nous group

Major Incident Review of the Lower Hotham and O'Sullivan fires

Department of Fire and Emergency Services

24 December 2015

Bold ideas | Engaging people | Influential, enduring solutions

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Glossary of acronyms

AFAC	Australasian Fire and Emergency Service Authorities Council
AIIMS	Australasian Inter-Service Incident Management System
CBFCO	Chief Bush Fire Control Officer
COMCEN	Communication Centre (DFES)
DEC	Department of Environment and Conservation
DEMC	District Emergency Management Committee
DFES	Department of Fire and Emergency Services
P&W	Department of Parks and Wildlife
EBA	Enterprise Bargaining Agreement
FES Commissioner	Fire and Emergency Services Commissioner
FESA	Fire and Emergency Services Authority
GIS	Geographic Information System
IAP	Incident Action Plan
IBMC	Interagency Bushfire Management Committee
IC	Incident Controller
IMT	Incident Management Team
ISG	Incident Support Group
LEMC	Local Emergency Management Committee
MIR	Major Incident Review
MOC	Metropolitan Operations Centre
OASG	Operational Area Support Group
ROC	Regional Operations Centre
SEMC	State Emergency Management Committee
SEMP	State Emergency Management Policy
SOC	State Operations Centre
USAR	Urban Search and Rescue
UWA	University of Western Australia
VCP	Vehicle Control Point
WA	Western Australia
WAFES	Western Australian Fire & Emergency Services

1 Executive Summary

The Department of Fire and Emergency Services (DFES) engaged the Nous Group (Nous) to conduct an independent major incident review (MIR) of the Lower Hotham and O'Sullivan bushfires occurring in January and February of 2015. The response to these incidents was jointly managed by DFES, the Department of Parks and Wildlife (P&W) and Local Government resources. This review is designed to identify key lessons learned in relation to how these agencies managed and responded to these incidents, and provide recommendations to improve the response to similar incidents in future.

The South West of Western Australia (WA) experienced a high level of bushfire activity during the 2014/15 season, of which the Lower Hotham and O'Sullivan incidents were the most significant. This reflects a trend of increasing risk of bushfires in the region resulting from climate change, high fuel loads and rising populations in the rural urban interface. In response to this trend, a number of changes to emergency management arrangements have been made to clarify accountability and enable inter-agency approaches. Despite the scale and complexity of the Lower Hotham and O'Sullivan incidents, the resulting losses were relatively few. This reflected aspects of the agencies' response that went well as well as some instances of favourable changes in weather conditions. The scale and complexity of these incidents offers the chance to consider opportunities for improving the effectiveness of the agency response to major fire incidents in the context of the recent and emerging changes in the emergency management landscape. This MIR was focused on the response of DFES, P&W and Local Government to the fires and was informed by desktop review and stakeholder consultation.

The objective of this MIR was to understand the aspects of the incident response that worked well and should be built upon and to highlight any issues that can be improved upon. In particular, the review intended to address:

- the context of the incident
- the effectiveness of the Incident Management Team (IMT)'s decision making and timeliness to coordinate and manage operational activities
- the effectiveness of Command, Control, Coordination and Communication at Incident, Regional and State level
- the effectiveness of relevant legislation, policies, plans, procedures and guides
- the effectiveness of operational vertical communications from the incident ground through all operational levels to the State Operations Centre
- the impact and progress against recommendations of previous MIRs.

The MIR identified three root causes that were the key determinants of any shortfall in the effectiveness of the agency response to the Lower Hotham and O'Sullivan incidents. These were:

- **Differences in the resourcing of the Incident Management Teams (IMTs)**: There were striking differences in the effectiveness of the management and coordination of operations in the response to the Lower Hotham and O'Sullivan incidents. While the response to any major incident creates challenges, the reports of agency personnel and volunteers and a review of key incident documentation indicates that there were some notable gaps in the Lower Hotham response. Many of these gaps were driven by break downs in IMT functions, which occurred due to inadequate resourcing of the IMT. In contrast, the O'Sullivan IMT was well resourced and, as a result, functioned more effectively.

- **Break downs in key systems, processes and policies:** There were a number of instances where key systems, processes and policies broke down. The most important of these break downs were in the deployment and tracking of resources, vertical communication of information and the

application of the traffic management policy. These break downs caused frustrations in operations and sometimes exposed firefighters and communities to higher levels of risk.

- **Differences in culture, expertise and approaches of agencies constraining collaboration:** The response to the Lower Hotham and O'Sullivan incidents was managed by a mix of DFES, P&W and Local Government personnel, including volunteer services. There were many examples of DFES and P&W working well together, particularly where relationships were already established. However, differences in the agencies' culture, expertise and approaches constrained collaboration in some instances. Less than optimal collaboration sometimes impacted the effectiveness of the response to the incidents.

Many recommendations for improving all aspects of managing the fire hazard have been made by previous reviews in WA and in other jurisdictions. Some of these are relevant to the response to the Lower Hotham and O'Sullivan incidents, as has been noted throughout the key findings for recent MIRs. It is apparent from the key findings of the Lower Hotham and O'Sullivan MIR that addressing the root causes of the effectiveness of the response requires a joint effort between agencies, in particular between DFES, P&W and Local Government. The challenge is in identifying the most promising opportunities for agencies to focus their joint effort and then collaborating effectively to implement these opportunities. Collaboration is most likely to be successful where it focuses on a small number of opportunities that will have the greatest impact. With this in mind, the MIR recommends that agencies focus their efforts on three priorities to deliver an improved inter-agency response to future major fire incidents. The three recommendations and their benefits are shown below.

Recommendation 1

Establish multi-agency preformed IMTs
An effective IMT for large and complex fire incidents requires the capacity and expertise of multiple agencies. Establishing multi-agency preformed IMTs will have three main benefits: • adequate IMT resources can be deployed with ease • strong working relationships will be built between IMT members • common approaches to incident management and fire response can be embedded.

Recommendation 2

Clarify the role of the ROC and SOC and their reporting relationships
The ROC and SOC have important coordination roles under the State Emergency Management Arrangements to support both the incident and the broader region and state. Clarifying the role of the ROC and SOC, their reporting relationships, and how the command structures of other agencies are integrated, will have three main benefits: • the ROC and SOC can perform their functions effectively • no inconsistencies, gaps or duplication in the activities of the IMT, ROC and SOC • transparency of incident management

Recommendation 3

Develop an integrated inter-agency resource management system
Large and complex fire incidents require resources from multiple agencies. Developing an integrated inter-agency resource management system will have three main benefits: • identifying potential resources will be more straightforward • the status and location of resource deployments can be tracked • planning of deployments can take into account all relevant information

2 The Lower Hotham and O'Sullivan incidents were significant in their scale and complexity

The 2014/15 bushfire season of the South West of WA covered the largest area of the conservation estate for any season since 1960/61, largely due to the Lower Hotham and O'Sullivan fires.

The weather conditions of the 2014/15 bushfire season and January in particular were characteristic of a trend in recent years that has heightened the risk of fire incidents. For the duration of these fires and the period leading up to them the prevailing weather conditions were dominated by a deep trough off the west coast and an associated high pressure system in the Southern Ocean. This is a common weather pattern for January. It is associated with hot dry weather and potential for thunderstorms east of the trough line. Typically in this pattern a trough will move east within a couple days of formation. In this instance the trough lingered for up to seven days, heightening the risk of both fire ignition and uncontrollable spread.

Rainfall for the whole of January 2015 was below average and the lowest in five years. This is in circumstances that for the whole of the preceding five year period the South West had experienced below average rainfall. In 2014 rainfall for the South West was in its lowest 10% since records began, and in 2010 it was the lowest ever.[1] The diminished rainfall over successive years is likely to have elevated the combustibility of existing fuels.

These conditions fostered numerous fire incidents across the South West in the 2014/15 season. Over the month of January, almost thirty fire incidents lasting for more than a day were flagged as significant in the FES Commissioner's daily report. This included three Level 2 incidents (Bailup, Wannamal and Boonanarring) and two Level 3 incidents (Bullsbrook and Waroona). Seven of these fire incidents remained active when the Lower Hotham and O'Sullivan incidents escalated, including the Level 3 Waroona fire (see Figure 1 below).

Figure 1: Number of significant active fires on each day through January

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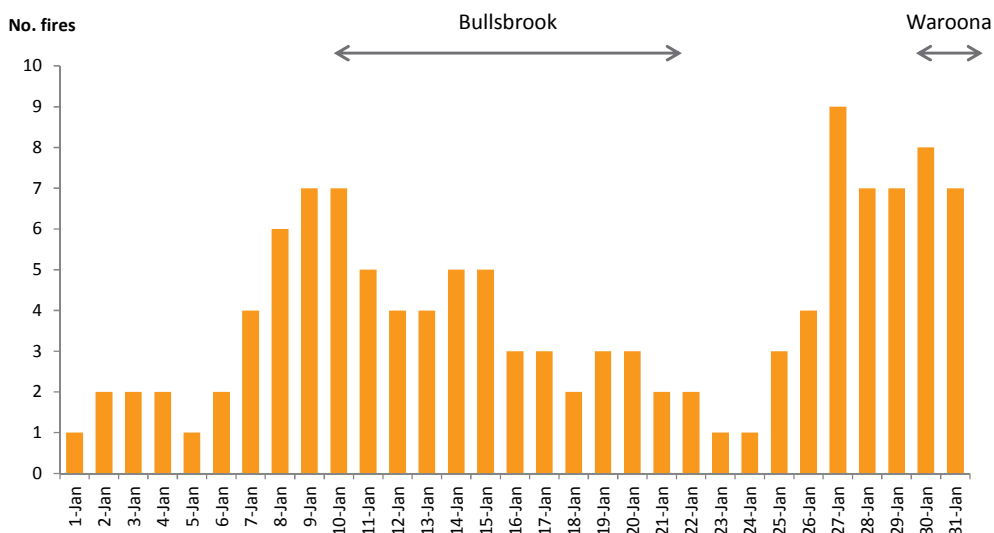
[1] Bureau of Meteorology: Regular Statement January 2015

Current systems do not make it possible to readily identify the total number of resources committed to responding to these incidents on each day. However, the scale of resources required was substantial, with over 60 appliances committed just to the Level 3 Waroona incident on 31 January.

Lower Hotham and O'Sullivan were the most significant of all incidents over the 2014/15 bushfire season, with a total area of approximately 147,000 hectares burnt. Both incidents were escalated to Level 3. The outcome of the response to both incidents was broadly positive. There was no loss of life and minimal property and infrastructure losses. This is a good result given the scale of the incidents, unpredictable fire behaviour and potential for much greater impact. While losses were minimal, the relative scale and complexity of these two incidents provides a useful opportunity to improve the effectiveness of the agency response to future major fire incidents.

For reference, the criteria for the declaration of each incident level are set out in Figure 2 below.

Figure 2: Criteria for incident levels[2]

Level 1	Level 2
A Level 1 incident is broadly defined by meeting one or more of the following typical conditions: • there are no significant issues • there is a single or limited multi agency response (day to day business) • there is minimal impact on the community • the incident can be managed by a Controlling Agency IMT only • there is a low level of complexity.	A Level 2 incident is broadly defined by meeting one or more of the following typical conditions: • requires a multi-agency response • has a protracted duration • requires coordination of multi-agency resources • there is some impact on critical infrastructure • there is a medium level of complexity • there is a medium impact on the community (health, safety, economic, technological or other) • there is potential for the incident to be declared an 'Emergency Situation' • the incident involves multiple hazards.

Level 3

A Level 3 incident is broadly defined by meeting one or more of the following typical conditions:
• requires significant multi agency response
• there is a protracted response duration
• there is significant impact on critical infrastructure
• there is significant coordination of multi-agency resources
• there is a high level of complexity
• there is significant impact on the community (health, safety, economic, technological or other
• there are multiple incident areas
• evacuation and/or relocation of community is required
• there is actual or potential loss of life or multiple, serious injuries
• a declaration of an 'Emergency Situation' or 'State of Emergency' is required

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[2] SEMP 4.1 Incident Management

2.1 Lower Hotham incident

A lightning strike to a marri tree on private property is thought to have started the Lower Hotham fire on 29 January 2015. The initial fire on 29 January was contained by local brigades and remained small. There is no documentation indicating what actions were taken by local brigades to ensure the situation was made safe over 29-31 January. The fire re-ignited on 31 January, when weather conditions became conducive to the fire's rapid spread and the incident was escalated to Level 2. The fire eventually spread to a total of 52,373 hectares. The fire was substantially contained by 6 February. The focus then became continued construction of containment lines, assessment of critical infrastructure and mopping up. The incident was eventually downgraded to Level 1 on 13 February. Although no lives were lost and damage to property was minimal, the surrounding communities were potentially at risk of suffering more severe impacts. At various stages of the incident, life and property in the towns of Boddington, Collie, Williams and Quindanning were considered to be at risk. Timber bridges on major roads, the Worsley Alumina conveyor belt, Collie power station, a telecommunications tower, water pipelines and pumping stations were also identified as critical infrastructure that was at risk of being damaged or destroyed.

This section describes the notable phases of the incident and its impact on the community. The information synthesised in this section is drawn from P&W's report "*Reconstruction of the path and behaviour of the Lower Hotham fire*"[3], the Regional Situation Reports for the incident and information provided through stakeholder consultation. Figure 4 below shows the total area of the fire's impact as it progressed. The data for the area burnt is taken from the regional situational reports.

Figure 3 below shows the approximate progression of the fire shape over time, based on fire shape maps contained in IAPs.

Figure 3: Progression of Lower Hotham fire shape

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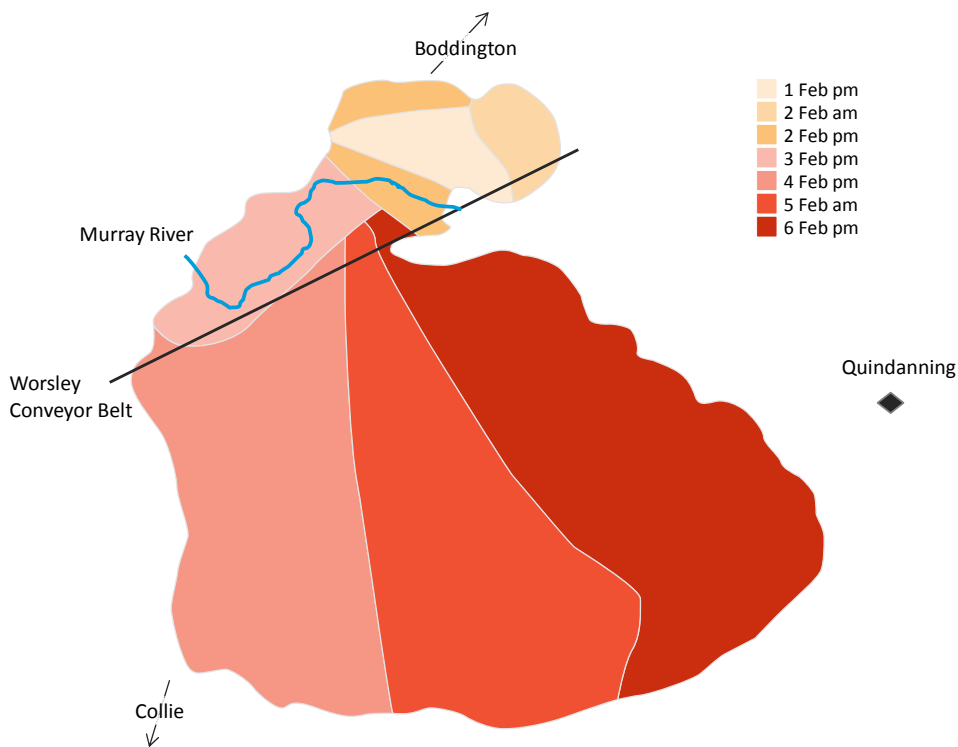
[3] Neil Burrows et al, *Reconstruction of the path and behaviour of the Lower Hotham fire,* (Department of Parks and Wildlife: 2015)

Figure 4: Area burnt during Lower Hotham fire

Watch & Act in place for surrounding area, extended to northern flank	4 - 6 Feb Emergency Warning for Shire of Boddington and Collie, Quindanning under immediate threat on 5 Feb	7 Feb Watch & Act for Shires of Boddington, Collie, Williams	8 Feb Advice for Collie, Boddington and Williams, all alerts downgraded to Advice on 9 Feb
Level 2	**Level 3**		**Level 2**

— Area burned ········ Number of IMT personnel

The fire started on private property on 29 January and was initially contained by the Shire of Boddington Bush Fire Brigade. It is not clear from the available incident documentation what actions were taken after the fire was initially contained. The fire re-ignited on 31 January, when hot dry ESE winds pushed the fire WNW. Once it crossed the Hotham River it advanced quickly up a steep slope through old fuel loads within private property and Lane Poole Reserve. This advance was much quicker than predicted by the Vesta fire behaviour model, perhaps owing to sustained crown fire and mass spotting or wind speed on the fireground being higher than recorded at nearby weather stations. In the evening of 31 January the Boddington Bush Fire Brigade requested that DFES take control. Shortly thereafter the first Section 13 declaration was made and a DFES officer was appointed Incident Controller. DFES personnel continued to assume the Incident Controller role until 12 February.
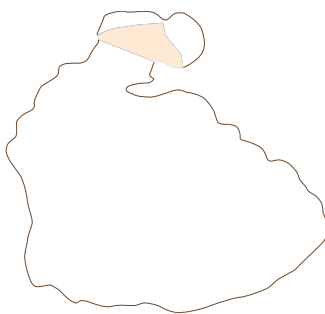
The fire's push west moderated as the topography levelled out. In the afternoon of 1 February the fire crossed a power line into Hakea forest that was subject to a prescribed burn three years prior. The younger fuel stopped the westerly progress of the head fire and there was a low level of activity on the northern flank. The passage of the fire had destroyed farm fencing and a shed. The Boddington town site lost power that night. The nearby telecommunications tower was consequently disabled. There was no internet coverage for the area and very limited mobile reception. Only radio communication was reliable. A Watch and Act warning[4] was

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[4] A Watch and Act warning indicates that "a fire is approaching and conditions are changing, you need to leave or prepare to actively defend to protect you and your family" (DFES website – warning systems)

issued for the northern flank of the fire as four houses along the Hotham River were identified as at risk.
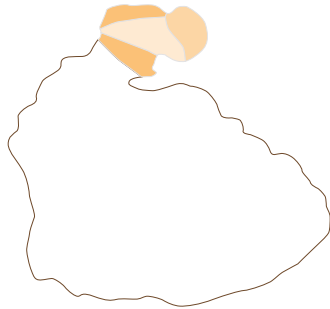
Fighting the fire and accurately tracking its progress was hampered by steep, varying terrain as well as, for the duration of its most active phases, thick smoke obstructing visibility. By the afternoon of 2 February a series of hop-overs on the southern flank had developed into a single front. The fire-fighting effort had prioritised protection of critical infrastructure and containing the fire to the north of Harvey-Quindanning Road. The fire broke its containment lines as it pushed south and jumped the Harvey-Quindanning Road. The road was closed along with the Lower Hotham Road. Watch and Act community warnings were in place over this period.

