corporation
- Telstra
- Main Roads Western Australia
- Dept. of Education
- Dept. of Health
- St John Ambulance
- Defence Joint Operations Support Staff (JOSS)
- Public Transport Authority
- Dept. of Treasury Public Utilities Officer
- Forest Products Commission
- Australian Energy Market Operator

Co-ordination in Response to the Wooroloo Fire

- 4.97** The initial management of bushfire in the Perth Hills is through the assigned local government. In the instance of the Wooroloo bushfire, the Deputy Chief Bushfire Officer took control of this fire on Monday 1 February.
- 4.98** As the fire grew in complexity, a decision was made to seek a declaration of a Level 3 incident. To effect this, pursuant to s.13 of the *Bush Fires Act 1954*, the FES Commissioner may appoint an Authorised Person to take control of all operations to assist in managing an incident. This Declaration was made at 1644hrs on Monday 1 February.
- 4.99** During this response phase co-ordination between the lead agency and support agencies is critical to ensure effective use of resources for public safety. The Incident Management Team that was formed during the afternoon of Monday 1 February included all relevant agencies, including agencies responsible for essential services. In addition, an Incident Support Group (ISG) was formed on day 1 to support the response and the initial membership included:
- DFES
 - DPIRD
 - Western Power
 - Shire of Mundaring
 - City of Swan
 - Main Roads
 - Department of Communities
 - Western Australian Police Force
 - St John Ambulance
 - Telstra
 - NBN
 - Water Corporation
 - DFES Operational Area Manager
 - DFES District Emergency Management Advisor

- 4.100** The ISG met regularly throughout the incident.

Relief and Recovery Co-ordination

- 4.101** The Incident Management Team for the Wooroloo Fire were managing the suppression of the bushfire, providing advice to the community, and supporting relief to those impacted by the fire. The ISG maintained the co-ordination between agencies in this initial relief effort. As the fire was controlled greater focus was then given to the community recovery effort. The State Emergency Management Procedure outlines governance that ensures co-ordination between the various agencies involved in recovery. The relevant groups were all established following the Wooroloo fire.
- The State Recovery Co-ordination Group (SRCG) was convened on 3 February.
 - A SRCG Partnership Forum established by the State Recovery Controller to support the recognised recovery arrangements met on Friday 5 February.
 - A meeting was held with City of Swan and Shire of Mundaring CEOs on 6 February.
 - A Joint Local Recovery group was formed, and individual groups aligned with the City of Swan and Shire of Mundaring.

- 4.102 Some feedback was provided during submissions and interviews that there were excessive meetings and forums in the initial stages of the recovery effort. It is important to achieve the balance between effective co-ordination and engagement with relevant agencies, but not creating an overburdening number of meetings and forums. Discussions need to focus on achieving outcomes for community relief.
- 4.103 The Wooroloo State Recovery Plan, published in September 2021, outlines the governance arrangements for the ongoing recovery of the communities affected by the Wooroloo fire. These arrangements ensure ongoing co-ordination between agencies, local government and community.

Consider the effectiveness of the impact assessment processes employed in informing early and timely recovery efforts and consider the effectiveness of the recovery function post response phase (ToR 4)

Impact Assessment

- 4.104 With the prevailing weather conditions, any fire starting on 1 February had potential to cause significant damage. Once the Wooroloo fire spread beyond the control of first responders it became extremely difficult to contain, and it caused significant impact. The scale of this impact was important to understand as soon as possible for individual landholders and support agencies to plan for relief and recovery activities. It is the responsibility of the Incident Management Team to initiate assessment of the impact.
- 4.105 The WA State Emergency Management Framework provides procedures and guidance for the assessment of impacts following level 2 or 3 incidents. This includes the deployment of Rapid Damage Assessment Teams and the preparation of an Impact Statement to be prepared by the Incident Management Team and provided to the local government as soon as possible. For the Wooroloo fire a Deputy Incident Controller was appointed to prepare Impact Statements for the City of Swan and Shire of Mundaring. The Impact Statements were completed on 15 February, and then approved and agreed by the Incident Controller and local governments on 19 and 22 February.
- 4.106 Considerable feedback was provided by stakeholders on the impact assessment process and the preparation of the formal Impact Statement. Overall, the Review heard a number of concerns about the co-ordination of on ground impact assessment between relevant agencies, timeliness in preparation of the report, and its value in meeting community needs. The Impact Statement is a point in time description of the known and emerging impacts. Consideration needs to be given how the process can provide an interactive and live analysis of the impacts of the emergency.
- 4.107 The Review also heard that the level of resourcing had an impact of preparation of the Impact Statement. Appropriate resourcing should be a consideration in addressing the future effectiveness of the impact assessment process.
- 4.108 Following the Wooroloo fire an improved Impact Statement process has been included within the Impact Statement Guide amendments. The Review commends the ongoing review of the impact assessment process. The concerns of stakeholders need to be addressed to make the process more efficient and aligned to providing relevant and timely information to support rapid relief and recovery efforts.

RECOMMENDATION 10

DFES, in consultation with local government, should review the impact assessment process to ensure information is captured and made available to relief and recovery agencies in a timely and effective way.

Early and timely recovery efforts

- 4.109 The Review considered that the timeliness and the effectiveness of the recovery in the early stages was appropriate and furthermore the ongoing provision of support to the affected community has been maintained at a level which the Review believes commensurate with the impact on that community. The Rapid Damage Assessment Team was deployed in the initial stages and able to provide early an indication of the extent of the property and infrastructure damage, which resulted in a prompt response to the community's requirements. There was a high level of collaboration between State and local government departments, private corporations and charitable foundations e.g. Red Cross, St John WA during and since the fire.
- 4.110 The establishment and management of the Evacuation Centres was considered appropriate and provided a central point for all affected residents, including ID Registration, to seek and be provided with information, funding and accommodation assistance and personal counselling, much of which continues through the local governments. COVID-19 restrictions and requirements to comply placed a further complication in the establishment of the Evacuation Centres to ensure that social distancing and health advice was maintained.

There were over 1,200 people registered through these Centres over the period. However, the Review was advised that there were some issues with permissions to establish the Centres due to COVID-19 and the management of vulnerable people, the management of whom would have benefitted from a pre-identification register.

- 4.111 There were significant public donations of clothing and furniture etc. which, while generous, created a logistical issue for the local governments who found it difficult to coordinate the overwhelming quantity. This was also an issue at the Evacuation Centres with many items being delivered to those Centres by a well-intentioned public.
- 4.112 The Review has been advised that majority of the recovery work on fire-affected properties has been completed and a substantial amount of waste resulting from the clearing has either been recycled or reused. The Review was told that there was a need for a State policy on “clean up” requirements, including funding arrangements, following events like the Wooroloo Fire. This issue should be addressed through the State Emergency Management Committee and overseen by the respective Local Emergency Management Committees.
- 4.113 There were several financial relief schemes established to assist the community, these included the Lord Mayor’s Distress Relief Fund which raised \$16,763,165 and the Premier’s Grant which provided grants of up to \$4000 per impacted household. The Review was advised that this did create an issue with different criteria for eligibility dependent on the circumstances. The National Disaster Recovery Funding Assistance was activated on the 5 February and coordinated by the State Recovery Coordinator in consultation with WA Treasury and the Chief Executive Officers of the City of Swan and Shire of Mundaring.
- 4.114 The establishment of a State Recovery Controller and the Partnership Forum, while realising benefits to the recovery effort by providing substantial private corporate support and influence, seemed to function independently from the State Recovery Co-ordination Group and Recovery Coordinator arrangements.
- 4.115 The response by Western Power was considered exceptional given the infrastructure damage to the power network. This was supported by a number of public submissions complimenting Western Power personnel for their efforts. The Review was advised that Western Power representatives were on site from the outset and were involved in many decisions regarding power outages and restoration with the IMT during the incident and as a part of the recovery. In total 800 power poles were impacted by the fire, 680 needed to be replaced, involving 55km of power lines. Assessments were done within eight days and the repair and recovery was completed within 18 days, and the assessment eight days with all power restored in 26 days.