By the morning of 3 February, efforts to contain the southern advance appeared to have been successful, with the fire remaining within containment lines south of Harvey-Quindanning Road. The focus had been to contain the blaze within the boundaries of Pinjarra/Boddington Roads west of Lower Hotham Road within the Hakea forest. However, the weather made an unfavourable turn in the afternoon with high temperatures and the development of thunderstorm cells and dry gusty NE winds. Under these conditions, the fire advanced south west, jumping the Murray River for the first of a number of times. A major breach of containment lines occurred in the middle of the afternoon of 3 February, most significantly in the SE corner of the fire. The breakout quickly escalated through long unburnt fuels (19 – 40+ years old) and the steep slope on the true left of the Murray River. It reached the Bibbulmun track and by evening the historic Long Gully Bridge was lost to the fire. At this time, the rate of fire advance was greatly in excess of predictive modelling. The reason for the discrepancy is not well understood. It was potentially attributable to fire ground wind speeds, the small scale variability of the topography, the length of the fire front and fuel intensity that caused the fire to become "plume driven".
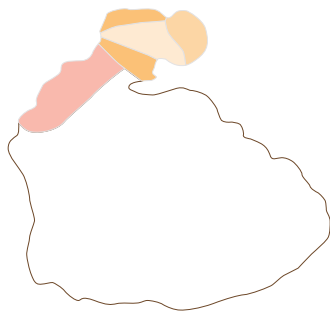
A further change in wind direction was evident by the evening of 3 February, shifting to a NNW wind of moderate strength (10-15km/h). It transformed the 10km southern flank of the 1.5km south west head fire into a 6km southward head fire. There is little reliable information available as to the course of the fire from the morning of 4 February, primarily due to smoke-impaired visibility and challenging terrain. Post incident analysis indicated a significant advance south that progressed at a greater than predicted rate. By late morning on 4 February the wind had changed to westerly, this time turning a 30km eastern flank into a head fire.

In response to the escalating fire, in the early afternoon of 4 February an emergency situation declaration was issued pursuant to the *Emergency Management Act 2005*. Emergency warnings[5] were issued for the southern part of Lower Hotham in the Shire of Boddington. By this stage of the fire one house and two sheds had been lost, along with farm fencing, some livestock, parts of plantations and the Long Gully Bridge. Many smaller roads had also been closed.

The eastern advance over 4 February burnt through younger fuels of 5 – 11 years old generally derived from vegetation types having a lower

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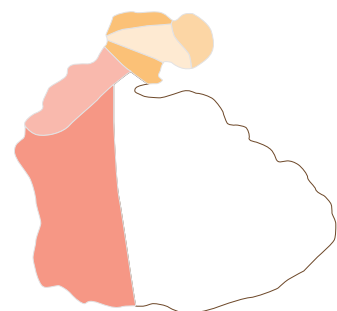
[5] An Emergency Warning indicates that "you are in danger and you need to take immediate action to survive as you will be impacted by fire" (DFES website – warning systems)

hazard rating (lower fuel intensity) than the previous phases. The advance east was slower than the previous phase but still significantly faster than predicted and with a much longer front. The topography during this phase was flatter and less variable.
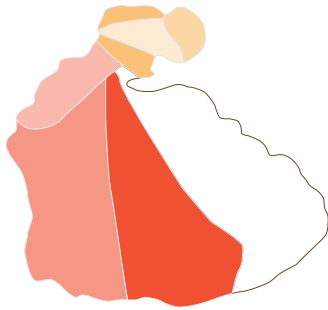
The wind speed dipped overnight on 4 February, but picked up again on the morning of 5 February and throughout the day. This prompted the IC to declare the incident as Level 3 by mid-morning. The eastern continuation of the head fire reached within 3km of Quindanning. The Emergency Warning for the Shire of Boddington remained in place and was extended to the Shire of Collie. Fire prediction models indicated that the Boddington town site could be impacted on the night of 5 February.

The trough off the west coast began to shift east in the afternoon bringing cooler more humid conditions and a gradual wind shift to the south. Community meetings were held on 5 February in Boddington at 10am and again at 5pm. By the night of 5 February the wind had shifted to the south and pushed the fire north, effectively to burn back on itself.

Whilst Emergency Warning were now in place for the southern part of Lower Hotham in the shires of Boddington, Collie and Williams, by the morning of 6 February the immediate threat to towns and major infrastructure had abated. Community meetings were held at 10am and 5pm in Boddington. Fire activity did pick up again in the afternoon, with hop overs occurring on the southern and western boundaries. There were no reports of those hop overs placing assets in immediate danger. As ongoing efforts to strengthen containment lines continued and the hop overs were controlled, the overall level of risk did not escalate. On 7 February warnings for the Shires of Boddington, Collie and Williams were reduced to Watch and Act. As the advance slowed with the easing conditions the affected communities shifted to a phase of recovery. From 7 February to 9 February community meetings were held at 10am in Boddington and 12pm in Quindanning.
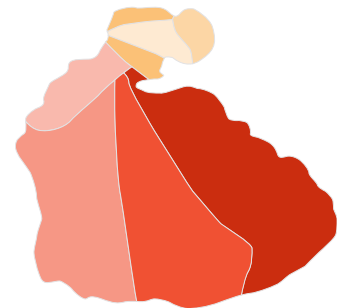
On 8 February crews focused on construction of containment lines on the eastern flanks of the fire. Warning levels were reduced to Advice[6] for the Shires of Boddington, Collie and Williams although a Watch and Act warning remained in place for Quindanning. On the following day, all community warning levels were reduced to Advice. By this stage fire crews had made significant progress in mopping up, reporting that it was 80% complete by the afternoon of 9 February when the fire was downgraded to a Level 2 incident. On 10 February mopping up continued. Priorities became facilitating the recovery process and demobilisation, including aiming to treat all hazards, open all roads and rehabilitate containment lines. The emergency situation declaration was revoked on 11 February and the fire was downgraded to a Level 1 incident on 13 February.

The Lower Hotham fire burnt through an area of 52,373 hectares. Property losses were limited to one house, two sheds, fencing, livestock and the historic Long Gully Bridge. Fortunately, no lives were lost. This does not mean that community members did not experience trauma in circumstances where the fire genuinely threated their safety and the safety of their property.

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[6] An Advice warning indicates that "a fire has started but there is no immediate danger, this is general information to keep you informed and up to date with developments" (DFES website – warning systems)

2.2 O'Sullivan incident

The O'Sullivan fire was first spotted from the air on the morning of 30 January 2015 in Shannon National Park, south of where the park is intersected by the South West Highway. Like the Lower Hotham fire, the O'Sullivan fire was subject to the weather conditions dominated by the deep trough off the west coast of the South West region. Following the severe lightning strikes that occurred on 28 January, 15 fires were ignited of which the O'Sullivan fire was one. In addition to these fires, the P&W Warren region was also managing four fires from other causes and eleven active prescribed burns. The O'Sullivan fire ultimately reached a size of approximately 98,000 hectares. Like the Lower Hotham fire, the O'Sullivan fire also burnt through large areas of high fuel loads.

Figure 5 below shows the approximate progression of the fire shape over time, based on fire shape maps contained in IAPs.

Figure 5: Progression of O'Sullivan fire shape
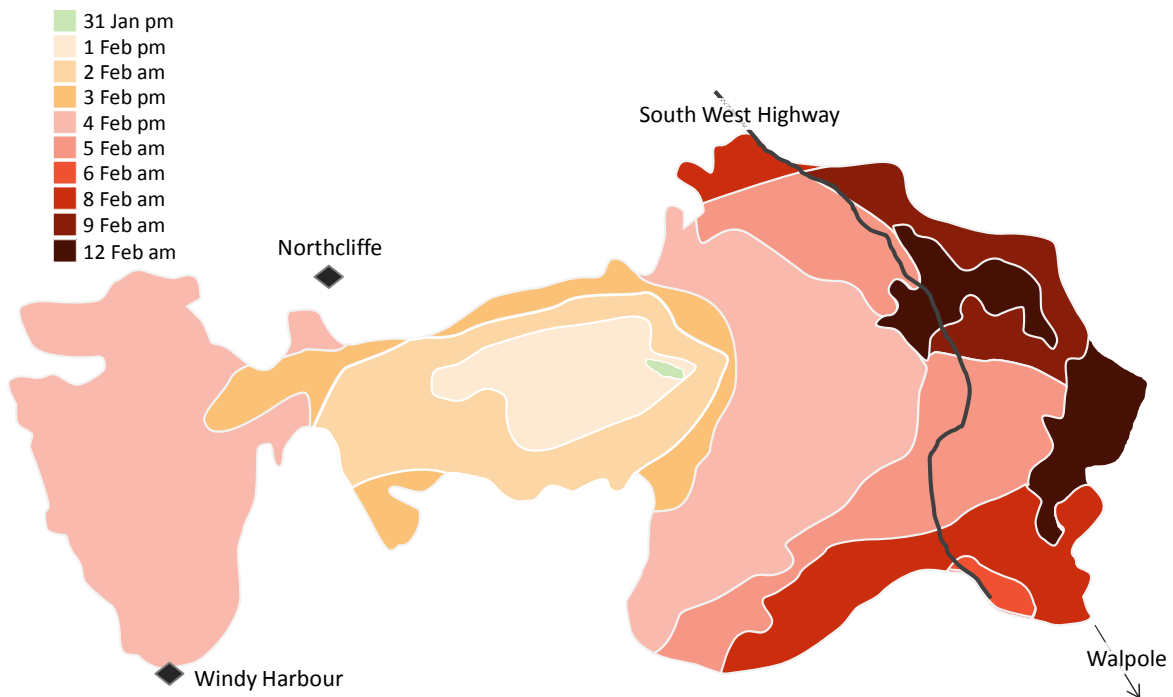
Figure 6 shows the progress of the incident over time, indicates critical points in the development of the incident and the general state of community alert. The information synthesised in this section is drawn from the Regional Situation Reports for the incident, the minutes of the OASG meetings and information provided through stakeholder consultation. Figure 6 below shows the total area of the fire's impact as it progressed. The data for the area burnt is taken from the regional situational reports.

Figure 6: Area burnt during O'Sullivan fire
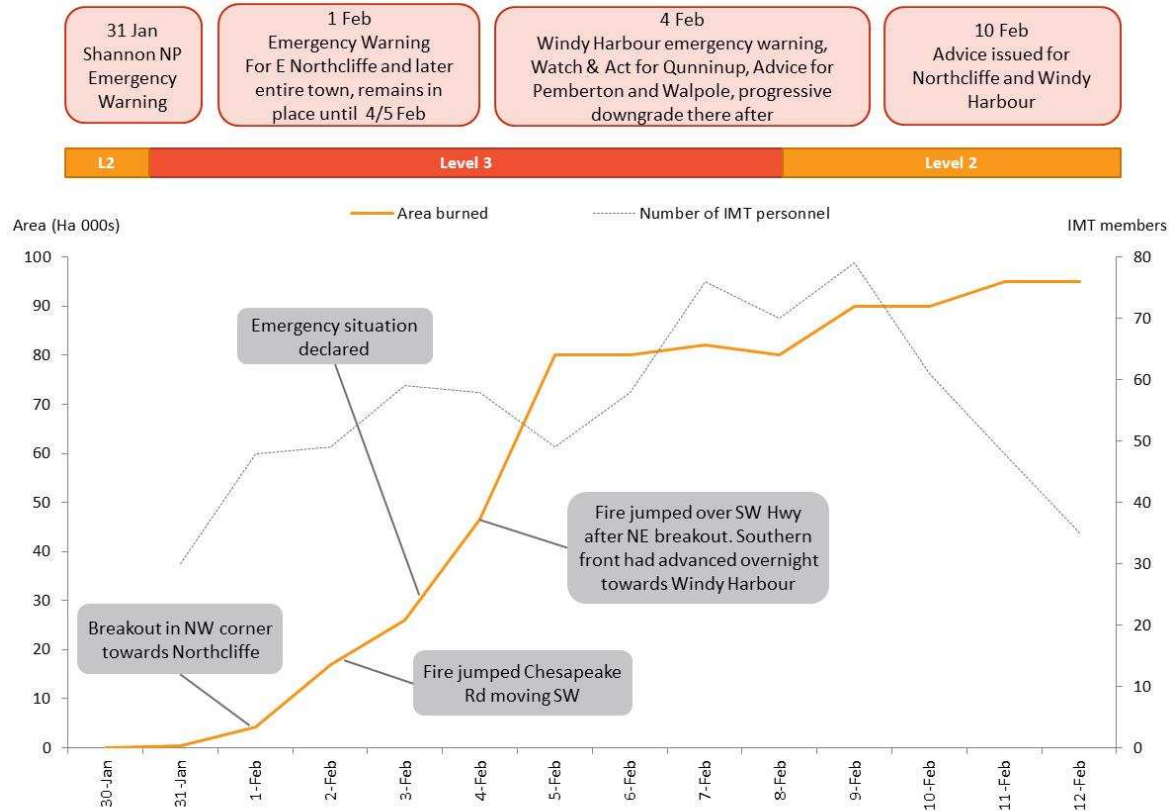
P&W was the first agency to respond to the fire in Shannon National Park. The ignition occurred on a rocky outcrop in the vicinity of 5 year old fuels. Water bombing was successful in containing the initial blaze. The terrestrial resources that responded were diverted to other fires that were burning in older fuels and were judged to pose a greater immediate threat to property and infrastructure. This decision is also likely to have been influenced by the fact that ground crews could not access the fire front until a track could be cleared. An untimely break down of a contract bulldozer on the afternoon of 30 January, which was to be used to clear an access track, hampered the effort to make a direct attack. Later that afternoon the incident was declared as Level 2, as part of a complex of fires in the region. A Level 2 IMT was formed to respond to the complex of fires. The O'Sullivan fire escalated through the course of 31 January and that night the decision was made to declare the incident as a Level 3 incident. Following the escalation to Level 3, control was transferred to DFES under section 13 of the Bushfires Act. P&W continued to provide significant support to the IMT, ground machinery and logistics.

Under the influence of an ESE wind, spotting had contributed to the westward advance of the fire towards Northcliffe. Residents in the area of the national park were issued an Emergency Warning and advised to leave but most elected to stay and defend. The 2012 Babbington fire scar due south offered a valuable potential control barrier to the advance of the fire's southern flank. On 31 January a strategic decision was made to focus direct attack on the northern flank of the fire, reflecting the threat to assets north of the fire. That night the wind changed from ENE to E. The fire crossed Bannister Road and later Muirillup Road North. By midnight the fire was crowning and spotting up to 200m ahead of the main front.
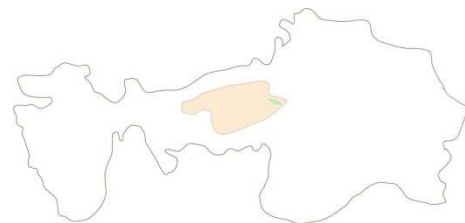
In the early hours of 1 February the wind shifted back to ENE and was picking up in strength as the fire made a series of jumps over the Canterbury River. The wind followed this pattern, staying between NE and E until mid morning on 4 February.

Speeds of 30km an hour with 50km gusts on 2 February induced markedly more severe fire intensity. A breakout from the NW boundary of the fire placed eastern Northcliffe under threat such that an Emergency Warning was issued for the area. Many roads had already been closed and a community meeting was held at 12pm in Northcliffe. The fire spread rapidly in this phase and on 2 February passed south of Northcliffe, crowning with over 40m flames in karri forests. An unoccupied farmhouse, fences and pasture were lost. Police went door to door in Northcliffe advising residents to evacuate.
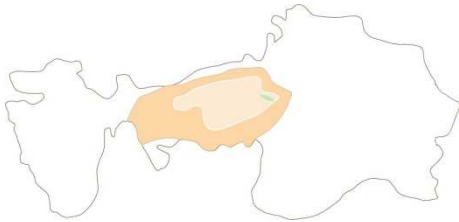
By the afternoon of 2 February the fire jumped Chesapeake Road and continued its advance WSW as crews fought to contain it. At this time there were also reports of a breakout in the NE corner of the fire, heading towards the South West Highway. As in the case of the Lower Hotham fire, the intensity and scale of the O'Sullivan fire appeared to create its own conditions, with behaviour inconsistent with predictions in its most active phases.

The fire crossed Windy Harbour Road overnight, which prompted its closure before daylight broke on 3 February. Telecommunications infrastructure had been damaged but losses remained minimal. Community meetings were held in Pemberton at 12pm every day from 3 February to 7 February. A meeting was also convened in Northcliffe on 3 February at 2pm. On the east side of Windy Harbour Road the advance of the long southern front was halted by the 2012 Babbington fire scar. On the west side of Windy Harbour Road however, the fire continued west and south. On the afternoon of 3 February an emergency situation was declared by DFES under the *Emergency Management Act 2005.*
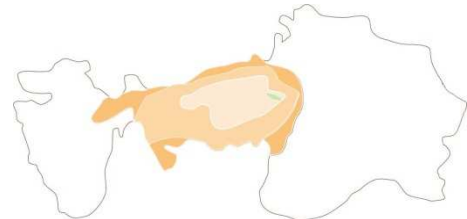
The advance of the fire south placed Windy Harbour under threat. In the early hours of 4 February a Watch and Act warning was issued for Windy Harbour, and by the afternoon this was upgraded to an Emergency Warning. The fire's movement towards Windy Harbour destroyed one unoccupied residential house and a farm shed. The advance of the fire south west also destroyed three dwellings on private property at Malimup Springs. In the morning the wind had changed to NNE and gradually shifted to a SW wind by the evening. Efforts to contain the NW boundary had been moderately successful.

On the opposite side of the fire, the NE breakaway which had begun on 2 February advanced closer to South West Highway on the morning of 4 February and priority was given to protecting the Highway's timber bridges. Soon after, retardant was used on the bridges and the Highway was closed. As the wind shifted SW Pemberton was issued an Advice level warning and the hospital was evacuated. A Watch and Act warning was issued for Quinninup. Walpole was also issued an Advice warning, which was later elevated to Watch and Act in light of the fire making several jumps over the South West Highway. A community meeting in Northcliffe was scheduled for 2pm but cancelled due to an unacceptable risk level. Deployment of Victorian resources commenced on the night shift of 4 February.

In the morning of 5 February the wind had shifted back to NW and favourable weather conditions were forecast for the remainder of the week. The active fire of the previous night around Windy Harbour had been contained. Efforts continued to contain the NE breakout across South West Highway and the

western front of the fire. As the threat was subdued warnings for Windy Harbour and Northcliffe were downgraded to Watch and Act in the evening. 5 February marked the end of the most active phases of the fire. A significant IMT changeover occurred on the day shift of Feb 6, as P&W transitioned from their red team to their green team. However, a joint IMT, comprising DFES, P&W and LG personnel continued throughout the incident. Over the period through to 11 February a further 15,000 hectares would be burnt, some of which consisted of back burning to protect Walpole, pocket burning to protect Windy Harbour and edging to strengthen containment lines. Keeping the community informed of developments remained a priority. The community meeting in Pemberton assisted in fulfilling on that objective and a community meeting was also held in Walpole on 6 February.
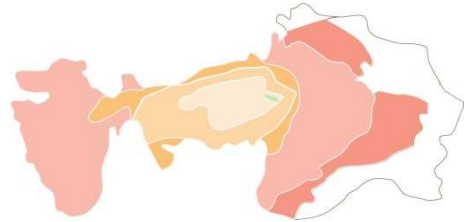
Fire crews dealt with many spot fires and hop overs during this phase, some of which were accessible by air only. Strategic retardant drops were used to ensure the robustness of containment lines. For the most part the fire was held within containment lines.

South West Highway was opened for operational purposes only on 7 February which allowed safety checks to commence, particularly in relation to hazardous trees. With Northcliffe residents that had left the town allowed to return home on 8 February, assessing hazards and opening roads was a priority.

On 9 February the fire was downgraded to a Level 2 incident and it was deemed safe enough to reopen the Northcliffe district high school. On 10 February the Watch and Act in place for Northcliffe, Windy Harbour and Quininnup was downgraded to Advice and the All Clear was given to Walpole and Pemberton as demobilisation of some units began. The subsequent arrival of resources from New South Wales and Queensland assisted with the closing phases of the fire in circumstances where local crews were fatigued and experiencing injury and illness. The fire had been completely contained and controlled by 11 February.
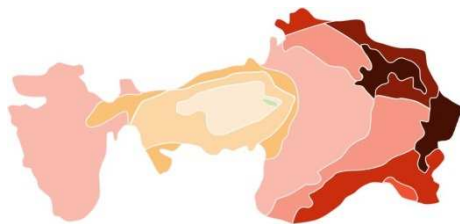
Approximately 98,000 hectares were burnt in the O'Sullivan fire. The fire impacted on forest values, including consolidated areas of productive regrowth in State forest. No lives were lost and property damage was limited to two houses, farm fencing, pasture and livestock. While losses were minimal, the fire had a significant impact on the community. It caused major disruption and placed fire crews, community members and their property at great risk, with the potential for a much more severe impact. In addition to the voluntary evacuation of Northcliffe, evacuation plans were also in place for Pemberton, Walpole and Quinninup, the latter of which was considered undefendable.

3 This is an opportunity to consider the effectiveness of the response to fire in light of changes in the operating context

The operating context for government agencies responding to fire hazards is determined by some factors that are within the control of responsible agencies and some that are not. In recent years fire incidents in the South West of WA have increased in scale and complexity. It is anticipated that this trend will continue. Agencies will likely be required to respond to larger and more complex fires more frequently in the future.

In response to increasing complexity of fire, there have been some significant changes to emergency response legislation and policy. This has changed the operating context in which the agencies respond to major fires. Recent policy and legislative adjustments have been made to provide clearer accountability mechanisms for management of fire incidents. Previous MIRs have also indicated a shift towards a more unified inter-agency approach to emergency management.

The Lower Hotham and O'Sullivan incidents provide a useful opportunity to consider the effectiveness of the response in light of these recent changes in the operating context for emergency management, and identify opportunities for improvement of the response to similar future incidents.

3.1 Major fires in the South West are becoming more frequent and more complex

In part as a result of changes in climate, reductions in prescribed burns and rising populations in the rural-urban interface, there is an elevating risk of major fire incidents in the South West of WA. Figure 7 below shows the area of the South West[7] under P&W's (and its predecessors') management that was subject to bushfires from the season of 1960/61 to 2014/15. While this data is not a precise illustration of the area burnt by fire in the South West, as it only relates to P&W land, it provides an indicative trend.

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[7] South West refers to P&W's South West forest region (Swan, Blackwood and Warren), located west of a line from Lancelin in the north to Mt Barker in the South and then following the Hay River to, Ocean Beach, Wilsons Inlet at Denmark)

Figure 7: Hectares of South West P&W estate subject to bushfire 1961 - 2015
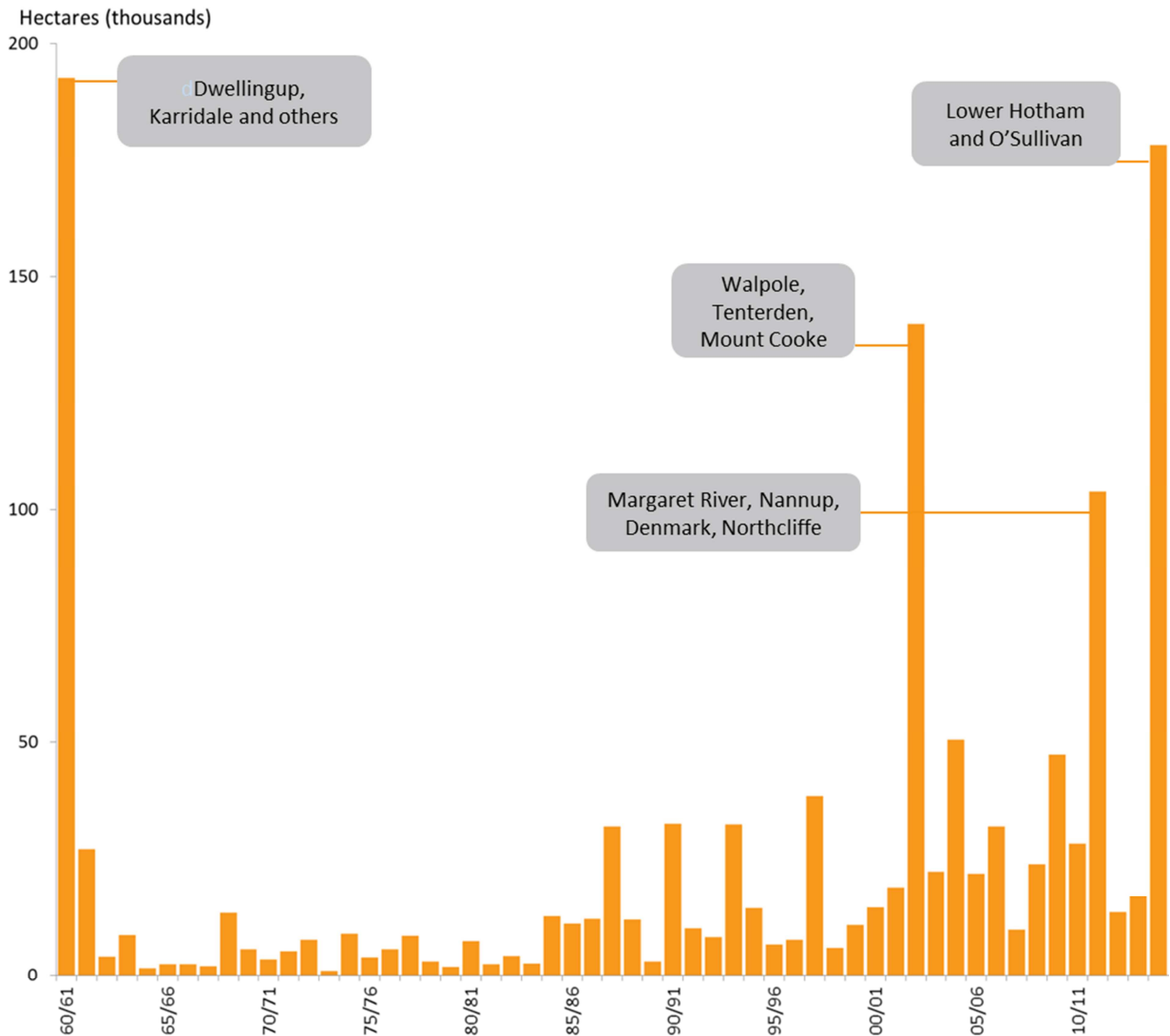
There is an overall trend towards an increasing scale of bushfire incidents in the South West. This may be the result of a number of factors, which are not examined in this MIR. Figure 7 shows an upward trend commencing from around the mid-1980s, becoming more pronounced in the last 13 years. The 1960/61 season featured the biggest scale of bushfires in WA's recent history, including the large Dwellingup and Karridale fires. This led to a Royal Commission and resulted in major changes to fire management practices. Examined on a decade to decade basis the upwards trend over the past 45 years is clear. The yearly average for the bushfires within the P&W estate for the 1970s, '80s, '90s, '00s and '10s (5 seasons to date) are approximately 5,000, 10,000, 17,000, 38,000 and 68,000 hectares respectively.

Figure 7 indicates there is a trend towards increasing scale of bushfires, but it does not fully illustrate the elevated risks that fires are posing to life and property. Recent fires are pertinent examples of this. On the metropolitan urban-rural interface, the Perth Hills fires of 2010/11 and the Parkerville, Stoneville, Mt Helena fire of 2013/14 resulted in the loss of 128 homes. Elevated risks on the urban-rural interface are also faced in growing regional areas, such as in the 2011 Margaret River fires that resulted in the loss of 32 homes and nine chalets. Although no lives were lost in these fires, the impact on the community was

immense. Protecting property and ensuring the safety of urban residents renders the task of responding to such fires more complex.

Climate change is increasing the frequency and scale of bushfires

The influence of climate change is likely to escalate the risks of fire in the South West of WA in coming years. The relationship between climate change and fire is complex. The Climate Council attributes climate change with a high probability of causing:

1. weather conditions that are conducive to the spread of fire once ignited

2. fuels to become drier and more combustible

3. more fire ignitions from lightning strikes.

The above three factors are listed in the order of their influence, with more lighting strikes playing a relatively minor role compared with weather during fire seasons and fuel combustibility.[8]

Broadly, there will be more very hot days with low humidity and high winds during the South West bushfire season as a result of climate change. Since the mid-1970s rainfall in the South West has declined by up to 15%[9], representing the most severe decline in Australia. It has resulted in drier soils and more ignition-prone fuel loads. There is a high degree of confidence that there will be a long-term trend towards longer bushfire seasons with fires that are harder to control due, in part, to climate change.

Climate change is expected to play an increasingly significant and detrimental role.[10] This is consistent with a recommendation of the 2011 Special Inquiry into the Perth Hills fire that the State Government recognise the projected changes in climate and potential impact on future fire events. [11]

High fuel loads in the South West pose a challenge to incident responses

Fuel loads are a key determinant on the incidence and intensity of bushfires. The nature of fuel loads will have a significant impact on the fire behaviour, and thus the potential effectiveness of agency responses to major fire incidents. In the Lower Hotham and O'Sullivan incidents fuel loads played a decisive role in both the rapid escalation and ultimate containment of the fires.

Prescribed burning is recognised as an effective method to manage fuel loads and reduce the size and intensity of bushfires. The 2011 Review of the Perth Hills bushfire noted that "prescribed burning is the most effective preventative measure that can be employed to manage fuel loads and mitigate the impact of bushfires".[11] Reflecting this, it made a number of recommendations to facilitate prescribed burning, in particular a recommendation to resource a comprehensive prescribed burning program in Perth's urban rural interface.

The legal responsibility for prescribed burning is dependent on the underlying tenure of the land affected. P&W, DFES and Local Government fire brigades have both led and participated in prescribed burns. Local Governments are also empowered to direct private land holders minimise fire risk through controlled burns, clearing and other means.[12] Figure 8 below shows the area of the South West[13] under

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[8] Climate Council, *Be Prepared: Climate Change and the Victorian Bushfire Threat*,(2014) p7-8

[9] Climate Council, *Climate Change 2015, Growing Risks, Critical Choices*, (2015) p48

[10] Climate Council, *Climate Change 2015, Growing Risks, Critical Choices*, (2015) p20

[11] Mick Keelty AO, 'A Shared Responsibility: The Report of the Perth Hills Bushfire February 2011 Review', Recommendation 43

[12] *Bush Fires Act 1954,* s33

[13] P&W's South West forest region (Swan, Blackwood and Warren)

P&W's (and its predecessors') management that was subject to prescribed burns from the season of 1960/61 to 2014/15.