Consider the extent, geographic range, method, effectiveness and duration of public warnings (ToR 5)

- 4.116 Information provided to the public leading up to and during bushfire incidents is critical in helping to save lives and reduce the impact of bushfires. The provision of information and warnings when fires start in the landscape is now well recognised as a priority objective, alongside suppressing the fire, by agencies leading bushfire response.

Public information and engagement prior to 1 February 2021

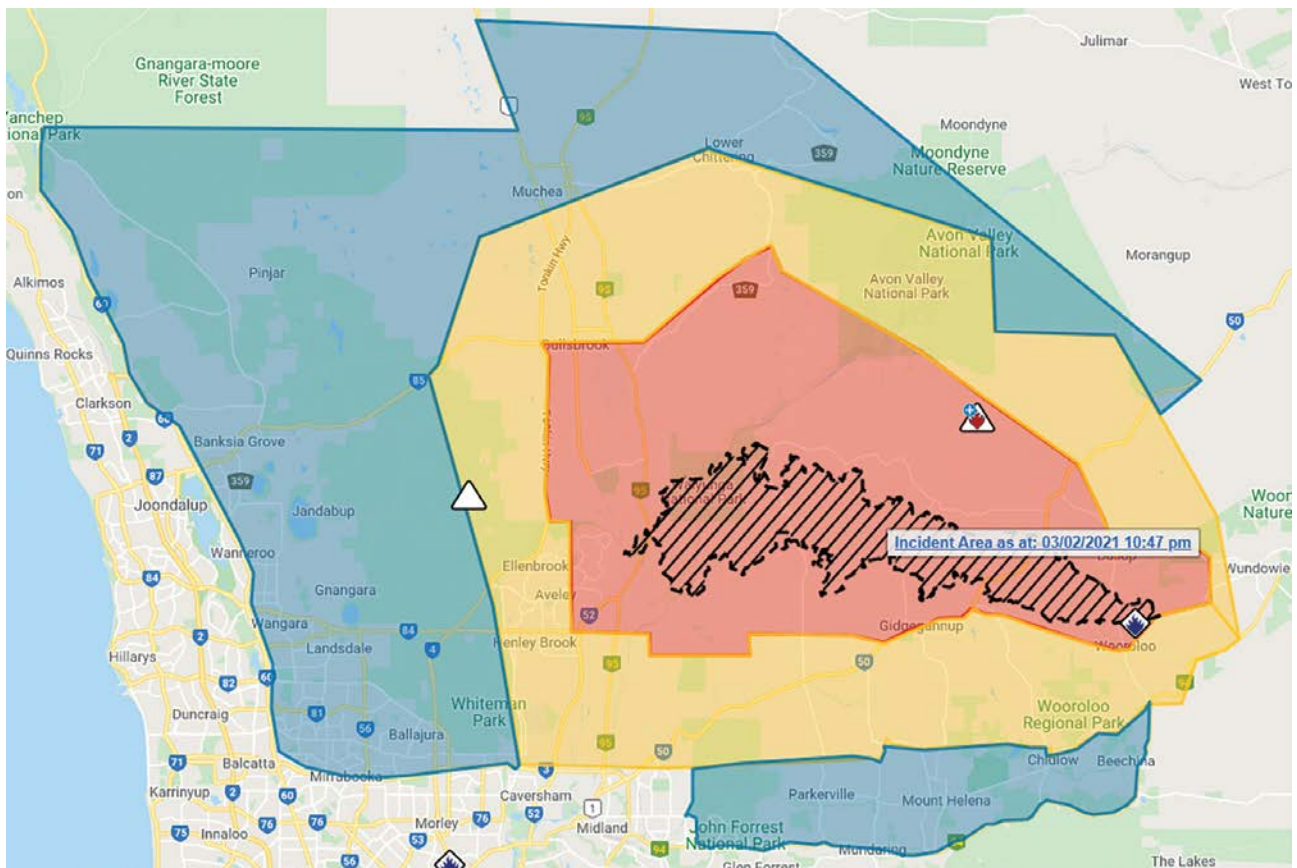
- 4.117 DFES co-ordinates bushfire risk programs across the year and leading up to the southern (and northern) bushfire season in WA. The Areas of Community Engagement Focus (ACEF) Program was developed in 2013 to target intensive community engagement strategies in at-risk locations. The Bushfire Ready Program is a community-led bushfire preparedness program, developed by DFES and delivered in collaboration with local governments, DFES regional offices and volunteer brigades. These programs highlight the importance of landholders and individuals preparing for bushfire risk.
- 4.118 DFES run media campaigns to support the ongoing engagement programs leading up to the bushfire season. The ‘How fireproof is your plan?’ bushfire safety campaign was running on television, radio, print, online, outdoor and social media in the lead up to the 2020/21 bushfire season. DFES and local government target these campaigns at the local level with supporting messages and resources to engage with community members (e.g. Community Engagement Officers).
- 4.119 This support to communities in high bushfire risk areas is critical in helping the management of fuels and other mitigation actions (e.g. reducing fuel loads around properties and access roads). The areas impacted by the Wooroloo fire were the focus of a high level of education and awareness sessions through local brigades with the support of DFES. However, experience shows that focus needs to be maintained in engagement or community awareness reduces. There were mixed levels of community preparedness leading up to the Wooroloo fire.
- 4.120 In the days leading up to the Wooroloo fire, weather forecasts indicated increasingly deteriorating fire weather conditions. A Total Fire Ban was declared for the Perth Metropolitan, City of Swan and Shire of Mundaring for Monday 1 February. This information and Fire Danger Ratings were promoted on the range of channels in place in WA (e.g. Emergency WA, social media, traditional media).

Warnings issued after the Wooroloo fire started

- 4.121** DFES has the accountability to manage and issue warnings for emergency incidents. In addition to warnings DFES works with other agencies and local government to provide other aspects of public information during incidents. DFES' public information arrangements draw upon operational and communication expertise, and rely upon a consistent, coordinated, multi-faceted approach. The provision of community warnings and information is one of six DFES Strategic Control Priorities. All facets of DFES' Public Information response were activated during the Wooroloo Bushfire, staffed by both operational and corporate staff. The Public Information State Operations team worked in partnership with the Incident Management Team Public Information Section and Community Liaison Unit, with all teams managing significant information demands. A total of 207 public warnings were issued for the Wooroloo Bushfire, from the start of the incident on 1 February until the All Clear was issued on 3 March. Warnings were issued simultaneously to Emergency WA, DFES Facebook and Twitter, the 13DFES information line and to media/stakeholders.
- 4.122** As the Wooroloo fire management transitioned from community relief to recovery, public information shifted focus to engaging with those affected by the fire. The platforms for warnings described above continued to be used, but there was also a stronger use of face-to-face interaction at the local facilities (e.g. relief centres).