Figure 8: Hectares of South West conservation estate subject to prescribed burns 1961 - 2015
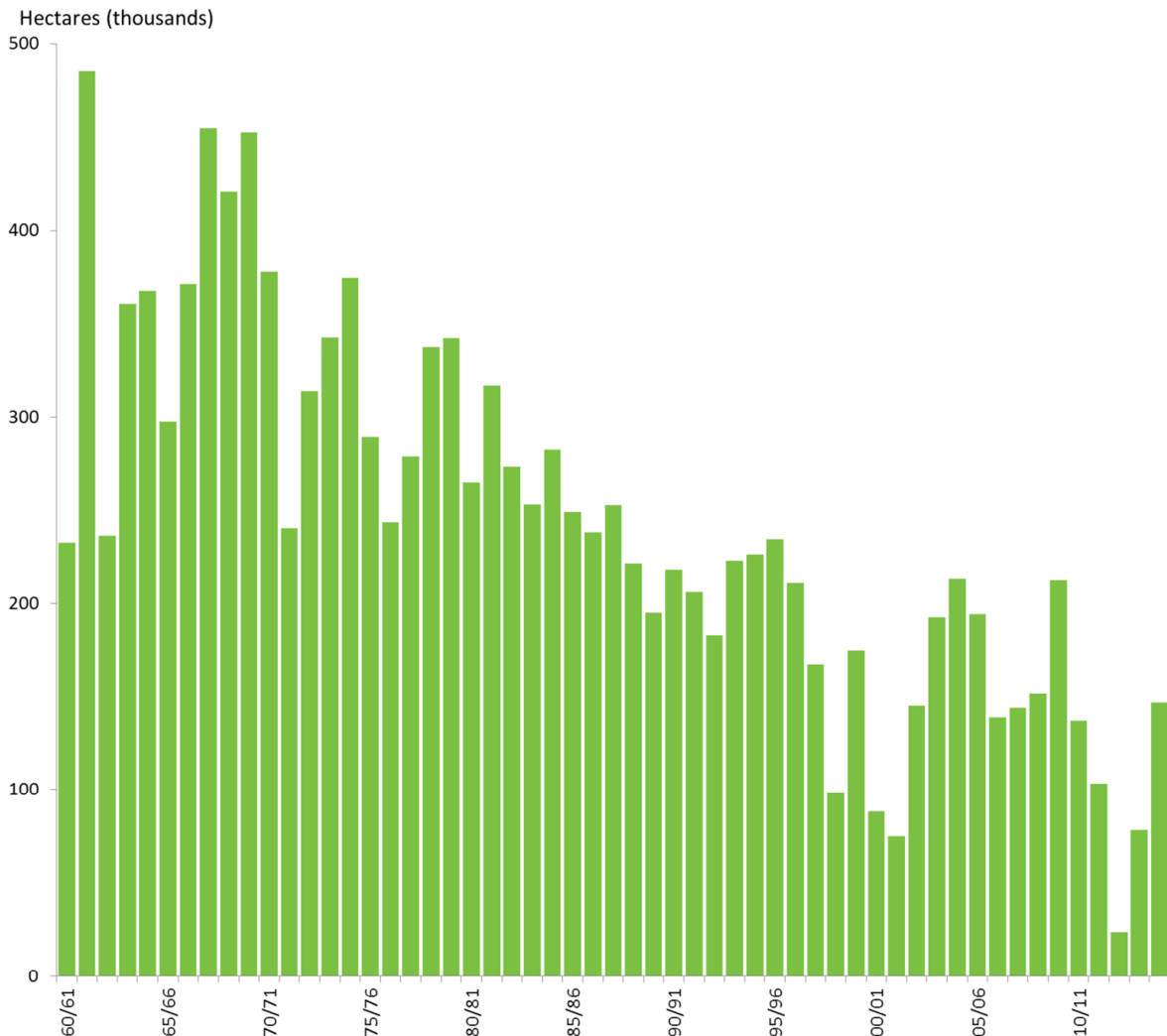
There is a clear downward trend in the area of prescribed burns undertaken over the past 30 to 40 years. P&W's reconstruction of the Lower Hotham fire notes that "for a variety of reasons including climate variability, land use changes, population growth and resource constraints, the prescribed burning program has been falling behind targets since the 1990s".[14] In recognition of the importance of prescribed burning for reducing fuel loads and hence bushfire risk, additional funding of $20 million has been provided to P&W over four years from 2015-16 to expand prescribed burning.[15]

The long term trend towards reduced prescribed burns in the South West is reflected in high fuel ages. This is illustrated by Figure 9 on the following page, which shows fuel ages as at February 2015.[16]

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[14] N. Burrows et al, *Reconstruction of the path and behaviour of the Lower Hotham fire,* (Department of Parks and Wildlife, 2015), p8

[15] Government of WA Media Statements, "Extra $20 million for prescribed burning program", 11 May 2015

[16] Provided by DFES Lower South West

Figure 9: South West fuel age map showing Lower Hotham and O'Sullivan fire area
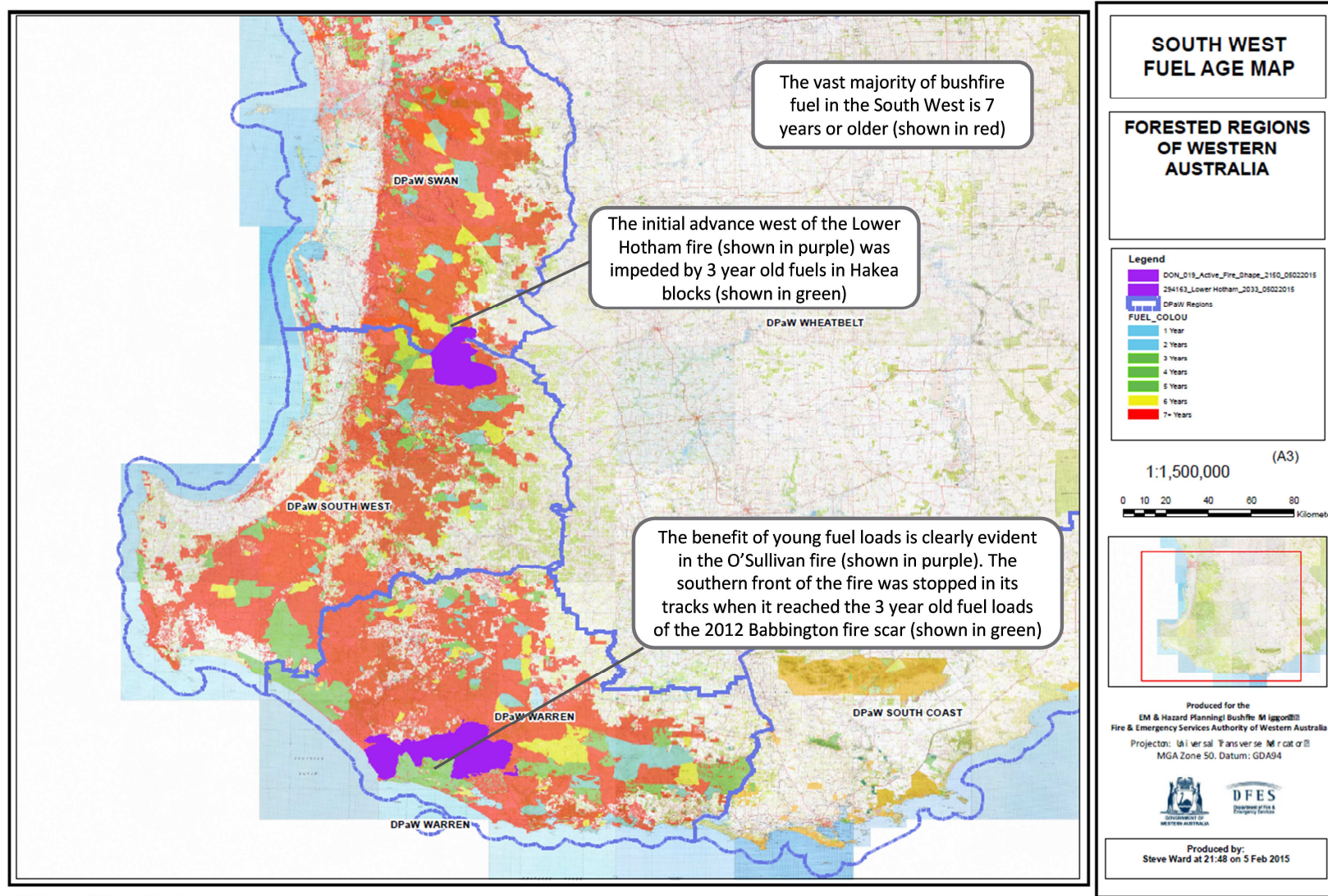
3.2 In response, there have been significant changes made to emergency management arrangements in recent years to clarify accountability and enable inter-agency approaches

The operating environment of the WA fire agencies has shifted over recent years, in part as a response to the greater complexity of major fire incidents. Legislative and policy adjustments that have been made are significant and not yet well settled in agency operating procedures. These changes have been intended to provide clearer accountability and control, and have allocated DFES a greater level of responsibility in the oversight of the management of major fire incidents. There is also a shift towards a more unified inter-agency approach, which has been signalled in the recommendations of previous MIRs.

Recent legislative and policy changes have accorded greater responsibility to DFES in the management of major fires

Clear accountability and control during emergency situations is necessary to ensure the response effort is effectively coordinated and the responsibilities assigned to agencies and their personnel are clear. If no agency is empowered to take control of an incident then the response effort risks being chaotic and less effective, either because there is no command structure or because there are competing command structures. If accountability is unclear the ensuing confusion may result in the performance of key operational roles being either delayed or under-resourced in the face of higher priorities.

The shift towards clearer accountability and control can be discerned from the recommendations of previous MIRs. For example, the Black Cat Creek review made a recommendation that DFES or P&W (depending on land tenure) is mandated to take over control of emergency incidents from Local Government once they have been declared Level 2 incidents, but this recommendation was not supported by Government. To foster the shift towards clearer accountability and control, recent legislative and policy changes have accorded DFES greater powers and an accompanying greater level of responsibility in the oversight of the management of major fire incidents. This includes changes to the State Emergency Management Plan Westplan – Fire (in 2013) and changes to section 13 of the *Bush Fires Act 1954* (in 2002, 2009 and 2012).

Westplan – Fire was most recently updated in August 2013, amalgamating the previously separate Westplan – Bushfire and Westplan – Urban Fire. Westplan – Fire prescribes that all Level 3 incidents will automatically fall under the overall control of the FES Commissioner. This policy change was announced in the Premier's response to the Keelty review of the Margaret River fire, as one of a number of actions extending beyond the recommendations of the Keelty review. It recognises that in the most serious incidents, it is of heightened importance to ensure there is clear accountability and control. Westplan – Fire states that this does not necessarily mean that DFES personnel will assume the role of IC. Westplan – Fire reinforces the FES Commissioner's authority to direct the response effort for a Level 3 incident and is intended to provide a clear protocol for DFES to assume the role of Controlling Agency in certain circumstances. This provision in Westplan – Fire

> **What is a Controlling Agency?**
>
> The Controlling Agency is the agency nominated to control fire-response activities. The Controlling Agency has specific roles and responsibilities under Westplan – Fire and its supporting policies. The effect of the Bush Fires Act 1954 and Westplan Fire is to provide DFES with the greatest scope to determine which agency will be the Controlling Agency, whilst recognising the importance of inter-agency input into such critical considerations.

requires that all personnel involved in the response, particularly those within IMTs, accept this assignment of responsibility to ensure full interagency cooperation and cohesion.

Section 13 of the *Bush Fires Act 1954* enables the FES Commissioner to authorise a bush fire liaison officer or another person to take control of all operations in relation to that fire. The effect of this mechanism is to provide the FES Commissioner with the ability to appoint personnel in the position of Incident Controller (IC). The procedure for making section 13 declarations has been the subject of recent legislative amendments as well as revisions to Westplan – Fire.

Section 13 has been amended four times since 1998. Significantly for present purposes:

- 2002 amendments provided a mechanism for the Fire and Emergency Services Authority (FESA) to take control of a fire at the request of a Local Government authority.

- 2009 amendments, made in part as a response to the findings of the 2006 CDJSC Report,[17] provided FESA with the power to appoint an IC of its own accord if FESA considered it appropriate to do so because of the "nature and extent of the bush fire". The amendments also provided a mechanism for FESA take control of a bush fire burning on conservation land.

- 2012 amendments changed the references to FESA to the FES Commissioner, according responsibility to an individual rather than to the broader organisation.

As a result of the 2009 amendments, section 13 made reference to all three fire agencies for the first time. The current iteration of section 13 requires the various agencies to communicate to determine the most appropriate means of managing the response to fire. However, the amendments have accorded DFES with the greatest responsibility for determining how the response to fire is controlled and managed. DFES is positioned to assess which agency and which personnel are the most appropriate to control the response.

The legislative amendments and particularly the revisions to Westplan – Fire are relatively recent. The 2014/15 bushfire season imposed a stress test on the revised protocols from which valuable lessons can be gleaned to improve emergency management operations.

Although there have been ongoing adjustments to legislation and policies over recent years, more reform is expected in the short to medium term. A key recommendation of a 2006 inquiry into the emergency services acts was to replace the *Fire and Emergency Services Authority 1998*, the *Bush Fires Act 1954* and the *Fire Brigades Act 1942* with one comprehensive emergency services act. DFES and other agencies have travelled a significant distance down the path of implementing these recommendations but they have not yet reached completion. The process is now in its final phase, which is parliamentary drafting. It is anticipated that further changes to the regulatory framework will be made, which will continue the shift towards clearer accountability and clearer mechanisms for transfer of control.

Previous reviews of major fires signal a move towards a unified inter-agency approach to responding to fire

Emergency response arrangements are moving towards a more unified inter-agency approach to responding to fire. Previous MIRs highlight many examples of re-occurring issues that have provided the impetus to move towards a unified inter-agency approach, including:

- ineffective, inconsistent and confusing communication both between the agencies responding to fire and in agency communications with the community

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[17] Community Development and Justice Standing Committee, Inquiry into Fire and Emergency Services Legislation, Report No. 3 in the 37th Parliament, 2006

- agencies following different procedures in declaring incident levels and issuing community warnings

- significant variability in quantity and quality of training programs limiting potential response capability

- a trust deficit between some parts of the agencies.

As a result, previous MIRs have made recommendations to shift towards a more unified inter-agency approach (see

Figure 10 below).[18]

Figure 10: MIR recommendations signalling shifts in emergency response management

Perth Hills 2011	Black Cat Creek 2012	Parkerville 2014
• FESA and DEC finalise their MOU and commit to working in partnership • FESA develop with other agencies a "one source: one message" multi layered system • All fire agencies consult with one another and participate in joint exercises together with WA Police, and the Department for Child Protection • The Interagency Bushfire Management Committee develop a consistent program of education, training and testing of Level 3 Incident Controllers	• Critical operational procedures such as 'Red Flag Warnings', must be consistent across DFES, DEC and Local Government • State wide review to consider locating coordination/support/ control of emergency management across agencies in joint facilities • WA adopts a culture of joint IMTs • Fire agencies adopt a common set of standing orders, operational and training procedures	• Executive Teams of DFES and P&W meet quarterly to agree joint improvements • In addition to regular meetings of the DFES/P&W Interagency Bushfire Management Committee, the two organisations should use joint exercises • All agencies engaged in bushfire response should develop expeditious procedures for the mobilisation of resources in support of other agencies

A unified inter-agency approach calls for individual consistency and collaborative cohesion between the agencies. Individual consistency means, for example, that potential Incident Controllers from each agency receive the same level of training (as recommended by the Perth Hills MIR) and that there are common operational procedures (as recommended by the Black Cat Creek MIR). Collaborative cohesion does not follow from individual consistency alone. It demands that agencies have an awareness and understanding of each other's capabilities and organisational cultures. Joint training initiatives and strategic planning are integral to gaining that understanding (as recommended by the Parkerville MIR). Under current arrangements, fire response agencies collaborate through the Interagency Bushfire Management Committee (IBMC). Through the IBMC, agencies are working towards consistent inter-

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[18] The recent Major Incident Reviews included in this summary include:
- Perth Hills (PH): Mick Keelty AO, 'A Shared Responsibility: The Report of the Perth Hills Bushfire February 2011 Review'
- Black Cat Creek (BC): Leading Emergency Services, 'Major Incident Review for the Black Cat Creek Fire of 2012 in the City of Albany'
- Parkerville Stoneville Mt Helena (PSM): State Emergency Management Committee, Parkerville Stoneville Mt Helena Bushfire Review (2014)

The recommendations of the Keelty Special Inquiry into the Margaret River fire in 2011 focus predominantly on the operations of DEC, with less emphasis on recommendations to move towards a more unified inter-agency approach.

agency approaches, such as joint doctrine. A unified inter-agency approach requires that joint measures agreed through the IBMC are fully implemented by all fire response agencies.

There is potential for a perception of tension between the drive for a unified inter-agency approach and the need for clear accountability and control. Clear accountability and control is suggestive of hierarchy that may undermine efforts to nurture collaboration and collegiality between the agencies. However, these two shifts should be considered to be complementary. As the agencies develop more effective means of collaboration there is a need for that collaboration to be coordinated. Clear command structures enhance the potential of a unified inter-agency approach and ought to make the best use of agency resources. The ability to operate effectively in the context of these fundamental shifts in emergency management is critical to the effectiveness of agencies in responding to fire.

3.3 The Lower Hotham and O'Sullivan incidents provide a useful opportunity to assess the effectiveness of the agency response to fire

Despite the scale and complexity of the Lower Hotham and O'Sullivan incidents, the resulting losses were relatively few. However, the scale and complexity of these two incidents offers the chance to consider opportunities for improving the effectiveness of the response to major fire incidents in the context of the recent and emerging changes in the emergency management landscape.

The MIR was focused on the agency response to the Lower Hotham and O'Sullivan incidents

The objective of this MIR as stated by DFES is to understand the aspects of the incident response that worked well and should be built upon and to highlight any issues that can be improved upon. In particular, the review intended to address:

* the context of the incident

* the effectiveness of the Incident Management Team (IMT)'s decision making and timeliness to coordinate and manage operational activities

* the effectiveness of Command, Control, Coordination and Communication at Incident, Regional and State level

* the effectiveness of relevant legislation, policies, plans, procedures and guides

* the effectiveness of operational vertical communications from the incident ground through all operational levels to the State Operations Centre

* the impact and progress against recommendations of previous MIRs.

There are two main implications of these terms of reference on the scope of this review. Firstly, the review is focused on the response of the combat agencies, in particular DFES, P&W and Local Government. The review did not explicitly consider the community response. Secondly, the review is focused primarily on the response phase of the management of the incidents. There was not an explicit focus on prevention, preparation and recovery.

Alongside this review, the State Emergency Management Committee (SEMC) is conducting a review of the Lower Hotham and O'Sullivan incidents. The SEMC review has three areas of focus, of which one – the effectiveness of operational vertical communications – is also one of the considerations for the DFES review. The findings relating to this will inform this part of the SEMC review.

The MIR used a combination of desktop review and stakeholder consultation

The MIR used a combination of desktop review and stakeholder consultation (including interviews, focus groups and workshops) to inform the findings and recommendations of the review of the agency response to the Lower Hotham and O'Sullivan incidents. The use of multiple data sources provided a comprehensive understanding of the response from which to develop robust findings and recommendations.

The MIR reviewed documents and materials that could usefully inform the MIR of the Lower Hotham and O'Sullivan incidents. This included the following documents:

- Relevant legislation, in particular the *Bushfires Act 1954* and *Emergency Management Act 2005*
- State Emergency Management plans and policies, in particular Westplan – Fire and State Emergency Management Policies
- Departmental specific policies and procedures, including the DFES Western Australian Fire & Emergency Services (WAFES) Manual and Operational Directives and P&W policies
- Incident documentation, such as Incident Action Plans (IAPs) and associated documents, Regional Situation Reports, meeting minutes
- Records and attachments from the WebEOC Information Logs and Request Logs[19]
- Written submissions received from agency personnel and volunteers associated with the response
- Previous MIRs for the Perth Hills, Black Cat Creek, Margaret River and Parkerville fires

The desktop review was partially completed prior to the stakeholder consultation to provide a baseline understanding of the context of the incidents and to guide stakeholder consultation. Areas of interest revealed through stakeholder consultation were then investigated through further desktop review.

Stakeholders to be consulted for the MIR were identified through DFES, P&W and Local Government representatives. The groups of stakeholders consulted included:

- **DFES Executive**: A briefing was provided to the DFES Deputy Commissioners to test the approach and understand the most important areas of focus for the MIR.
- **State Operations Centre (SOC)[20]:** A focus group was held with DFES personnel involved in the SOC and further interviews were held with DFES and P&W personnel involved in the SOC.
- **Regional Operations Centre (ROC)[21]:** A mixture of focus groups and interviews were held with DFES and P&W personnel involved in the Great Southern and Lower South West ROCs.
- **IMT:** A mixture of focus groups and interviews were held with DFES, P&W and Local Government personnel involved in the Lower Hotham and O'Sullivan IMTs.

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[19] WebEOC is a web-enabled system used for incident management by DFES, WA Police and the Department of Health. In 2008, SEMC endorsed the use of WebEOC as the preferred crisis information management system for emergency management agencies in WA. Currently, DFES uses the Information Log, the Request Log, the State Preparedness Board and the Incident Action Plan. WebEOC is used to facilitate vertical communication of situational awareness, operational information and resource requirements between the IMT, ROC/MOC and SOC.

[20] The SOC maintains overall command, control and coordination of resources, maintains an overview of available resources and maintains a strategic overview of the resourcing requirements and incident activity across the state. (WAFES Manual Part Three: State Operations Centre (SOC))

[21] The ROC coordinates operational resources at a regional level (WAFES Manual Part Five: Regional Operations Centre (ROC)). The Lower Hotham incident was coordinated through the Great Southern ROC in Albany. The O'Sullivan incident was coordinated through the Lower South West ROC in Manjimup. .

- **Firefighting response:** A mixture of focus groups and interviews were held with people involved in the firefighting response, including volunteers and volunteer association representatives. Written feedback from volunteers was also provided through volunteer associations and through DFES District Officers.

- **Inter-agency coordination groups:** An opportunity to provide written feedback was given to the All Hazards Liaison Group. A mixture of focus groups and interviews were held with members of Incident Support Groups (ISGs) and Operational Area Support Groups (OASGs).

- **Local government:** A mixture of focus groups and written feedback were used with Local Government representatives.

4 Key finding 1: The difference in IMT resourcing was the most significant factor impacting the effectiveness of the response effort

There were striking differences in the effectiveness of the management and coordination of operations in the response to the Lower Hotham and O'Sullivan incidents. It was consistently reported by agency personnel who had been involved in both incidents that the O'Sullivan response was better managed. Feedback from volunteers deployed to the incidents and from volunteer association representatives was consistently critical of the management and coordination of the Lower Hotham response. In contrast, there was much less critical feedback from volunteers in relation to the management and coordination of the O'Sullivan response.

While the response to any major incident creates challenges, there were some notable gaps in the Lower Hotham response. Some of the most significant impacts of this included a reactive operational response rather than strategic forward planning, an uncoordinated operational response, poor management of crews and appliances and insufficient community engagement. This is reflected in the negative volunteer experience of Lower Hotham.

These impacts were ultimately driven by break downs in IMT functions, which often occurred due to inadequate resourcing. Therefore, a large part of the difference in the effectiveness of the management and coordination of operations between the two incidents can be explained by differences in the resourcing of IMTs. Section 4 explores this by:

- comparing and contrasting the resourcing of the Lower Hotham and O'Sullivan IMTs

- identifying how differences in IMT resourcing impacted the effectiveness of the IMT at both incidents

- identifying how differences in IMT resourcing impacted the effectiveness of other groups involved in the response, including the ROC, SOC and inter-agency coordination groups.

4.1 There were dramatic differences between the two incidents in the resourcing of the Incident Management Teams

There are a number of core functions that must be carried out by the IMT, as specified by the Australasian Inter-Service Incident Management System (AIIMS). AIIMS is designed to be flexible and so it does not specify the level of resourcing required for an IMT or for particular functions.

However, to get a sense of the appropriateness of the resourcing of the IMTs for the two incidents, it is useful to compare the Lower Hotham and O'Sullivan IMTs. Both incidents were significant in scale and complexity, running for a similar length of time and both escalated to Level 3 for a number of days. O'Sullivan was somewhat greater in scale, with a larger area burned and being Level 3 for 9 days compared to 5 days at Lower Hotham.

Evidence of the IMT resourcing demonstrates that the O'Sullivan incident had far more IMT resources in total and in each of the IMT functions compared to the Lower Hotham incident for most of the duration. The Lower Hotham also had less continuity of personnel in key IMT roles, including the IC. Requests for additional IMT resources for Lower Hotham were made, but sufficient resourcing was not in place until the fire was contained and controlled.

It was clear that the concurrent Lower Hotham and O'Sullivan fires put significant pressure on the state's resources. Ultimately, the state did not have sufficient resourcing to manage two large concurrent fires. The O'Sullivan fire was a higher priority for the state, as the potential risks to life and property were assessed to be higher. This in turn drove resourcing priorities, resulting in O'Sullivan having a higher level of resourcing.

AIIMS provides a common framework of the functions that are performed by the IMT

AIIMS provides a common incident management framework for the activities and resources of multiple agencies in responding to an emergency situation.[22] Within AIIMS, there are specified functions that must be performed to manage the incident. These include:

- Control – the management of all activities necessary for the resolution of the incident
- Planning – the development of objectives, strategies and plans for the resolution of an incident
- Intelligence – collecting and analysing data to support decision making and planning (sometimes included in Planning)
- Operations – the tasking and application of resources to achieve resolution of the incident
- Investigations – investigations to determine the cause and contributing factors of an incident (sometimes included in Operations)
- Logistics – the acquisition and provision of human and physical resources, facilities, services and materials to support achievement of the incident objectives
- Finance – managing finances associated with the incident (sometimes included in Logistics)
- Public Information – the provision of warnings, information and Advice to the public and liaison with the media and affected communities.

The IC is accountable for all the functions, but may delegate the management of functions if required due to the size and complexity of the incident. AIIMS is designed to be flexible, allowing the IC to develop a structure that is appropriate to the circumstances of the incident.

The resourcing of the O'Sullivan IMT scaled up much more rapidly than the Lower Hotham IMT

Initially, the O'Sullivan incident was managed as part of a complex of multiple fires in the region, with a single IMT managing all of the incidents. The O'Sullivan incident was escalated to Level 3 on 1 February, based on the potential risk posed by the fire. On 1 February, the IMT on day shift was comprised of 48 personnel. Throughout the period during which O'Sullivan was a Level 3 incident, the IMT day shift had between 48 and 76 people and the IMT night shift had between 18 and 51 people.

P&W were not able to provide many personnel team to support the Lower Hotham IMT initially, as their resources were committed elsewhere, primarily to the O'Sullivan incident. Lower Hotham had an IMT of 10 people on the 1 February day shift, after it was escalated to Level 2. On 5 February, when the incident was escalated to Level 3, the IMT scaled up to 21 people, of which some of the additional resources were from interstate. This is less than half the level of resourcing compared to the first day that O'Sullivan was escalated to Level 3. By 8 February, when the fire was being held within containment lines, the Lower Hotham IMT scaled up again and had a similar level of resourcing to the O'Sullivan IMT.

Figure 11 and Figure 12 below show the level of IMT resourcing for both incidents throughout their duration as Level 2/3 fires.

Figure 11: IMT resourcing of the O'Sullivan incident[23]
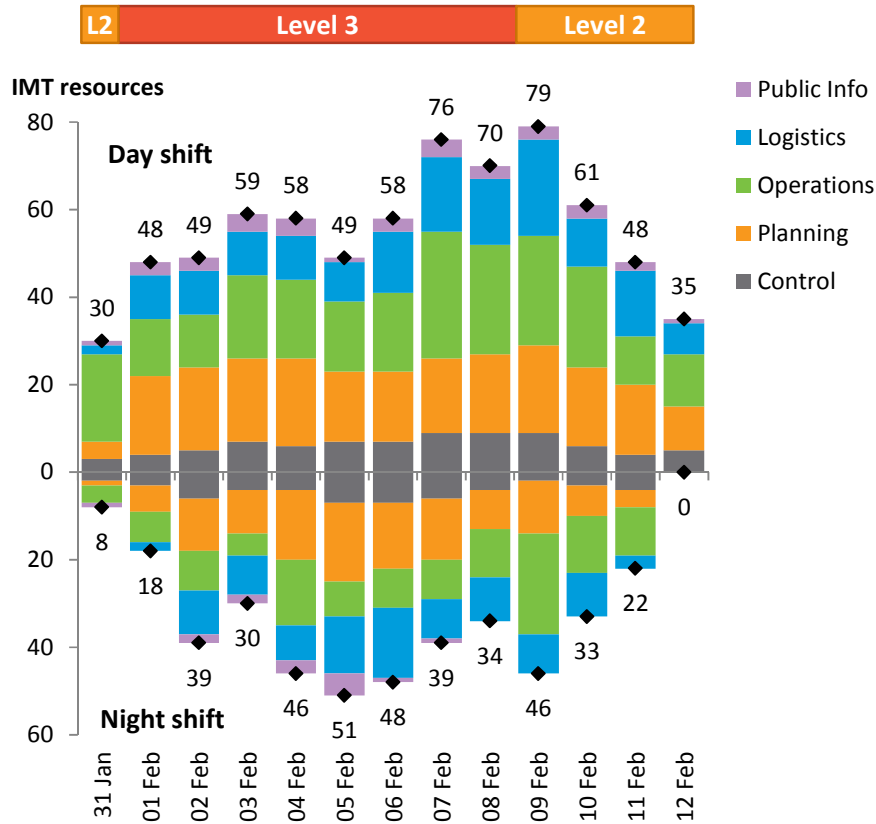
Figure 12: IMT resourcing of the Lower Hotham incident[23]*
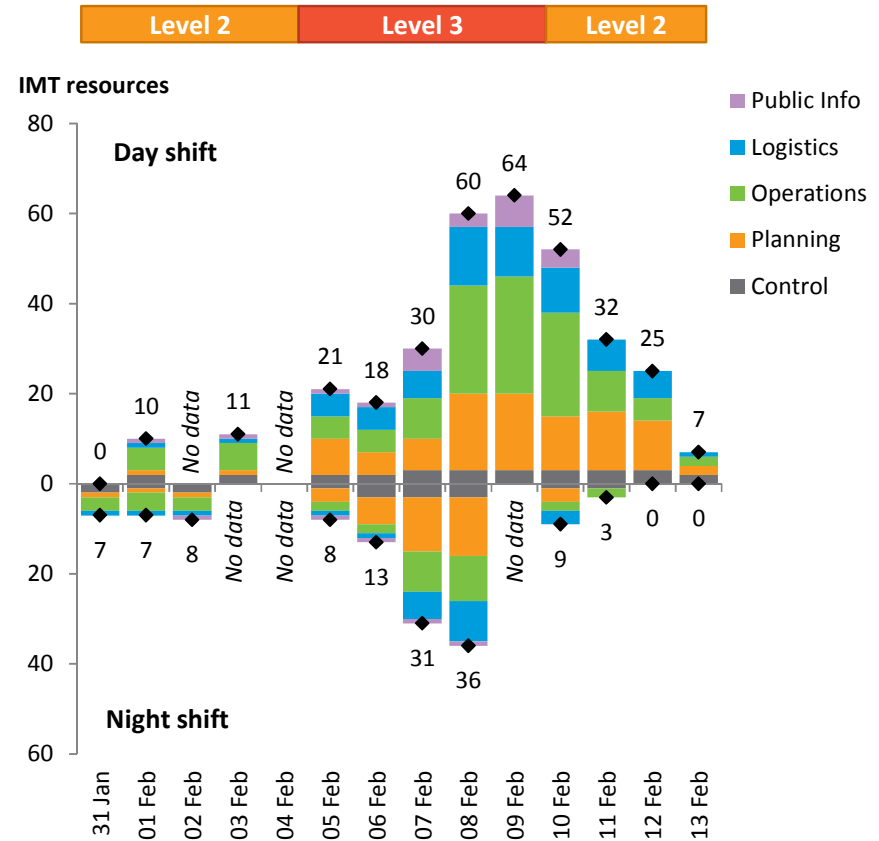
Data on IMT resourcing is not available for the Lower Hotham shifts on 02/02 day shift, 03/02 night shift, 04/02 day shift, 04/02 night shift and 09/02 night shift.

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[23] IMT resourcing based on the organisational structures provided in the IAPs for each incident. Functional categories shown assume that intelligence sits within planning, investigations sits within operations, and finance sits within logistics.

While these fires differed in size and complexity, there was a clear discrepancy in the IMT numbers. The difference between the incidents in how quickly the IMT resourcing scaled up reflects the higher priority given by the state to O'Sullivan, as the potential risks to life and property were higher. One example of this is the redirection of the South West taskforce from Bunbury that was en route to Lower Hotham to O'Sullivan.

Previous MIRs have recommended….

…that whenever a Bush Fires Act 1954 section 13 transfer of control is invoked, the Incident level of an event should also be reviewed and any changes documented (Parkerville).

This previous recommendation was followed at the Lower Hotham incident, where it was relevant. The initial Section 13 declaration for the Lower Hotham incident on 31 January at 19:30 was followed a few hours later by an escalation of the incident from Level 2 to Level 3. For O'Sullivan, the Section 13 declaration was made in line with the requirements of Westplan - Fire when the incident escalated to Level 3.

The Lower Hotham IMT had less continuity of personnel in key IMT roles

There was also a lack of continuity of personnel in key IMT roles at the Lower Hotham incident. This was observed by members of the Lower Hotham IMT and is supported by analysis of continuity in key IMT roles. Figure 13 and Figure 14 show, for each shift, the number of shifts that personnel in each of the key IMT roles had completed in the same role during the incident, prior to each shift. Where there are no prior shifts in role shown, such as the 10 Feb night shift for Lower Hotham, this indicates that all personnel in key IMT roles were completing their first shift at the incident.