Key Indicators of Public Information activity

- 4.123**
- 207 public warnings issued
 - Emergency Warning 131
 - Watch and Act 13
 - Advice 62
 - All Clear 1
 - 21 Telephone Warnings
 - 13 press conferences and 37 interviews conducted
 - 50+ proactive social media posts, 19 million impressions, 30,000 Facebook messages/comments and audience growth of 35,000 (19%)
 - 11 community meetings
- 4.124** The Review received many submissions relating to the provision of information and warnings. Overall, there was significant and appropriate focus given to this important function in managing the Wooroloo incident. DFES is to be commended on the priority given to providing warnings and the provision of maps with warning areas. This was a positive aspect recognised by community submissions. The Review agrees with the DFES Incident Review Stage 1 report that the use of the incident area as a warning area is not recommended. This is especially relevant considering the use of non-visual channels such as radio to provide community information.
- 4.125** The Review team heard examples of some confusion and concern with messages (e.g. Emergency Alert telephone warning to Ellenbrook at 0143 on 2 February), but the level of information and its usefulness was effective in saving lives during the fire. The introduction of COVID-19 restrictions during the fire also created significant complexities and the risk of mixed messaging with the concurrent emergencies should be a future consideration.
- 4.126** The Review observed that there were a significant number of Emergency Warnings issued over the five-day period - 131 - being more than half of the total warning number. Commentary in the DFES Incident Review Stage 1 suggests some potential cause in the management of de-escalation and escalation messaging. Further analysis of this high number of Emergency Warnings is suggested, to ensure that the messages remained relevant to the community, given the heightened level of awareness needed for this highest level of warning. Other states have significant recent experience in warning de-escalation which could support DFES' future considerations in this area.
- 4.127** Considering the high number of Emergency Warnings (131) and the relatively low number of Telephone Warnings (21) issued, the review team recommend a realignment of the triggers for Telephone Warnings with Emergency Warnings. This approach is in place in other states. This adjustment would address an observation that the first Telephone Warning was issued at 1456, two hours after the first Emergency Warning at 1245.



An example of warning and advice polygons current during the fire.

- 4.128 Social media continues to play an increasingly important role in messaging and community engagement during bushfires. The Review heard submissions on its use during the fire (e.g. local Facebook pages) and supports the continued development of its application as a key public information channel. DFES maintain a capability to monitor local social media use, however they provide a focus on corporate social media accounts to encourage users to go to Emergency WA. DFES also activates a 'local alert' during major incidents to disrupt a user's news feed with critical incident information in a local area. Given the local channel focus from the submissions, consideration should be given to using these localised and trusted mediums to both gather knowledge and distribute critical information, in a true two-way communication function.
- 4.129 Known cellular blackspots in the area of the Wooroloo fire had an impact on the reach of public warnings and on broader communication needs in fighting the fire. Numerous submissions highlighted this issue, and the Review supports ongoing efforts to address the communication blackspots. DFES has established a Telecommunications Resilience Improvement Working Group and Local Government Advisory Group to bring relevant stakeholders together. The loss of power at telecommunication towers also impacted community warnings at critical times during the fire and the time to restore power was lengthy.
- 4.130 DFES have undertaken an assessment of the Public Information function after the Wooroloo fire. The Review supports the improvements identified covering:
- The Incident Area feature on Emergency WA
 - Enhancements to Emergency WA
 - Emergency Alert Telephone Warning System (TWS)
 - Application of mapping in warnings
 - Location of the Public Information sections at both the Incident and state levels
 - Resources to support media management and community liaison
 - Information relating to community access to fire affected areas



Credit: Evan Collis

RECOMMENDATION 11

DFES and local government should continue discussions with telecommunications providers to explore the adequacy of current arrangements for backup power at telecommunication towers in emergency incidents.

RECOMMENDATION 12

DFES should continue improvements to the warnings platform to develop more timely and tailored information for all communities, including a focus on mapping for community, the content of messages and transition between warning levels.

RECOMMENDATION 13

DFES should embed the issuing of Emergency Alert Telephone Warning System (TWS) in the Public Information section. This will support:

- Increased capacity and improved timeliness to issue TWS in future*
- Consistency in overall messaging considering the recent character limit increase via the Emergency Alert upgrade*
- The consideration for the integration of Emergency Alert as a publishing function of a future Emergency WA platform.*

Effectiveness of the 'Animal Welfare in Emergencies' program (ToR 6)

Animal Welfare Program

- 4.131 In 2018, to clarify the role and responsibilities of those stakeholders involved in the emergency response and recovery related to the safety and welfare of animals, the WA State Emergency Management Committee (SEMC) endorsed the *State Support Plan - Animal Welfare in Emergencies* (SSP-AWiE) and assigned the Department of Primary Industries and Regional Development (DPIRD) as the primary agency for coordinating animal welfare services in emergencies.
- 4.132 The SSP-AWiE was prepared by DPIRD in collaboration with other relevant hazard management agencies (HMAs) and controlling agencies and included the Animals in Emergencies Working Group under the sponsorship of the SEMC – Response Capability Subcommittee. The plan also acknowledged the key role local governments plays in supporting animal welfare activities during emergency incidents.
- 4.133 The plan outlined the guiding principles aligned to the *State Emergency Management Policy*, while incorporating the *National Planning Principles for Animals in Disasters* and specified the preparedness, response and recovery requirements and responsibilities of those agencies assigned with the role and responsibility for coordinating animal welfare services in emergencies, with the DPIRD as responsible for the strategic oversight of these arrangements.
- 4.134 The Review was advised that the Wooroloo Fire was the first time the arrangements set out in the SSP-AWiE were activated, although the Plan had previously been exercised. The activation followed a request from the IC, approved by the Executive Director, Biodiversity, on the 3 February 2021 after discussions with the IC, local government and community members related to numerous animal welfare reports.
- 4.135 The DPIRD confirmed that eight Assessment Teams had been pre-emptively identified to be deployed from the 1 February, subject to a formal request from the IMT. These teams were on the fireground by Tuesday 2 February and the Plan was implemented by Wednesday 3 February. DPIRD coordinated these Assessment Teams which included DPIRD staff including livestock compliance and biosecurity officers, veterinarians, local government field staff, and volunteer veterinary professionals.
- 4.136 The Wooroloo area has a diverse land use from small to medium acreage, the largest 4,500ha, including hobby farming and commercial activities involving a variety of livestock, predominantly horses. The area includes the first Andalusian stud in Australia, "Bodeguero Stud", which in 1974 was incorporated into the El Caballo Resort.

SSP- AWiE Activation

- 4.137 Immediately following the activation of the SSP-AWiE, the DPIRD implemented a formal response structure, including the activation of the stakeholder network as outlined in the Plan. The functions identified included liaison with and reporting to the IMT, contributing to specific information relating to the welfare of animals, coordination of volunteers and professional veterinary staff and the Animal Welfare Emergency Group (AWEG) to consult with DPIRD in coordinating the SSP-AWiE. During the Wooroloo fire the Animal Welfare Response Group was established through the Committee for Animal Welfare (CAWE), which included the Australian Veterinary Association, Perth Zoo, RSPCA, Shire of Mundaring, and City of Swan. The COVID-19 restrictions implemented on Sunday 31 January prior to the Wooroloo Fire had an impact on the availability and number of volunteers and veterinary personnel engaged, which created fatigue management issues for those personnel who were deployed over this period.
- 4.138 The operational activities of the AWEG during the Wooroloo Fire were priorities to include the assessment and triage of impacted animals, treatment, euthanasia and disposal, shelter, transport, and relocation. During the fire it was estimated that the equivalent of 150 veterinary days was spent in assisting affected animals.
- 4.139 The Teams assessed any animals found on impacted properties, with over 750 veterinary assessments of animals completed prior to the landowners being given clearance to safely return to their properties. These assessments were reported daily to the community members at the established evacuation locations. Only a small proportion of those animals assessed by the veterinary staff were required to be humanely euthanised.

- 4.140 The Table below, compiled by DPIRD, provides an analysis of the activities of the AWEG as a result of the Wooroloo Fire.

Total animals assessed

Animal	Treated	Minor injuries	Euthanasia	DOA	Alive & well	TOTAL	%
Sheep	0	41	4	8	321	374	49.47
Cattle	3	0	1	0	144	148	19.58
Alpaca	0	2	1	3	46	52	6.88
Horse	21	3	0	1	26	51	6.75
Chicken	0	0	1	24	13	38	5.03
Pigeons	0	0	0	0	30	30	3.97
Duck	0	3	0	9	8	20	2.65
Kangaroo	3	1	7	3	1	15	1.98
Goat	0	0	0	0	9	9	1.19
Dog	4	0	0	0	3	7	0.93
Bobtail	0	0	0	4	0	4	0.53
Donkey	0	0	0	0	3	3	0.40
Cat	2	0	0	0	0	2	0.26
Pony	0	0	0	0	1	1	0.13
Deer	0	0	0	0	1	1	0.13
Possum	1	0	0	0	0	1	0.13
TOTAL	34	50	14	52	606	756	
%	4.50	6.61	1.85	6.88	80.16		

Source: Department of Primary Industries and Regional Development

- 4.141 In the early stages of the fire several landholders took it upon themselves to relocate their livestock to private studs in the surrounding area, which arguably minimised the impact of the fire on livestock on those properties and reduced the pressure on the AWEG during the incident. However, the Review was concerned that this uncoordinated activity had the potential to endanger human lives and livestock.
- 4.142 The Review was satisfied that the AWEG was effectively integrated into the EOC and IMT, operating from the Mundaring Recreation Arena, during the deployment and continued until it ceased operations on Monday 8 February and responsibility transitioned to the Shire of Mundaring and City of Swan.
- 4.143 The coordination, storage and suitability of donations, including fodder transport across the State, in the animal welfare recovery phase was highlighted as an issue to the Review. Not all the donations were appropriate and created issues for the AWEG in managing the distribution and storage. It also had commercial and financial implications for local rural agriculture suppliers, also impacted by the fire.



Credit: DFES

4.144 Since the Wooroloo Fire the Incident and Emergency Management Branch of DPIRD has conducted an “After Action Review” (AAR) involving all parties involved with the fire response the outcomes of which were published in the publication *“After Action Review of the Animal Welfare Response during the Wooroloo Bush Fire – February 2021.”* The AAR identified 18 Review Recommendations under five Key Review considerations, which include:

- The development of an Animal Welfare in Emergencies Operational Plan for both State and Local responses.
- The development of a DPIRD Plan addressing the transition of an animal welfare management to local government authorities and activation of specific recovery for agriculture and regional development agency responsibilities
- Improve measure to ensure the effective establishment of an AWiE command location across different regions of the State, including the required resources and logistical process required for responses to varied scales.
- Strengthen the capability of all local government authorities to report and assist in AWiE responses
- Establish a centralised animal welfare reporting system that all local government authorities can transfer over to during an animal welfare response.

4.145 The Review, in considering the AAR document and the related Recommendations, concludes that the outcomes of the DPIRD Review effectively identify any issues and/or concerns highlighted to the Review.

Meteorological aspects of the fire as examined by the Bureau of Meteorology (ToR 7)

Pre-Season Bushfire Conditions

- 4.146** The antecedent climatic conditions experienced in 2020 in Southwest WA were exceptionally warm and a very dry cool season. The rainfall and mean temperature deciles for the seven months from April to October were in the lowest 10% (rainfall) and highest 10% (temperature) of historical records. These weather conditions resulted in a soil moisture (KBDI) for this period that was below to very much below average across the Southwest.
- 4.147** In November, several cold fronts and associated low pressure systems resulted in the wettest month on record at many sites across the Perth Metropolitan area, particularly in the Perth Hills. This resulted in an increase in the KBDI which resulted in above to near average soil moisture in early summer.
- 4.148** Very warm daytime temperatures in December and January, with little follow-up rain, saw soil moisture decrease to near the long-term average. The influence of the November rainfall was temporary, as both upper and lower soil moisture values in the vicinity of the fire ground had returned to near average conditions by January 2021.
- 4.149** Severe heatwaves were recorded in the Perth area in December 2020 and in January 2021 with three consecutive days above 40°C from 23-25 December 2020. The only rainfall recorded was a few millimetres on 13 and 14 December 2020. Further heatwave conditions were recorded at the RAAF Pearce automatic weather station (AWS), the closest to the Wooroloo fire, on 6-9 January when temperatures reached the low 40s and the mid-afternoon relative humidity dropped to around 10%.

Weather conditions prior to the Wooroloo bushfire

- 4.150** Conditions leading into the 1 February 2020 were very hot and dry. The Pearce AWS recorded four consecutive days, including on the day of the fire, when the maximum temperatures exceeded 35°C and mid-afternoon relative humidity was in the range 10-14%. The exceptionally dry conditions coupled with the strong to gusty easterly winds invariably led to significant and erratic fire behaviour.

Conditions during the Wooroloo bushfire

- 4.151** The BoM reported that the weather pattern over the Wooroloo fire ground was relatively stable for much of the period from 1 to 6 February, with moderate strength easterly winds predominated, with surges of strong gusty winds that caused periods of increased fire danger, particularly during the evening periods on 1 and 3 February.
- 4.152** The Table below shows the weather conditions at 1400hrs on 1 February at nearby AWSs.

AWS Location	Wind Speed (km/h)	Wind Gust (km/h)	Wind Direction (degrees)	Temperature (°C)	Relative Humidity (%)
Pearce RAAF (BOM)	31	52	100	34.6	12
Swan Valley (BOM)	15	30	100	35.2	14
Rolling Green (DBCA)	20	39	100	32.5	15
Bickley (BOM)	28	57	100	32.6	15

- 4.153** In comparison the Table below shows the weather conditions at 2000hrs on 1 February

AWS Location	Wind Speed (km/h)	Wind Gust (km/h)	Wind Direction (degrees)	Temperature (°C)	Relative Humidity (%)
Pearce RAAF (BOM)	15	20	120	30.9	11
Swan Valley (BOM)	7	20	150	31.1	13
Rolling Green (DBCA)	11	19	110	29.1	12
Bickley (BOM)	17	28	110	27.4	15



Credit: Evan Collis

- 4.154** As a consequence of these weather conditions the Forest Fire Danger Index (FFDI) at Pearce AWS and Rolling Green AWS indicated that the FFDI increased rapidly at around the time the fire was started. The FFDI peaked at 60 at the Pearce AWS between 1330hrs and 1600hrs due to the stronger winds observed at that location. The very dry air and the high temperatures continued well into the evening period resulting in favourable conditions for overnight fire activity. This very dry air is a significant feature of the event. It is highly likely that the strengthening of easterly winds during the evening of 1 February, combined with the very dry air were major contributing factors to the main fire run overnight.
- 4.155** Indicators of this overnight dry air (dew point) are critical in understanding potential fire behaviour overnight. Typically, active fire behaviour decreases overnight and any indication of variation to this scenario is important for fire fighter and community safety, and in setting suppression strategies. The Review recognises the significance of the dew point behaviour and its impact during the Wooroloo bushfire. Further work should be considered to look at whether dew point indicators should be given greater priority in fire prediction products. The Review notes the current work underway to develop the Australian Fire Danger Rating System, including a renewed Australian Fire Danger Index (AFDI). This AFDI is considering a range of new inputs to improve fire prediction.
- 4.156** On Tuesday 2 February, temperatures on the coastal plain remained higher than locations to the east. Winds strengthened and remained 30 km/h or higher overnight with a maximum wind gust of 56km/h recorded at 0200hrs with an increase the relative humidity.
- 4.157** The BoM reported a transient pulse of pyrocumulus cloud observed at the fireground and on satellite imagery during the afternoon due to the increase in moisture, however the atmosphere was too dry to sustain moist pyro-convection.
- 4.158** By Wednesday 3 February weather conditions continued to be hot and with south to south-easterly up to 25km/h in the late morning, changing to the south to south-westerly at 35 to 40km/h with gusts experienced up to 70km/h in the hills during the evening by which time the daytime temperature dropped to 34°C. Firefighters were monitoring weather conditions for the weekend as rain was forecasted by the BoM on Saturday and Sunday which could bring some relief.
- 4.159** On Thursday 4 February a new ridge continued to build across the southwest WA. The tropical low remained a short way south of Carnarvon and a strong easterly pressure gradient had re-established itself between these two systems. The stronger southeasterlies persisted through the night with Bickley AWS recording a maximum gust of 76km/h at 0015hrs, and Pearce RAAF 65km/h at 0736hrs. During the day the maximum temperatures reached the mid to high 20s, and the FFDI peaked at Very High to Severe at the Pearce AWS in response to dry air aloft mixing down to the surface and strong winds.
- 4.160** These stronger easterly winds persisted during the early morning for the second day in a row, Friday 5 February, with Bickley AWS recording a maximum gust of 76 km/h at 0608hrs and Pearce AWS 69 km/h at 0339hrs. The daytime maximum temperatures were once again in the mid to high 20s.
- 4.161** The rain predicted earlier in the week arrived on Saturday night and into Sunday morning which saw 15mm fall on the fire ground. The rain was effective in mitigating any further significant risk to the area.