Figure 13: Continuity of personnel in key IMT roles – Lower Hotham[24]

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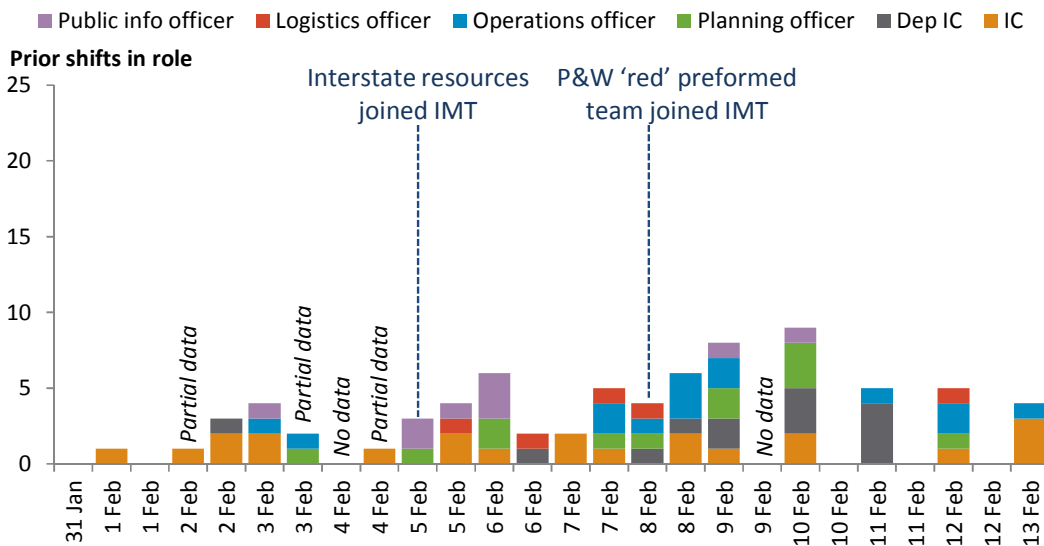
[24] Analysis based on the organisational structures provided in the IAPs for each incident. Where there was more than one person specified in a particular role, the data shown is for the person with the highest number of prior shifts in role.

Figure 14: Continuity of personnel in key IMT roles – O'Sullivan[24]
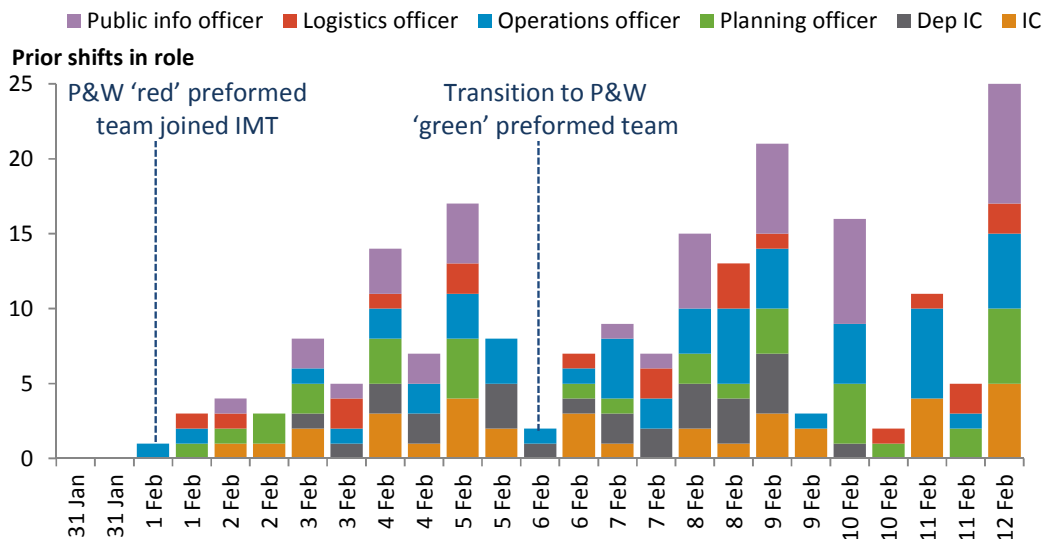
Lower Hotham had less continuity of personnel in key IMT roles than O'Sullivan. At Lower Hotham, it was not until the 6 February day shift where the personnel in the six key IMT roles had collectively completed 5 prior shifts in their roles. Throughout the majority of the incident, personnel in IC roles had only completed a maximum of two prior shifts as IC. In contrast, the IC appointed by the SOC at O'Sullivan on the 1 February day shift, when the incident was raised to Level 3, completed five shifts as IC. The subsequent day shift IC completed six shifts as IC.

This analysis is focused only on the continuity of personnel in key IMT roles, who would have the greatest level of oversight. Frequent turnover of key IMT roles at Lower Hotham resulted in some loss of knowledge of the incident from the IMT and made it more difficult to develop a common operating picture of the situation. Members of the Lower Hotham IMT observed that it would take time for incoming personnel to gain a full appreciation of the incident and to build effective working relationships with other IMT members. This would likely impact on the effectiveness of the IMT over the first shift of changing personnel. Some IMT members also believe that the community may have been more receptive to the information provided through community meetings if they had seen continuity of ICs.

Previous MIRs have recommended….

…that future appointments to the role of Incident Controller should be limited to one for the entire duration of the incident to provide for a single point of responsibility and control for the incident (Parkerville).

The intent of this previous recommendation indicates that the importance of maintaining continuity of key IMT roles, in particular the IC, has been recognised following past incidents. While this recommendation was not supported by DFES or P&W, as it was considered to be impractical, the intent of minimising the number of ICs was supported. Prior to the Lower Hotham incident, resource commitments to other fires, notably the Waroona fire, initially limited the length of time that key IMT personnel could be available at Lower Hotham, due to fatigue issues. In contrast, resourcing availability for the O'Sullivan IMT enabled it to minimise the number of ICs to a greater extent.

The Lower Hotham IMT was not able to increase its resourcing to the level required until the fire was contained and controlled

There are a number of possible explanations for the difference in resourcing of the IMT between the Lower Hotham and O'Sullivan incidents. One contributing factor was multiple prior and concurrent fire

incidents across the South West. Of particular note, there was a fire in the Shire of Waroona in the days immediately prior to Lower Hotham and O'Sullivan, which was a Level 3 incident on 31 January. The Waroona fire required significant firefighting and IMT resources to manage the incident, with over 60 appliances deployed to the incident on 31 January.[25] This resulted in fewer resources being available for other incidents in the state, particularly during the early stages of the Lower Hotham and O'Sullivan incidents. P&W did not have the resources to provide a significant level of support to the Lower Hotham incident initially, as their resources were committed to fires elsewhere in the South West.

Figure 15 below shows the number of resources that could potentially be available across DFES and P&W accredited in key IMT roles. The diamonds show the total number of people accredited in key IMT roles. However, personnel in both agencies are often accredited for multiple roles. The bars show the maximum number of resources that could be available, after ensuring that personnel are only allocated to one role.

Figure 15: Number of personnel across DFES and P&W accredited in key IMT roles*
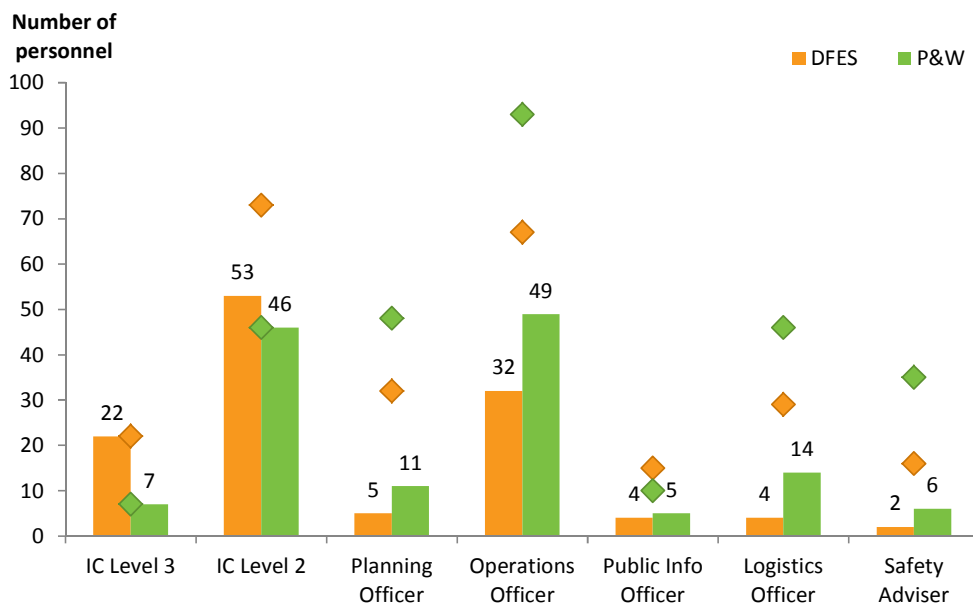
To account for personnel that are accredited in multiple roles, the analysis allocates one role to each person, prioritised in the order IC level 3, IC Level 2, Planning Officer, Operations Officer, Public Information Officer, Logistics Officer, Safety Adviser. For example, a person who is accredited as an IC Level 2 and Operations Officer is counted as an IC Level 2.

This analysis indicates that DFES has more resources for IC roles, and P&W have more resources for other key IMT roles. However, these resources are not necessarily readily available for deployment to a major fire incident. The organisational remit of DFES as a multi-hazard emergency response agency means that its resources are spread across the whole of the state, with resources primarily located in the metro area and a relatively low proportion of its resources in the South West. The organisational remit of P&W as a land management agency means that it has other responsibilities apart from responding to fires on its land, including managing prescribed burns, which limits capacity of its resources. Personnel in both agencies may also have responsibilities at state or regional level that would preclude them from being appointed to the IMT. The number of personnel who are accredited for Level 3 roles is smaller still. For example, of the 11 P&W personnel shown in Figure 15 as being available as Planning Officers, only three are accredited as Level 3 Planning Officers.

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[25] Appliance Attendance List for Waroona as at 1735 on 31/01/15 – uploaded to WebEOC Information Log 4393

Members of the Lower Hotham IMT and Great Southern ROC reported that many requests were made for additional IMT resources through the ROC to the SOC. These resource requests and their resolution are not always clearly identifiable on WebEOC, so it is not possible to document and review all requests made. There is one record on WebEOC of resource requests for IMT personnel for the 1 February day shift being rejected[26], but no clear indications of the outcome of subsequent IMT resource requests made.

Previous MIRs have recommended….

…that (the predecessor of) DFES review its use of the Australasian Interagency Incident Management System to ensure that the most appropriate resources (including aerial resources) are used to respond to an incident. If resources are rejected during an incident either through the decision making process or other grounds, the reason for the decision should be documented (Perth Hills).

The intent of this previous recommendation reflects the fact that decisions on resource deployments need to be clear to all parties. However, there were often not clear indications of the outcomes of resource requests for both the Lower Hotham and O'Sullivan incidents. Where there is a record of a resource request being rejected at Lower Hotham, there is no indication of the reasons for the decision.

One example of a request made in WebEOC for IMT resources is shown in Figure 16 below. This WebEOC record shows a request made for IMT resources on 2 February at 0655hrs.

Figure 16: WebEOC record 4461 of IMT resource requests for Lower Hotham

2015/01/31 BF 294163 Lower Hotham
Request Log Detail
Date Goes here
Time goes here

Priority: High
Status: Closed
Due By: 02/02 1056hrs

—————— Request Details: 3943 ——————

Requested By: jbettesworth

Requestor ROC Management Support Position:

Request Date/Time: 02/02 0655hrs

Assigned To: MOC Planning Officer
Subject/ Title: Proposed Resource Request
Details of Request: Albany ROC - Proposed Resource Request for Lower Hotham IMT.
Attachments:

Attachment

Resources Required for Lower Hotham from IMT.xlsx

—————— Execution Details ——————

Last Updated: 04/02 0324hrs
Completed By: kstanford

—————— Request Log ——————

Request Log 03/02/2015 19:57hrs MOC Logistics Officer (kstanford) : Task Complete - Completed as of tuesday evening/wednesday morning.
02/02/2015 07:57hrs SOC Planning Officer (crsmith) : Task Re-Assigned to - The attached request is seeking 10 x Heavy Appliances for day shift Monday 2/2/15. Are you able to identify any HTs that may be able to travel today to assist, thanks.
02/02/2015 06:57hrs ROC Management Support (jbettesworth) : Request Assigned to SOC Planning Officer -

This request included additional division and sector commanders on the 2 Feb day and night shifts and a full Level 2 IMT from the 3 Feb day shift, as well as a range of appliances for each shift. The request is

—————————————————

[26] WebEOC Information log 4441

marked as completed on the evening of 3 February, with specific mention to one of the requests for appliances but not the IMT resources. The specific resources requested are shown below.

Figure 17: WebEOC record 4461 of IMT resource requests for Lower Hotham - attachment

Proposed Resource Request for Lower Hotham Incident No 294163 for IMT			
Date	Dayshift/Ni	Personnel	Appliance
Monday 2/2/2015	Dayshift	Divisional Commander x 2	Heavy Appliances x 10
		Sector Commander x 2	
Monday 2/2/2015	Nightshift	Divisional Commander x 1	2.4/3.4 Appliances x 8
		Sector Commander x 1	
Tuesday 3/2/2015	Dayshift	Full Level 2 IMT	Dozer x 2
		Divisional Commander x 2	2.4/3.4 Appliances x 14
		Sector Commander x 1	Excavator x 1 with grab head
Tuesday 3/2/2015	Nightshift	IMT Staffing - IC, PIO, Logisitics and Planning	2.4/3.4 Appliances x 6
		Divisional Commander x 2	

The Regional Situation Reports provided by the Great Southern ROC for Lower Hotham indicate that more resources were required and requested by the IMT from the escalation of the incident to Level 2 on 1 February until the downgrading of the incident from Level 3 to Level 2 on 9 February, when the fire was contained and controlled (see Figure 18 below). Over 1 to 4 February, it is clear that these requests were for IMT resources. This supports the reports from the IMT and ROC that requests for more IMT resources were being made and not fulfilled to the extent needed to manage the incident. The IMT scaled up initially on 5 February, with 20 IMT members on the day shift. The IMT scaled up again on 8 February, supported by members of the P&W red preformed team. By this point in the incident the fire behaviour had abated, indicating that resource levels were unable to catch up with requirements until the fire was contained.

Figure 18: Resource requirements noted in Regional Situation Reports for Lower Hotham over the period 1 to 9 February

1 Feb	• *1030hrs:* Resources for night shift IMT have been requested • *2000hrs:* IMT night shift resource request has been fulfilled
2 Feb	• *0700hrs:* Ongoing IMT resource requirements • *1500hrs:* IMT needs additional resources, requests have been submitted and additional request to P&W has been made • *1900hrs:* Need to replace dayshift and nightshift IMTs, not able to supply from region, shortfall expected despite anticipated interstate assistance
3 Feb	• *0600hrs:* No confirmed nightshift IMT replacement from SOC • *1030hrs, 1600hrs, 2000hrs, 2300hrs:* Resource requirements are as per requests made, ground support and admin and finance officers are a priority
4 Feb	• *0600hrs:* Ground support is only 50% resourced currently • *1900hrs:* Ground support resourcing has been met, IMT resource requirements have been submitted to the SOC • *2300hrs:* IMT resource requirements have been submitted to the SOC
5 Feb	• *0600hrs, 1030hrs, 1600hrs, 1800hrs:* Level 3 resource requirements have been submitted to SOC
6 Feb	• *0600hrs, 1030hrs, 1600hrs:* Significant resources requests made to SOC
7 Feb	• *0600hrs, 1000hrs, 1500hrs:* Significant resources requests made to SOC
8 Feb	• *0530hrs, 1000hrs, 1500hrs:* Significant resources requests made to SOC
9 Feb	• *0600hrs:* Resourcing requirements for this incident will reduce significantly in line with the downgrading of the incident to Level 2 on 9 February 0400hrs

While constraints on the capacity of state-wide resources presented a challenge in adequately resourcing the incidents, in particular in scaling up the resourcing of the Lower Hotham IMT, the government response through the SOC was able to mobilise resources on a significant scale. Regional Situation Reports for Lower Hotham from 8 February note that there were over 100 appliances and over 200 personnel at the incident. This included crews from all across WA, as well as resources from interstate. However, while the scale of resources mobilised was significant, the Lower Hotham fire was largely contained by 8 February, when the bulk of resources were in place. Through the jointly run DFES / P&W state air desk, the SOC quickly mobilised air operations to support both incidents, which was reported to have been effective at both fires.

4.2 The difference in IMT resourcing resulted in a less effective response in Lower Hotham than in O'Sullivan for key IMT functions

IMT stakeholders believe that under-resourcing of the IMT at Lower Hotham ultimately resulted in the size and duration of the fire being greater than it would otherwise have been. While it is not possible to substantiate this view, insufficient resourcing of IMT functions relative to the scale of the incident did lead to insufficient capacity in the IMT to fulfil the core requirements under AIIMS for managing the

incident. This had clear consequences on the effectiveness of many aspects of the management of the incident, and is reflected in critical feedback from volunteers of their experience of the Lower Hotham response. In contrast, the O'Sullivan IMT had a higher level of resourcing and, as a result, was more effective in managing and coordinating the response to the fire. While the number of resources is a key driver of the IMT's ability to fulfil its functions, the capability of those resources is also important. However, assessing the capability of individuals on the IMT would be subjective, and even a highly capable team would require a sufficient level of resourcing to be effective. This section analyses the differences between the Lower Hotham and O'Sullivan IMTs in resourcing of the planning, logistics and public information functions, and the impacts of this on the effectiveness of the response.

Fewer people on the Lower Hotham IMT meant that the full scope of some AIIMS functions were not able to be fulfilled

The IMT must be resourced sufficiently to carry out the scope of activities required under each function to enable an effective response to the incident. This may require establishing units within functional sections and delegating responsibility. For Lower Hotham, the resourcing of the IMT did not enable the full scope of some functions to be undertaken.

The AIIMS framework is designed so that the IMT can be scaled up to reflect the size, complexity and work demands of the incident, and so it does not provide guidance on the number of resources needed for different types or levels of incident.[22] However, Westplan – Fire does specify that a Level 2 IMT must include a Public Information Officer, and a Level 3 IMT must include a Deputy IC, Safety Advisor and Public Information Officer. Lower Hotham did not have sufficient resourcing to fulfil these requirements. A Safety Advisor was not in place until the 7 February day shift, two days after the incident was declared as Level 3 on 5 February at 0600.

The Lower Hotham Planning function had fewer resources than at O'Sullivan, resulting in less useful IAPs and a more reactive rather than strategic response

The AIIMS structure specifies five sub-functions within Planning (including Intelligence):

Figure 19: The scope of the Planning function under AIIMS

Planning

Intelligence
- provides intelligence to support decision-making and planning
- collection and evaluation of situation information
- developing modelling and predictions
- providing technical advice
- developing maps

Plans
- develops, documents and communicates the Incident Action Plan and develops supporting plans
- works will intelligence to develop alternative strategies
- undertakes planning based on intelligence and risk assessments

Resources
- establishes and maintains a Resource Management System for the tracking of resources
- planning for successful changeover and demobilisation

Communications planning
- develops and monitors the Communications Plan using technical advice and support from Logistics

Management support
- provides administrative services, document management and operators for communications equipment

Lower Hotham only had one IMT member in Planning over the first 5 days that it was a Level 2 incident. On the 5 February day shift, when the incident was escalated to Level 3, there were 8 people in Planning. In contrast, the O'Sullivan IMT had 18 Planning personnel on its first day shift as a Level 3 incident on 1 February (see Figure 20 below).

Figure 20: Comparison of IMT resources in Planning between Lower Hotham and O'Sullivan
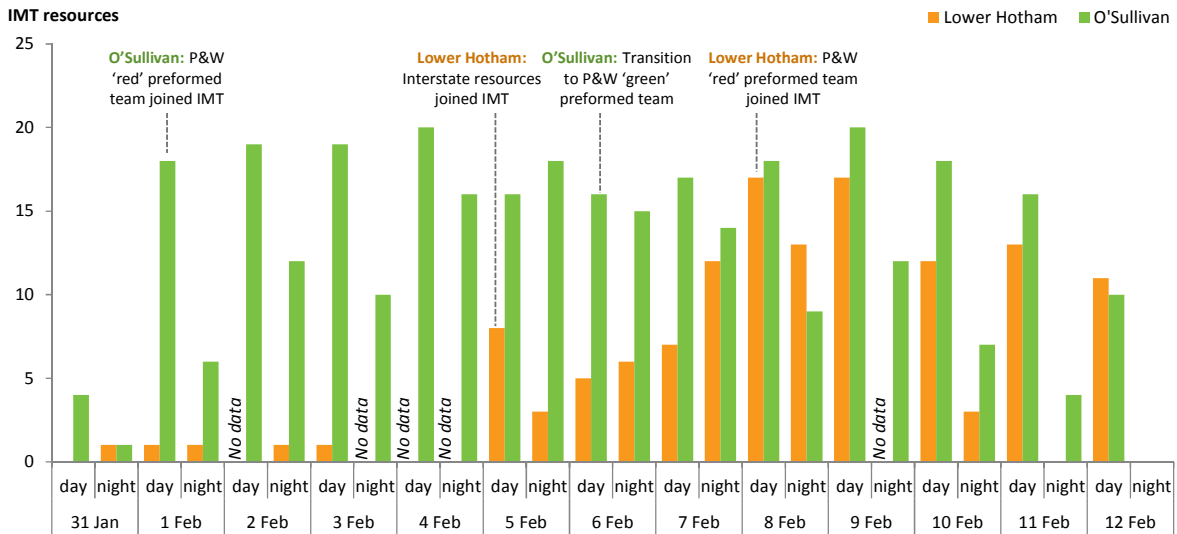
The difference in Planning resources is reflected in the extent to which the core planning functions were undertaken, in particular the development of plans based on intelligence of the current and forecast situation and the dissemination of plans to the fireground. Members of the Lower Hotham IMT reported that there were insufficient planning resources in the early days of the incident to be able to undertake predictive modelling, mapping and planning for longer term strategy and resources.

All of the O'Sullivan IAPs contained detailed operational instructions in sector and division plans and fire behaviour predictions.[27] However, the Lower Hotham IAPs were sometimes lacking in detail, particularly in the critical days of the incident over the period from the 1 February night shift until the 6 February night shift (see Figure 21). There were no fire behaviour predictions contained in the IAPs between the 1 February night shift and 5 February day shift. However, fire predictions would have been available to the IMT through the SOC. Operational instructions in the IAPs in the form of division and sector plans were intermittent until the 7 February day shift.

Previous MIRs have recommended…

…that (the predecessor of) DFES develop formal procedures for mandating the completion of Incident Action Plans, ensuring the documents are detailed and that they record critical decision making. (Perth Hills).

This previous recommendation highlights the importance of ensuring that detailed response planning is taking place and is being captured to inform all parts of the fire response. All formats of IAPs used at the Lower Hotham and O'Sullivan incidents included a form that specified the mandatory content* to be included in the IAP depending on its level, and required the IAP to indicate whether the content was included. This form was used, but at Lower Hotham the mandatory content was not always included. Analysis of the resourcing of the Lower Hotham and O'Sullivan IMTs suggests that this may be a result of inadequate resourcing to complete planning to the required detail, rather than a lack of formal procedures for completing IAPs.

*Mandatory content (as specified in the WebEOC IAP) Level 2-3 incidents includes fire behaviour predictions, operations summary, medical plan, weather forecast, operations overview map, situation analysis values and objectives, and strategic analysis. There are some differences between the WebEOC

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[27] IAPs and associated documentation for O'Sullivan

IAP and toolbox IAP as to what content is defined as mandatory.

Figure 21: Lower Hotham Planning staff and IAP detail over the first 14 shifts[28]

Shift	Planning staff	Incident objectives	Operational instructions (division and sector plans)	Fire behaviour predictions	Attached maps	Developed in WebEOC
31 Jan night	1	✓		✓		
1 Feb day	1	✓	South A, B	✓		
1 Feb night	1	✓	North			
2 Feb day	No info	✓				✓
2 Feb night	1	✓	North, South		✓	
3 Feb day	1	✓	North, South		✓	
3 Feb night	No info	✓				
4 Feb day	No info	✓	East, North, South			✓
4 Feb night	No info	✓				✓
5 Feb day	8	✓	East, North, South, West	✓		✓
5 Feb night	3	✓	East, North, South, West			✓
6 Feb day	5	✓				✓
6 Feb night	6	✓		✓	✓	✓
7 Feb day	6	From this shift onwards, IAPs include incident objectives, fire behaviour predictions, detailed division/sector plans and maps				

The lack of operational instructions in the form of division and sector plans in many of the early Lower Hotham IAPs means that there were several shifts where division commanders would not have had clear objectives documented for the shift. This is consistent with the experience of members of the Lower Hotham IMT, with reports of division commanders developing their own plans in the absence of any clear direction from IAPs. As a result, there was a risk that operations in individual divisions on the ground were not aligned to the broader strategy for the incident, and as a consequence were not optimal or could even put crews in other divisions at risk. On one shift for which there are no division plans, the 2 February day shift, the fire escaped containment and took a run to the south. While there are likely to be many factors that contributed to the fire escaping containment, having division plans in place may have reduced the risk of this occurring. The impact of insufficient operational instructions was exacerbated by inadequate or absent maps, which was an issue that many IMT members and volunteers raised. This made it even harder to effectively undertake fireground operations.

Another aspect of insufficient detail contained in IAPs is unclear instructions on the use of radio channels, leading to less effective communications on the ground. Volunteers reported issues with radio communications, in particular lack of clarity on the channels to be used. The division plan will normally specify the channel to be used in a division or sector for command and on the ground tactical communications. Inconsistency of division plans in the early days may therefore have contributed to lack of clarity on radio communications.

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[28] IAP and associated planning documentation for Lower Hotham

Developing a comprehensive IAP that cascaded down to division plans would have been particularly important after the incident escalated to Level 2, as Local Government brigades were already responding to the incident. Local brigades will often be the first responders to fires occurring outside of gazetted fire districts and P&W land. Once an incident is escalated, the structures of the IMT should bring together all operations into a cohesive response. However, in the case of Lower Hotham, insufficient detail of operational instructions in IAPs may have contributed to reports of local Boddington Shire brigades continuing to operate semi-independently in the early shifts of the incident. There were also reports of Shire of Williams volunteers acting semi-independently, supported by feedback from the Shire of Williams that notes poor communication between IMT and the Williams CBFCO. One manifestation of semi-independent operations of local bushfire brigades that was observed by volunteers was that local brigades used different radio channels to the rest of the incident operations. The channels used by local brigades were more appropriate to the terrain, but this knowledge was not integrated into the IMT. The presence of semi-independent operations of parts of the response is inconsistent with the AIIMS structure, and could have been avoided if local brigade personnel had been directly involved in functional roles within the IMT.

A case study illustrating the most significant instance of semi-independent operations at Lower Hotham is illustrated below.

'Semi-independent' operations at Lower Hotham from the P&W Collie office

Personnel from both DFES and P&W referred to the 'semi-independent' operations of crews operating under the direction of the P&W Collie office.

The P&W Collie office had received limited information from the IMT about how the Lower Hotham fire was being managed and its potential impact. They had not received any requests for resources to support the incident. They had limited success in trying to contact the IMT directly.

The P&W Collie office and the local Shire anticipated that the fire had the potential to head into the Collie region. Reflecting this, local members of the LEMC met on 4 February. In response to limited communication with the IMT, indicating that the risk on the southern front was not being mitigated, the P&W Collie office deployed crews consisting of P&W personnel, local brigade volunteers and timber industry personnel to the southern flank of the fire.

P&W Collie attempted to maintain contact with the IMT. On 4 Feb contact was made advising planned operations via SMS to the IMT Planning Officer and to the ROC P&W Liaison Officer, who in turn informed the IMT Resources Manager and the DFES RDC and OAM. However, attempts to contact the IMT were not always successful, and IMT members report being unaware of the P&W Collie crew initially.

Evidence of semi-independent operations is provided by separate sector plans for the P&W Collie crews that are not incorporated into the IAPs. Sector plans for the 5 Feb night shift were uploaded to WebEOC on 5 February at 23:15 by the ROC. These are not incorporated into the equivalent shift IAPs.

| 5190 | 2015/01/31 BF 294163 Lower Hotham | 05/02/2015 23:15:31 | Lower Hotham Fire Incident 294163 - DPAW Organisation Structure and Division Sector Plan

Lower Hotham Fire Incident 294163 - DPAW Organisation Structure and Division Sector Plan attached.

DPAW Organisational Structure with Division Sector Plan.pdf |

The P&W Collie crew provided additional firefighting resources to the response to the fire on the SW flank. However, semi-independent operations, such as this initial response from Collie, have the potential for significant risks to crews and operations, as the IC and IMT did not have full knowledge of the resources on the fireground and the strategies being undertaken. While a risk assessment was made and mitigation strategies were put in place, the safety of crews was at greater risk than if a coordinated response through the IMT had been possible.

By the end of the incident, the 'semi-independent' operations had been integrated into the IMT, reporting through to the Operations Officer.

The example above demonstrates one manifestation of an uncoordinated response to the fire. This reflects the absence of comprehensive planning of operations across the entire potential spread of the fire, and also the lack of an integrated resource management system, which would have helped to identify available local resources. It also reveals complexities caused by differing DFES and P&W boundaries: Collie is in different DFES and P&W regions to Boddington, where the fire started. As a result, it took longer to establish the incident area and operational area structures under the state arrangements, which impacted on effective two way communications between key stakeholders from different agencies.

Fire behaviour modelling and predictions was another aspect of Planning that does not appear to have been effectively assessed over the first days of the Lower Hotham fire at the incident level, due to insufficient resourcing. A 24 hour fire simulation was produced by P&W for 1 February and incorporated into the IAP. Fire behaviour modelling was undertaken by the SOC and attached to WebEOC on 2 February (marked as for attention of the ROC) and 4 February (not marked for attention) but there is no indication that these were incorporated into IAPs or that predictions were used by the IMT to inform planning. Fire predictions were included in the Lower Hotham IAPs from 5 February onwards.

Without having effectively undertaken or assessed fire predictions, it would have been difficult for the IMT to anticipate the likely impact of the fire. This is consistent with comments from many stakeholders from DFES and P&W that the potential scale of the Lower Hotham fire was underestimated in the early days of the incident. In contrast, the first IMT shift after DFES took control under Section 13, being the night shift of 31 January, did contain fire behaviour predictions and at this stage a significant fire size was anticipated. The corresponding Regional Situation Report on 31 January at 2200 notes that due to a "lack of obvious containment lines… a very significant fire size [is] predicted". While fire behaviour modelling and predictions should have assisted the IMT to anticipate the scale of the fire, there would still have been limitations due to the unpredictable fire behaviour.

Together with limited resourcing in IMT, not referencing fire behaviour predictions made it difficult for the IMT to develop and put in place pre-emptive strategies. Again, this is consistent with the observations of IMT members and operational personnel that operational decisions were reactive rather than forward looking and strategic. One aspect of this is that critical infrastructure assessments were not made in the early days of the incident. Critical infrastructure was identified early on in the incident. On 31 January the ROC discussed risk to critical infrastructure with Western Power and the Worsley refinery and on 2 February the IMT provided maps for infrastructure assessments to the MOC.[29] However, there was not the capacity within Planning to integrate this into strategies, with no critical infrastructure strategies documented until 6 February.[30]

Previous MIRs have recommended….

…that (the predecessors of) DFES and P&W ensure that their Incident Controllers identify critical infrastructure as part of their initial assessment and preparation of Incident Action Plans when attending major incidents. (Perth Hills)

This previous recommendation reflects the importance of identifying critical infrastructure, assessing the impact, and developing strategies accordingly. Critical infrastructure was identified by the IMTs at both incidents. However, in the case of Lower Hotham there was insufficient capacity in the IMT to develop assessments of critical infrastructure and mitigating strategies until one day after the incident was escalated to Level 3.

Another potential consequence of the IMT being unable to adequately anticipate the likely impact of the fire is the decision not to escalate the Lower Hotham incident to Level 3 on the morning of 4 February. Over the previous day the fire had escaped containment lines and spread rapidly to the south west, crossing the Murray River and doubling in size to 8000 hectares. A Bushfire Emergency Warning was made for the southern part of Lower Hotham in the Shire of Boddington early on the morning of 4 February.[31] An Emergency Situation Declaration was then made later in the day for the Shires of Boddington, Collie, Williams and Waroona in relation to the Lower Hotham fire at 2pm.[32]

The minutes of the 4 February 0830 IMT meeting noted:

> " DPaW pressing for Level 3 but still at L2 – not enough resources to support a L3 and doesn't meet all the criteria "

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[29] WebEOC Information Logs 4400, 4402, 4711, 4716

[30] A critical infrastructure protection strategy was developed by the ROC on 6 February 0500. Further strategies were developed by the IMT on 8 February – a Critical Infrastructure Strategies and Trigger Points document (WebEOC information Log 5509).

[31] Regional Situation Report 4 February 0600hrs

[32] Emergency Situation Declaration accessed on WebEOC Information Log 4982

This indicates that the IC judged an escalation of the incident to Level 3 as not being appropriate at this time, based on a combination of known resource constraints and an assessment of the potential scale and impact of the fire. Predicting the potential scale of the fire was difficult, given that the fire behaviour was unpredictable and not anticipated by the fire models. The incident was raised to Level 3 the next day, at 0600 on 5 February.[33] While the impact of the decision not to raise the incident to Level 3 is uncertain, it is possible that escalating the incident would have resulted in additional deployment of IMT resources that could have assisted to reduce the extent of the fire spread over 4 and 5 February.

While resource constraints in the Planning function at Lower Hotham challenged the ability of the IMT to undertake forward planning, risk assessments of the rural-urban interface were made. RUI assessments were undertaken for Quindanning on 3 February (uploaded to WebEOC on 8 February), Boddington and Williams on 5 February (uploaded to WebEOC on 5 February and Collie on 5 February (passed on to the Collie volunteer Fire & Rescue Service captain).[34] Similarly at the O'Sullivan incident, the Urban Search and Rescue (USAR) team were deployed to Northcliffe to assess for structural fire defence after fire behaviour predictions, referred to in the IAP on the 1 Feb day shift, noted that if the fire was not contained it could impact on Northcliffe.[35]

Differences in the resourcing for logistics resulted in better management of crews and appliances at the O'Sullivan incident compared to Lower Hotham

The O'Sullivan IMT had a much larger logistics function than the Lower Hotham IMT. At Lower Hotham, there was only one IMT person in Logistics over the period 1 to 4 February. However, by 4 February there were over 40 appliances and over 100 personnel, including crews from across WA and from Victoria.[36] It is likely that a Logistics team of one person would not have sufficient capacity to manage and support the logistics for this scale of resources. As a consequence, the units that sit within Logistics, including supply, communications support, facilities, ground support, medical services, catering and finance may not have been completely fulfilled. Even when the Lower Hotham incident was escalated to Level 3, on the 5 February day shift, there were only five people in Logistics. In contrast, the O'Sullivan IMT had 10 people in Logistics from its first day shift as a Level 3 incident on 1 February (see Figure 22 below). It is not clear from the incident documentation whether the Logistics function of five people was considered sufficient by the IMT at that time. The size of the Logistics function did increase again to 13 people on the 8 February day shift, which suggests that more resources were required. By this point in the incident, the fire behaviour had abated.