- 4.162 The Fire Danger Ratings issued daily by the BoM during the bush fire season for Monday 1 February to Friday 5 February are included below for the Lower West Coast (LWC) and Lower West Inland (LWI) fire weather districts.

Forecast Issued	Date	LWC	LWI
31 January PM	1 February	Severe	Severe
1 February PM	2 February	High	Very High
2 February PM	3 February	High	Very High
3 February PM	4 February	Very High	Very High
4 February PM	5 February	High	High

- 4.163 The briefings and information on meteorological aspects of the fire were well detailed and provided effective information for management of the Wooroloo fire. The BoM were present in the State Operations Centre (SOC) and provided advice to the Wooroloo Incident Management Team. Wherever possible there is real benefit in including BoM officers in Incident Management Teams for complex bushfires.
- 4.164 Over a number of years DFES has embedded a BoM Severe Weather Forecaster in the DFES SOC, a position known as SOCMET, under a MoU arrangement with BoM. The SOCMET provides a range of weather related formal and informal situational awareness services to the SOC staff, on a scheduled and ad hoc basis. The SOCMET also has access to the BoM forecasting systems and reports. A trial is underway this southern summer for a BoM Incident Weather Forecaster to be located at the SOC on request.

Consider any other matter that the Review Team identifies in its course of activities (ToR 9)

- 4.165 In addition to the issues highlighted in the discussion above, the Review identified the following themes as being worthy of highlighting.
- 4.166 The Review is aware that the WA Government, in consultation with DFES and other key stakeholders, is reviewing the *Bush Fires Act 1954*, in conjunction with the *Fire & Emergency Services Act 1998* and other relevant Acts with the view to updating the legislative framework in which DFES operates. The Review supports the reconciling the various pieces of legislation considering the current and future requirements in the bushfire and emergency service provision undertaken by DFES across the Prevention, Protection, Response, and Recovery functions of WA communities from such events.
- 4.167 The Review received several submissions regarding the suitability and capability of vehicles being utilised for bush firefighting, given the water carrying capacity and crew protection capability, particularly in a bushfire turnover situation. It was the Review's conclusion that a combination of urban pumpers, light and heavy bushfire tankers, and larger water tankers with some firefighting capability e.g. water monitors (cannons), was appropriate for the rural-urban interface in the Perth Hills. The Review did not undertake a detailed investigation of appliance typology and allocation, but given the frequency with which this issue featured in submissions, it is an issue that DFES needs to address, including consideration of whether vehicles being dispatched to bushfire events are of an appropriate type for that kind of incident. The Review is aware that DFES is establishing a State Operational Support Fleet model that will consider the issues raised.

Monitoring of review actions and outcomes

- 4.168 The Review noted reference in many submissions made to it, to previous reviews undertaken for major fires in WA. The Review has been advised that there is a process in place for monitoring the progress made in relation to previous review recommendations through the State Emergency Management Committee. This process is not clear to the public and there appears to be no community understanding of implementation of actions from previous reviews. Earlier in this report a list of past assurance activities was provided.
- The Review considers that greater integration of this process with affected agencies and communication with the public would be beneficial.

5 CLOSING REMARKS

- 5.1 The Wooroloo Bushfire was a major incident that had a profound impact on the communities directly impacted by the fire, those involved in fighting it, as well as interest groups and the broader public. The Review team pays tribute to the hundreds of agency and community members who responded to the fire on Monday 1 February and the days after. Whether fighting the fire, supporting those who suffered losses, or restoring essential community services, the commitment of those involved deserves high praise.
- 5.2 Communities will continue to live in areas of high bushfire risk. Management of the risk to minimise the impacts of bushfires involves many aspects before, during and after a fire starts. This Review does not suggest any one answer to the complexities of living with fire. There were many elements of the fire's preparation, response and recovery that were done extremely well and align with best practice across Australasia. There are however always things that can be learnt and improved. The thirteen recommendations look to provide guidance that will help save lives, property and the environment to reduce the impacts of future events.
- 5.3 This Review has taken information from a range of sources to reflect on the impact of the fire and ensure lessons are learnt for future incidents. The Review team thanks all those who have made submissions and contributed information for this report. Monitoring the implementation of the recommendations will support ongoing improvement and evaluation of best practice.
- 5.4 The effects of the Wooroloo Bushfire will continue well into the future as residents and landholders rebuild their properties and recover from the psychological impacts of such a traumatic event. While this community's beautiful bush landscape has begun to recover and shows its resilience to fire, support to the recovery of the people affected will be critical for some time to come.

6 GLOSSARY

AFAC	Australasian Fire and Emergency Service Authorities Council
AHLG	All Hazards Liaison Group
BFB	Bush Fire Brigade
BoM	Bureau of Meteorology
BRMP	Bushfire Risk Management Planning
CBFCO	Chief Bush Fire Control Officer
CLU	Community Liaison Unit
COMCEN	DFES Communications Centre
DAC	Duty Assistant Commissioner
DCS	Duty Chief Superintendent
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
EA	Emergency Alert
EM	Emergency Management
EW	Emergency Warning
FDI	Fire Danger Index
FFDR	Forest Fire Danger Rating
HMA	Hazard Management Authority
HRA	Heightened Risk Actions
IAP	Incident Action Plan
IC	Incident Controller
ICC	Incident Control Centre
ICV	Incident Control Vehicle
IMT	Incident Management Team
ISG	Incident Support Group
LAT	Large Air Tanker
LEMA	Local Emergency Management Authority
LG	Local government
LGA	Local government Area
MOC	Metropolitan Operations Centre
MoU	Memorandum of Understanding
OPB	Operational Preparedness Briefing
PFT	Pre-Formed Team
PPE	Personal Protective Equipment
P&W	Parks and Wildlife

PyroCb	Pyrocumulonimbus
RoS	Rate of Spread
RUI	Rural Urban Interface
SAO	State Situation and Analysis Officer
SECG	State Emergency Coordination Group
SEMC	State Emergency Management Committee
SEMP	State Emergency Management Committee Policy
SEWS	Standard Emergency Warning Signal
SOC	State Operations Centre (DFES)
SOCMET	State Operations Centre Meteorology
SW ROC	South West Regional Operations Centre
TFB	Total Fire Ban
TWS	Telephone Warning System
VCP	Vehicle Control Point
VFES	Volunteer Fire and Emergency Services
VFRS	Volunteer Fire and Rescue Services
W&A	Watch and Act
WALGA	Western Australian Local Government Association
WAPF	Western Australia Police Force

REFERENCES

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- Keelty, M (2011) The Perth Hills Bushfire Review. Perth Department of Premier and Cabinet
- City of Swan. (2019) City of Swan Bushfire Risk Management Plan. Perth: City of Swan
- Shire of Mundaring (2019) Shire of Mundaring Bushfire Risk Management Plan: Shire of Mundaring
- Department of Fire and Emergency Services. (2021) Wooroloo Bushfire 2021 – Review of existing mitigation Activities.
- Ernest & Young (DFES) – *Evaluation of Earth Moving Equipment Contractors (2104) October 2020*
- Bureau of Meteorology (2021) – Report into the meteorology aspects of the Wooroloo fire, February 2021
- DFES Western Australian Fire and Emergency Service Manual Part Two: State Operations Centre
- SEMP Policy: A Strategic Framework for the Emergency Management in Western Australia. (2018) Traffic Management During Emergencies Guidelines

APPENDIX 1 – CHRONOLOGY OF THE FIRE

Date	Time	Activity
31/01/2021	1800	Key Decision/Info Perth Metropolitan, Peel and South West 5 day lockdown
01/02/2021	0000	Key Decision/Info Total Fire Ban - Perth including City of Swan and Shire of Mundaring.
	0800	Key Decision/Info DFES Metropolitan Regional staff at Regional Offices
	0830	Key Decision/Info Perth Metropolitan increases Risk level to Major
	1202	Key Decision/Info Structure Fire reported intersection Werribee & Harper Road Wooroloo – Mundaring VFRS redirected from nearby incident
	1205	Key Decision/Info '000' caller reports bushfire
	1206	Key Decision/Info Mt Helena & Wundowie BFB's mobilised
	1210	Key Decision/Info Chidlow BFB mobilised. Aircraft activated.
	1214	Key Decision/Info Sawyers Valley and Stoneville Brigades mobilised 2 x SEATS, 2 x Helitacs and Air Intelligence dispatched
	1217	Key Decision/Info Mundaring VFRS arrives – 3 rd Alarm classification – request air support
	1222	Key Decision/Info Mundaring Deputy takes control
	1228	Key Decision/Info 5 pumps for Rural Urban Interface requested
	1231	Key Decision/Info Metropolitan North Strike Team mobilised
	1233	Key Decision/Info Incident Weather Forecast requested
	1234	Key Decision/Info Western power request for infrastructure under threat
	1245	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO in SHIRE OF MUNDARING
	1254	Key decisions / Info RUI Strike Team from Metropolitan activated – 12 appliances
	1300	Key decisions / Info 44 appliances on scene – excludes aircraft
	1310	Key decisions / Info Discussion to move ICC to Wooroloo Bushfire Brigade
	1314	Key decisions / Info Bunbury SEATS repositioned to Jandakot Airport
	1319	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO in SHIRE OF MUNDARING
	1322	Key decisions / Info Request from Mundaring Chief to mobilise machinery
	1328	Key decisions / Info ICC established at Wooroloo Bushfire Brigade
	1335	Key decisions / Info 3 properties known lost Request from Shire of Mundaring to take control of incident
	1345	Key decisions / info Large Air Tanker (LAT) 132 dispatched from Busselton
	1357	Key decisions / Info Section 13 requested
	1358	Key decisions / Info Level 2 incident declared
	1400	Key decisions / Info Police on scene USAR Damage Assess Teams requested 58 appliances on scene – excludes aircraft Section 13 Authorised Person Appointment for Supt Metro NE – affected area: Shire of Mundaring and City of Swan – until revoked

Date	Time	Activity
	1405	Key decisions / Info Forrestdfield pump destroyed; Wooroloo Prison Farm light tanker on fire but extinguished
	1408	Key decisions / Info Wooroloo Prison 2.4 report a burnover LAT 132 conducts drop over fire St John Ambulance requested for first aid post
	1415	Key decisions / Info 2 x Ambulances requested
	1419	Key decisions / Info Critical Infrastructure report complete
	1427	Key decisions / Info 6 Structural Pumps requested
	1431	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO in SHIRE OF MUNDARING
	1451	Key decisions / Info City of Swan representative requested for ICC
	1456	Alerts & Warnings <u>EA campaign: Message:</u> Warning Too Late to Leave Seek shelter and actively defend.
	1500	Key decisions / Info Trigger for Level 3 declaration - fire crossing Toodyay Road 82 appliances on scene – excludes aircraft Change of Controlling agency to DFES from Shire of Mundaring and City of Swan completed at 1500hrs effective from 1400hrs.
	1500	Key decisions / Info Priority is to protect life and then property
	1505	Key decisions / Info Fire 1 hour from impacting Toodyay Rd with current RoS
	1510	Key decisions / Info Fire shaped approved for upload to Emergency WA
	1511	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Safe to Leave - If the way is clear, leave now towards Toodyay Rd.
	1515	Key decisions / Info First formal IMT meeting
	1515	Key decisions / Info Strategy for aircraft asset protection & reduce head fire RoS
	1530	Key decisions / Info Rate of Spread 5km/hr and fire size 8.15 hectares
	1542	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO in the SHIRE OF MUNDARING
	1550	Key decisions / Info Divisions established. More resources & machinery requested
	1600	Key decisions / Info 93 appliances on scene – excludes aircraft
	1600	Key decisions / Info Information received about private machinery tracking fire
	1619	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Safe to Leave If the way is clear, leave now East on Toodyay Rd.
	1630	Key decisions / Info RoS 3 km/h up hill on other side of Toodyay Rd spotting 500m towards Tilden Park Level 3 Incident Declaration form completed
	1630	Key decisions / Info Machinery starts tracking southern edge of fire
	1634	Alerts & Warnings <u>EA Campaign clone: Message:</u> Warning Safe to Leave. If the way is clear, leave now East on Toodyay Rd.
	1639	Key decisions / Info Decision to establish ICC at Mundaring Arena

Date	Time	Activity
	1645	Key decisions / Info More appliances requested for Tilden Park Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP and GIDGEGANNUP in the SHIRE OF MUNDARING and CITY OF SWAN
	1700	Key decisions / Info 113 appliances on scene – excludes aircraft Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP and GIDGEGANNUP in the SHIRE OF MUNDARING and CITY OF SWAN
	1701	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave. Seek shelter and actively defend.
	1705	Key decisions / Info DO Darling Range advise of large number of people on the road in Tilden Park
	1715	Key decisions / Info RoS 2.2 km/h 500 metres spotting. Fire size 15.75 hectares
	1723	Key decisions / Info IC requests urgent media for people not leaving Tilden Park and public not adhering to warnings
	1727	Key decisions / Info Bushfire Technical Services requested for report on potential measures for suppression
	1730	Alerts & Warnings Meeting to determine location of State Cache as ICC at Mundaring Arena <u>EA Campaign: Message:</u> Warning Too Late to Leave Seek shelter and actively defend.
	1733	Alerts & Warnings <u>EA Campaign cloned: Message:</u> Warning Too Late to Leave - Seek shelter and actively defend.
	1800	Key decisions / Info IMT meeting held Multiple reports of fire crews trapped '000' calls for properties under threat 136 appliances on scene – excludes aircraft
	1812	Key decisions / Info Multiple properties reported alight in Tilden Park
	1813	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP, GIDGEGANNUP, WUNDOWIE and WALYUNGA NATIONAL PARK in the SHIRES OF MUNDARING and NORTHAM and the CITY OF SWAN
	1824	Key decisions / Info Shift 1 Incident Action Plan complete
	1830	Section 13 Authorised Person Supt. Metro SE – affected area: Shire of Mundaring and City of Swan – until revoked *Level 3 Incident Controller
	1840	Key decisions / Info Tracking of fire edge with HP from tail of fire to Bailup Road complete north and south
	1849	Key decisions / Info City of Swan representative tasked to move evacuated horses from State Equestrian Centre
	1854	Key decisions / Info IC completes Common Operating Picture to review objectives for night shift
	1858	Key decisions / Info Line Scanner ordered for two-night shift runs –Air Support requested for first light to be forward based
	1900	Key decisions / Info Machinery Manager tasked – BRMO South 156 appliances on scene – excludes aircraft
	1910	Key decisions / Info All Air Support ceased due to last light

Date	Time	Activity
	1913	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Safe to Leave -If the way is clear, leave now SW on Toodyay Rd.
	1917	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP, GIDGEGANNUP, WUNDOWIE and WALYUNGA NATIONAL PARK in the SHIRES OF MUNDARING and NORTHAM and the CITY OF SWAN
	1919	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP, GIDGEGANNUP, WUNDOWIE and WALYUNGA NATIONAL PARK in the SHIRES OF MUNDARING and NORTHAM and the CITY OF SWAN
	1930	Key decisions / Info Police Air Wing ordered for night intelligence
	1930	Key decisions / Info IC tasks Deputy IC 1 to review traffic management plan & liaise with external agencies. Deputy IC 2 tasked to review structure of Operations & develop comms plan out to Bullsbrook
	2000	Key decisions / Info Trigger points Avon River & Gt Northern Hwy - strategic picture 164 appliances on scene – excludes aircraft
	2008	Key decisions / Info Additional 8 Pumps requested for Brigadoon (Avon Ridge) for Asset Protection
	2014	Key decisions / Info Additional 6 Pumps requested for Shady hills for Asset Protection Planning for shutting ARC rail conducted Planning for Emergency Warning for Avon Ridge & Shady Hills conducted
	2022	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP, GIDGEGANNUP, WUNDOWIE and WALYUNGA NATIONAL PARK in the SHIRES OF MUNDARING and NORTHAM and the CITY OF SWAN
	2030	Key decisions / Info ISG meeting completed on site
	2045	Key decisions / Info Telstra escorted to Phone tower within fire area
	2045	Key decisions / Info Air support plan developed for 2/2
	2100	Key decisions / Info 165 appliances on scene – excludes aircraft
	2127	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of WOOROLOO, BAILUP, GIDGEGANNUP, WUNDOWIE and WALYUNGA NATIONAL PARK in the SHIRES OF MUNDARING and NORTHAM and the CITY OF SWAN
	2130	Key decisions / Info Incident Support Group meeting held on MS Teams Telcos advised to immediately action BCP's bring generators to ICC Water Corporation to provide generator to water tower at Brigadoon immediately
	2150	Key decisions / Info Plan to discuss closure of Great Northern Highway discussed with Main Roads
	2200	Key decisions / Info Plan with ARC infrastructure to shut rail line within 1 hour notice. Trigger met for Shady Hills & Brigadoon regards Public Information and resources
	2204	Key decisions / Info IMT Meeting commences
	2205	Key decisions / Info Trigger points approved for fire escalation to the east and northwest.

Date	Time	Activity	
	2223	Alerts & Warnings	<u>EA Campaign: Message:</u> Warning Safe to Leave EW from DFES for shady hills. If the way is clear, leave now.
	2228	Alerts & Warnings	Bushfire EMERGENCY WARNING for parts of BAILUP, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, HOVEA, LOWER CHITTERING, STRATTON, AVON VALLEY NATIONAL PARK, WUNDOWIE, MIDDLE SWAN, RED HILL, JANE BROOK, BELHUS, BASKERVILLE, HERNE HILL, CHIDLOW, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	2230	Key decisions / Info	Trigger points set for threat to Gidgegannup & Bunning Rd areas
	2300	Key decisions / Info	Fire impacting O'Brien Road – trigger point to shut ARC Rail Infrastructure
	2330	Alerts & Warnings	Bushfire EMERGENCY WARNING for parts of BAILUP, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, HOVEA, LOWER CHITTERING, STRATTON, AVON VALLEY NATIONAL PARK, WUNDOWIE, MIDDLE SWAN, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, CHIDLOW, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	2334	Alerts & Warnings	<u>EA Campaign: Message:</u> Warning Too Late to Leave EW from DFES for O'Brien Road. Seek shelter and actively defend.
	2340	Key decisions / Info	Police Airwing report 10 metre flame height and fire spotting 400 metres
	2343	Alerts & Warnings	Bushfire EMERGENCY WARNING for parts of BAILUP, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, HOVEA, LOWER CHITTERING, STRATTON, AVON VALLEY NATIONAL PARK, WUNDOWIE, MIDDLE SWAN, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, CHIDLOW, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	2350	Key decisions / Info	Containment objective set as Tonkin Highway
02/02/2021	0000	Key decisions / Info	Fire 2 kilometres from Avon Ridge
	0031	Alerts & Warnings	<u>EA Campaign: Message:</u> Warning Safe to Leave EW from DFES for Brigadoon. If the way is clear, leave now. Travel west.
	0037	Alerts & Warnings	Bushfire EMERGENCY WARNING for parts of BAILUP, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, LOWER CHITTERING, AVON VALLEY NATIONAL PARK, RED HILL, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0100	Key decisions / Info	Police Airwing advise fire has spotted 3 to 3.5 kilometres over the Avon Ridge into Walyunga National Park Great Northern Highway closed
	0126	Key decisions / Info	Aviation Strategy for shift 2 complete – this includes retardant line building on east side of Avon Ridge Estate and West side of Shady Hills Estate
		Key decisions / Info	Police airwing requested to refuel and return
	0140	Key decisions / Info	IC conducts video recording for media due to severity of incident
	0143	Alerts & Warnings	<u>EA Campaign: Message:</u> Warning Safe to Leave EW from DFES. If the way is clear, leave now travel in a westerly direction.

Date	Time	Activity
	0144	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0155	Key decisions / Info Incident Controller's Intent - not succeeding at stopping fire, protect life & then property. 17 machines (FEL's & dozers at fire, 8 more ordered)
	0245	Key decisions / Info Fire 1.5 kilometre from Great Northern Highway
	0249	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0315	Key decisions / Info Request for second LAT
	0341	Key decisions / Info IC instructs IMT to prepare handover for incoming crews and all IMT to return for second night shift
	0348	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0405	Key decisions / Info IC advised that 80% lost in Tilden Park and many burnt out cars in driveways and carports
	0425	Key decisions / Info Risk Register complete
	0430	Key decisions / Info NBN ready to deliver and instal generators Reserve Rd Tilden Park, Falls Height Rd
	0439	Key decisions / Info IAP for shift 2 complete
	0450	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0500	Key decisions / Info IC does various media live crosses
	0500	Key decisions / Info Incident Support Group Meeting
	0550	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0630	Key decisions / Info IMT Meeting

Date	Time	Activity
	0643	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, WUNDOWIE, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0700	Key decisions / Info IMT handovers commence at Mundaring ICC
	0712	Key decisions / Info Fire jumps Great Northern Highway
	0746	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0800	Key decisions / Info Multi Agency Pre-Formed Team Alpha commences Section 13 Authorised Person Appointment for Supt. Upper Great Southern– affected area: Shire of Mundaring and City of Swan – until revoked
	0838	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	0845	Key decisions / Info The fire is approximately 6929ha burning in a Westerly direction with a perimeter of approximately 88.4km
	0941	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	1015	Key decisions / Info State Recovery Coordination Group established – State Recovery Coordinator appointed
	1030	Key decisions / Info Losses confirmed as 59 residential properties
	1049	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN
	1154	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN

Date	Time	Activity
	1257	Alerts & Warnings Bushfire EMERGENCY WARNING for parts of THE VINES, BAILUP, ELLENBROOK, GIDGEGANNUP, MILLENDON, WALYUNGA NATIONAL PARK, UPPER SWAN, AVELEY, AVON VALLEY NATIONAL PARK, RED HILL, BELHUS, BASKERVILLE, HERNE HILL, BULLSBROOK, WOOROLOO, BRIGADOON in the SHIRES OF MUNDARING, CHITTERING and NORTHAM and the CITY OF SWAN **an additional 105 Emergency Warnings were issued by DFES until 0925hrs on 06/02/2021**
	1500	Community Meeting held at Brown Park Evacuation Centre Emergency Situation Declaration – powers 72 and 72a of Emergency Management Act – “Powers of a Hazard Management Officer”
	1700	Key decisions / Info Second Large Air Tanker arrives from NSW
	1930	Section 13 Authorised Person Appointment for Supt Metro SE – affected area: Shire of Mundaring and City of Swan – until revoked
	2200	Key decisions / Info Losses confirmed as 69 residential properties
03/02/2021	0400	Key decisions / Info Incident Weather Forecast includes predicted strong East South East wind gusts up to 70 kilometres per hour. Significant planning commenced for Shady Hills and Bullsbrook areas including resourcing, mitigation and voluntary evacuations.
	0700	IC Appointments and Declarations Section 13 Authorised Person Appointment for Supt. Upper Great Southern – affected area: Shire of Mundaring and City of Swan – until revoked
	1146	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Safe to Leave EW from DFES for Bullsbrook. If the way is clear, leave in a northerly direction now.
	1315	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Safe to Leave EW from DFES for East of Walyunga National Park. Leave immediately. Exit East.
	1427	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave EW from DFES for East of Walyunga National Park. Seek shelter and actively defend.
	1615	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave EW from DFES for Brigadoon. Seek shelter and actively defend.
	1900	Key decisions / Info Section 13 Authorised Person Appointment for Supt. Metro – affected area: Shire of Mundaring and City of Swan – until revoked
	1930	Key decisions / Info Losses confirmed as 80 residential properties
	2139	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave EW from DFES for Wooroloo. Seek shelter and actively defend.
	2142	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave EW DFES for Wooroloo. Seek shelter and actively defend.
	2300	Third Large Air Tanker from NSW
04/02/2021	0124	Alerts & Warnings <u>EA Campaign: Message:</u> Warning Too Late to Leave EW from DFES for Wooroloo. Seek shelter and actively defend.
	0608	Key decisions / Info USAR RDA preliminary assessments Losses confirmed as 81 residential properties
	0700	IC Appointments and Declarations Section 13 Authorised Person Appointment for Supt. Upper Great Southern – affected area: Shire of Mundaring and City of Swan – until revoked

Date	Time	Activity	
	1320	Key decisions / Info	Request for DACC for use of Pearce and Gin Airfields for refuelling and water reloading
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt Metro. SE – affected area: Shire of Mundaring and City of Swan – until revoked
05/02/2021	0700	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt. Upper Great Southern – affected area: Shire of Mundaring and City of Swan – until revoked
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt. Special Operations – affected area: Shire of Mundaring and City of Swan – until revoked
06/02/2021	0700	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt. Upper Great Southern – affected area: Shire of Mundaring and City of Swan – until revoked
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt. Special Operations – affected area: Shire of Mundaring and City of Swan – until revoked
07/02/2021	0700	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Chief Supt. State Operations – affected area: Shire of Mundaring and City of Swan – until revoked
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Supt. Special Operations – affected area: Shire of Mundaring and City of Swan – until revoked
08/02/2021	0700	IC Appointments and Declarations	Section 13 Authorised Person Appointment for Chief Supt. State Operations – affected area: Shire of Mundaring and City of Swan – until revoked * at 1722hrs this section 13 was reissued to remove Walyunga National Park, Ellen Brook Nature Reserve in the City of Swan These areas are managed by DBCA and will be handed back to them
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for DO Metro SE Rural – affected area: Shire of Mundaring and City of Swan excluding Walyunga National Park, Ellen Brook Nature Reserve – until revoked
09/02/2021	0700	IC Appointments and Declarations	Section 13 Authorised Person Appointment for DO Metro NE Rural – affected area: Shire of Mundaring and City of Swan excluding Walyunga National Park, Ellen Brook Nature Reserve – until revoked
	1900	IC Appointments and Declarations	Section 13 Authorised Person Appointment for three Incident Controllers for period 9 Feb 2021 1900hrs to 11 Feb 2021 0700hrs– affected area: Shire of Mundaring and City of Swan excluding Walyunga National Park, Ellen Brook Nature Reserve

APPENDIX 2 – THE REVIEW TEAM

DAVID NUGENT AFSM, PARKS VICTORIA

David Nugent is the Director Fire, Emergency and Enforcement with Parks Victoria, having worked in various public land management roles in Victoria for over 30 years. David has over 20 years' experience as a Certified Incident Controller across bushfire, floods and other emergencies, including through Victoria's Black Saturday fires in 2009.

His extensive experience spans fire deployments to North America, and conferences in Iran and South Africa.

David is a board member of AFAC (Australasian Fire and Emergency Service Authorities Council), the current Chair of the AIIMS (Australasian Interagency Incident Management System) Steering Group, and has been awarded the Australian Fire Service Medal, the National Emergency Medal and the National Service Medal.

STEVE YORKE AFSM, NSW RURAL FIRE SERVICE

Assistant Commissioner Steve Yorke is currently seconded to the Forestry Corporation NSW and is primarily involved in the implementation of the recommendations from the Royal Commission and NSW Independent Bush Fire Inquiry into the 2019-20 NSW bush fires within the Corporation.

Steve has previously held the positions of the Director, Operational and Mitigation Services, the Director, Response and Coordination, overseeing the State Operations Centre and Regional Manager for the NSW Rural Fire Service. He has had extensive operational and management experience since joining the NSW Rural Fire Service as a salaried Officer in 1999 and has been a volunteer member since 1972.

He has attended and been an active participant in many major fire incidents and other emergencies and has previously overseen NSW RFS State Operations Centre as the State Operations Controller. Ensuring and maintaining a strategic overview of the Service's resourcing, operational activities, and requirements across the state.

Steve has been involved in several AFAC Operational Reviews, including Sampson Flat and Tantanoola fires (SA), Parkerville and Waroona fires (WA), the Darwin Cyclone and Daly River Floods (NT). He has also been deployed as an International Liaison Officer by the National Resource Sharing Centre (AFAC) to Canada.

In recognition of his efforts and service Steve was awarded the NSW Rural Fire Service Commissioner's Commendation for Service in 2001 and was honoured with the Australian Fire Service Medal in 2008.

SUSAN DAVIES

Susan (Sue) Davies is a member of the local Ratepayers Association to keep in touch with local events. In this capacity she was asked to represent Bullsbrook at the bushfire recovery meetings following the Wooroloo fires. Her property was threatened but not directly impacted. She was in the local impact area and locked down for several days.

Sue trained as a nurse at Princess Margaret Hospital Perth from 1964 to 1967. She moved to Canberra with her husband for his work in Commonwealth public service in 1973. Sue did volunteer work with the preschool her children attended and served in various positions on parent associations. She also worked with the YWCA.

Sue returned to WA in 1980 and recommenced work at PMH for the next eight years. In 1988 she and her husband bought a block in Bullsbrook and over the next 18 months built their own house. In 1990 she commenced work in General Practice working at several different practices in Midland. In 1993 Sue was invited to work for a group of doctors setting up a new practice in Forrestfield and subsequently continued to work for one of those doctors who moved to Mt Lawley for a total of 20 years.

Since retiring Sue has maintained a very large garden and pursued an interest in native plants. She has volunteered for the last five years once a week in the Friends of Kings Park Nursery growing plants for their quarterly sales. She has also helped set up a Community Garden in Bullsbrook and serves on the committee as treasurer.

Sue has been married 54 years with 3 children and 6 grandchildren.

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