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[33] Incident Level Declaration accessed on WebEOC Information Log 5078

[34] WebEOC Lower Hotham Information Logs 5189 and 5549

[35] IAPs for the 1 Feb day shift and 1 Feb night shift

[36] Regional Situation Report 4 February 1900hrs

Figure 22: Comparison of IMT resourcing in Logistics between Lower Hotham and O'Sullivan

IMT resources

Legend: Lower Hotham (orange), O'Sullivan (green)

Annotations on chart:
- O'Sullivan: P&W 'red' preformed team joined IMT
- Lower Hotham: Interstate resources joined IMT
- O'Sullivan: Transition to P&W 'green' preformed team
- Lower Hotham: P&W 'red' preformed team joined IMT

X-axis (day/night for each date): 31 Jan, 1 Feb, 2 Feb, 3 Feb, 4 Feb, 5 Feb, 6 Feb, 7 Feb, 8 Feb, 9 Feb, 10 Feb, 11 Feb, 12 Feb
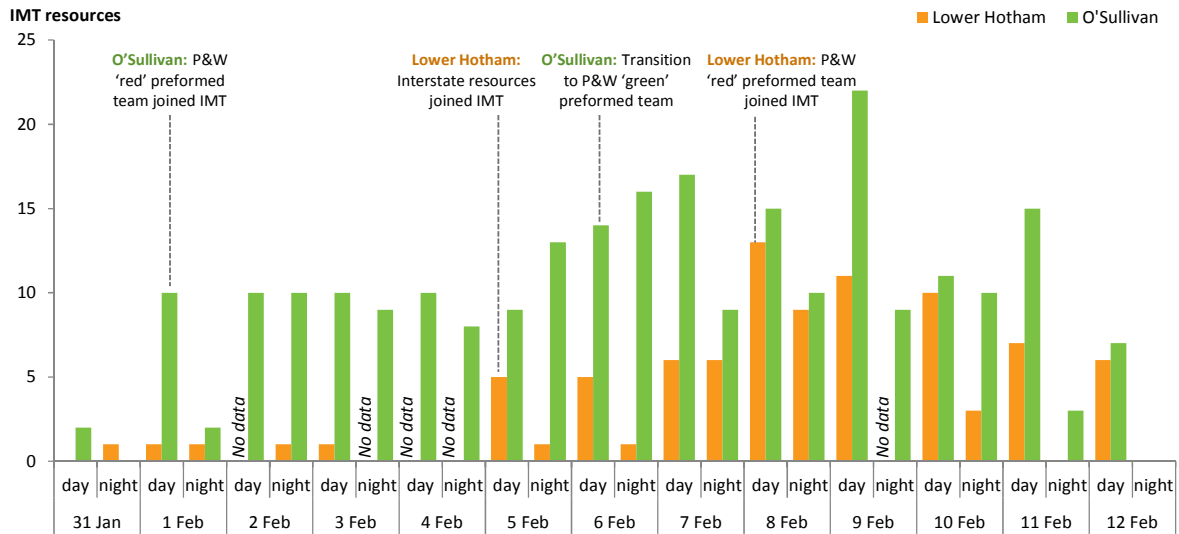
The relatively low level of resourcing at Lower Hotham for logistics clearly had a negative impact on the management of crews and appliances. Volunteers deployed to Lower Hotham consistently noted issues relating to logistics, in particular issues with catering. There were many reports of logistical issues with catering, including incorrect numbers of meals (too many and too little) and incorrect delivery of meals, resulting in crews missing meals. However, there were was generally positive feedback on the quality and coordination of accommodation (at the Boddington mine site).

The majority of feedback received for the MIR concerning volunteer logistics related to the Lower Hotham incident. In contrast, the O'Sullivan incident was notable in the relative absence of any feedback on volunteer logistics, suggesting that there were no significant issues. One local bushfire brigade captain at O'Sullivan commented that "logistics was brilliant". A better resourced logistics function meant that personnel and appliances were better supported, and therefore more effective, in their operations. This also meant that volunteers were more likely to feel valued, which is reflected in the difference in feedback from volunteers from O'Sullivan compared to Lower Hotham.

In response to insufficient resourcing for logistics, some groups at Lower Hotham started organising their own logistics, in particular for catering. This appeared to be the case for some volunteer crews and some P&W crews. While this ensured that the affected crews were provided for, it meant there were different logistics arrangements in different parts of the fireground, and may have exacerbated issues with identifying logistics requirements at the IMT.

While not part of the remit of the Logistics function, there were also issues with briefings and tasking that were consistently reported by volunteers in relation to Lower Hotham, and contributed to the negative experience of volunteers. Crews were not always provided with briefings, including information on the fire behaviour, weather conditions, fireground operations, maps and geographical information, and welfare provisions for volunteers. There were also consistent reports of crews waiting several hours to have tasks assigned to them, which caused frustration and impacted the morale of volunteers.

The volunteer experience of the Lower Hotham incident is discussed further below. These examples appear to have been the experience of volunteers throughout the duration of the incident.

The volunteer experience

The experience of volunteers for the Lower Hotham fire was challenging and frustrating. Typical experiences reported by volunteers included:

Arriving at the control point but waiting several hours to be tasked, which was **frustrating** for volunteers	Arriving at the control point and finding that the control point was not aware of incoming crews, resulting in delays for tasking and logistics, which caused **frustration**

Arriving at the fireground in the dark and being deployed onto unfamiliar terrain, which was **challenging** for volunteers and potentially **put them at risk**	Inadequate briefings on the tasks that crews would do, resulting n crews being **frustrated** and **confused**	Not being provided with adequate maps and directions, which sometimes **put volunteers at risk** with crews sometimes getting lost on the fireground
Arriving at the fireground after a full day of work and being immediately deployed onto a shift, which caused **fatigue management** issues	Very long shifts being undertaken by crews, which caused **fatigue management** issues	Crews missing meals as a result of shift changeovers not matching up with meal provision, causing **frustration** and **welfare** issues

Being deployed on to a sector and finding that the sector commander was not aware of incoming crews, resulting in the crews not being tasked, which was **frustrating** for volunteers	Operational command appearing to not value the experience brought by volunteers, which was **frustrating** for volunteers

Ultimately, the challenging and frustrating experience of volunteers at the Lower Hotham fire impacted on morale, with strong feedback that **volunteers did not feel valued**.

Positive feedback was received in relation to the role of volunteer liaison officers dedicated to ensuring volunteers are looked after and providing a conduit for information flow between crews and the IMT.

IMT resources dedicated to the staging area would also support the effective management of crews and appliances. AIIMS defines the staging area manager as being responsible for receiving and managing resources deploying onto and off the incident operations area. The staging area manager is required to establish briefing procedures, liaise with Planning for information to be included in briefings, liaise with logistics regarding catering, welfare, facilities and ground support.[37] Lower Hotham did not have any IMT resources assigned to the staging area until the 10 February day shift.[38] The lack of dedicated staging area resources is therefore likely to be a key contributing factor to the experiences of crews in receiving inadequate briefings, information and tasking.

While the O'Sullivan IMT was better resourced overall, there was no dedicated staging area officer or manager for the majority of the duration of the incident, similar to Lower Hotham. Members of the IMT believe that this contributed to a delay in setting up the staging area properly, with some separation between DFES and P&W at the control point over the first few days. The staging area was not properly set up until part way through the incident. This had a negative impact on the experience of volunteers. There was confusion over where volunteers should go to get resourced, leading to under-utilisation of volunteer resources. However, volunteers did note that their experience of the staging area was markedly improved after a Volunteer Liaison Officer was in place.

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[37] Australasian Fire and Emergency Service Authorities Council 2013, AIIMS Aide-memoire for Staging Area Manager
[38] IAP for 10 February day shift and preceding IAP organisational structures

The absence of a dedicated staging area manager at O'Sullivan may also be a factor in reports of insufficient flow of information from the IMT to fireground operations and inadequate tasking of crews. The absence of a staging area manager in an incident of this scale, with up to 12 sector plans at its peak, means it is likely that the briefings that crews should receive at the staging area would not be comprehensive. This is reflected in observations of a break down in downward communications with insufficient information and tasking.

Community engagement was less effective at the Lower Hotham incident compared to O'Sullivan, as a result of insufficient resourcing of the Public Information function

The Public Information function of the Lower Hotham IMT was also impacted by the resourcing of the IMT. Under AIIMS, the primary responsibility of the Public Information function is to provide information out to affected (and potentially affected) communities and the general public, direct or via the news media.[39] This includes three core sub-functions:

- Information and warnings – provision of timely, accurate and relevant information and warnings to communities

- Media – liaise with media and manage media requirements

- Community liaison – engage in two way communications and liaison with local communities and arrange community information channels

Until the 7 February day shift, the Lower Hotham IMT had only one person in the Public Information function. This meant that the full scope of Public Information could not be effectively undertaken, particularly given that multiple communities were affected by the fire. The Regional Situation Reports from 5 February note potential impacts on the townsites of Boddington, Quindanning and Dwellingup. However, community meetings were only held in Boddington initially and the IMT understood that Quindanning residents would attend meetings in Boddington. It was not until 7 February, when another potential breakout that could impact Quindanning was noted, that a community meeting was held in Quindanning.[40] Consistent with this, IMT stakeholders reported that community engagement was sometimes lacking, particularly for Quindanning which did not have sufficient information for some time.

The O'Sullivan incident had a significant community impact on the Northcliffe townsite and the Windy Harbour settlement and also generated substantial media interest. In this context, the role of the Public Information function of the IMT was particularly important. Throughout the majority of the incident, the day shifts had three to four IMT personnel in the Public Information function. A three person team enables each of the core Public Information functions of information and warnings, media liaison and community liaison to have a dedicated resource. The resourcing of Public Information in the O'Sullivan IMT is reflected in feedback from stakeholders that community information and engagement was well managed overall. The involvement of the DFES Community Liaison Unit meant that community meetings were organised and were supported with up to date and accurate information that ensured the community was well briefed. However, IMT stakeholders did note that the extent of media interest and the volume of information of varying accuracy posted on social media meant that having only one person in Public Information dedicated to media was insufficient. A single resource dedicated to media was not enough to manage both traditional media and social media. This resulted in inaccurate or out of date information being posted on social media, which the IMT was not always able to correct with a reference to official sources. This demonstrates the importance of having a level of resourcing in the IMT that is appropriately scaled to the demands of the incident.

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[39] Department of Fire and Emergency Services and Department of Parks and Wildlife, AIIMS Awareness Learners Manual, October 2013
[40] Regional Situation Reports for 5 February, 6 February and 7 February

Previous MIRs have recommended….

…that (the predecessor of) DFES and the ABC commence a thorough review of emergency warning messages, including the content, structure and presentation of emergency warning messages and media access to the IMT and SOC (Perth Hills).

…that (the predecessor of) DFES develops in partnership with other emergency service agencies a "one source: one message" multi layered system similar to that recommended by the [2009] Victoria Bushfire Royal Commission [Chapter 2] (Perth Hills).

These previous recommendations highlight the importance that has been identified in previous major incidents of managing the media and ensuring a single source of truth for emergency messaging. This continued to be a challenge, particularly for the O'Sullivan incident which generated significant media interest. Maintaining a "one source: one message" approach was difficult in the face of inaccurate information being posted on social media.

A draft Social Media Framework developed by P&W in consultation with hazard management and support agencies is currently under consideration by the SEMC Community Engagement Subcommittee. While recognising the dynamism of the social media environment, it is intended that the Framework will provide guidance and promote a common approach amongst emergency management agencies to issues encountered during the O'Sullivan and Lower Hotham incidents.

4.3 Differences in the resourcing of the IMT also had knock-on effects on the effectiveness of other aspects of the response

Beyond the core functions of the IMT, differences in resourcing also had knock on effects on other aspects of the response to the two incidents, in particular the functioning of the ROC/SOC and integration of local knowledge. The ROC and SOC have an important role in major incidents to maintain a strategic overview and coordinate resources at the regional and state level. However, in the case of Lower Hotham in particular, under-resourcing of the IMT meant that there was insufficient information being communicated upwards for the ROC and SOC to fulfil these roles.

The O'Sullivan incident integrated local knowledge more effectively into the incident management structures. This can be seen in differences in the composition of the IMT, with O'Sullivan regularly having Local Government and volunteer representatives in key roles on the IMT, which was not the case at Lower Hotham. This meant that local knowledge was more effectively integrated into the decision making of the O'Sullivan IMT. As has been acknowledged in previous reviews of major fires, it is critical that key local personnel are involved within the IMT for the duration of the incident.

The consequences of an under-resourced IMT at Lower Hotham had knock-on effects on the ability of the ROC and SOC to undertake their roles

The resourcing of the Lower Hotham IMT impacted the effectiveness of other parts of the response, in particular the ROC and consequently the SOC, and the inter-agency support groups. The under-resourcing of the IMT and resulting reduced flow of information to the ROC was one factor specific to the Lower Hotham incident that impacted on the vertical communications to the SOC. Another issue that affected both Lower Hotham and O'Sullivan was a break down in the use of WebEOC to communicate information, which is explored further in Section 5.2.

The ROC coordinates operational resources at a regional level to ensure an effective response to incidents that is integrated with other agencies where appropriate. The ROC also has a key role in providing situational awareness information to the SOC, so that the SOC can maintain a strategic overview of state-wide resources.[41] In order to operate effectively in its regional coordination role, the ROC is dependent on information from the IMT. However, the IMT was insufficiently resourced to supply the required information in a timely manner. Consistent with this, IMT members noted that they did not have the capacity to consistently provide information to the ROC.

One consequence of insufficient communication of information upwards from the IMT was that the ROC was not able to get a clear picture of resourcing requirements of the incident, and effectively coordinate resources across the region accordingly. This is likely to be a contributing factor in the incident continuing to be insufficiently resourced in the initial stages. In response to insufficient information on resourcing needs coming from the IMT, the ROC took on a more active role in managing resources. This in turn had a knock on effect of reducing the capacity of the ROC to undertake its regional coordination role and to provide strategic support to the incident.

This was exacerbated by the ROC also being under-resourced. It took time to scale up the ROC to ensure all roles were filled. This meant that some requests made from the SOC to particular ROC roles through WebEOC were not always picked up if the ROC role was not yet filled. The operational reporting rhythm required by the SOC took up much of the time of many ROC personnel. Members of the ROCs for both incidents found that there were not sufficient resources to both provide the level of information reporting required by the SOC as well as undertake the core coordination tasks of the ROC to support the incident. As a result, the ROC did not have the capacity to take a strategic view of the regional situation to support its role in regional coordination.

Another important consequence of insufficient information flow from the IMT to the ROC was subsequent insufficient flow of information from the ROC to the SOC. This meant that the SOC did not have sufficient information to maintain good situational awareness of the incident, including its operations, its potential impact and its resourcing needs. This impacted on the ability of the SOC to make informed state level coordination decisions. It also resulted in the SOC seeking information from the ROC outside of the regular reporting rhythms, which in turn put greater pressure on the capacity of the ROC.[42]

The DFES operational reporting rhythm states that a Commissioner's Briefing Note must be provided one hour after SOC activation then every three hours thereafter. The ROC and IMT are to provide Regional Situation Reports in accordance with this schedule. This operational reporting rhythm is designed to ensure a state-wide situational awareness of current and developing risks is communicated across DFES.[43] There were between four and six Regional Situation Reports from the Great Southern ROC submitted to the SOC each day over the period 1 to 5 February, when the Lower Hotham fire was uncontained and escalating (see Figure 23 below). However, members of the SOC reported that situational awareness information was not always timely or comprehensive. While Regional Situation Reports were regularly submitted, they were sometimes updated after being uploaded to WebEOC, indicating that the information contained was not always comprehensive initially and was updated to reflect new information from the IMT. One example of this is on 2 February, when the 1000 Regional Situation Report was updated and re-submitted at 1100 to contain more up to date information on the fire size.

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[41] DFES, WAFES Manual Part Five – Regional Operations Centre (ROC)

[42] This observation was made by stakeholders at incident, regional and state level

[43] DFES, WAFES Manual Part Two – DFES All Hazard Emergency Management Arrangements

Figure 23: Frequency of Regional Situation Reports for Lower Hotham[44]

**Number of
Reg Sit Reps**
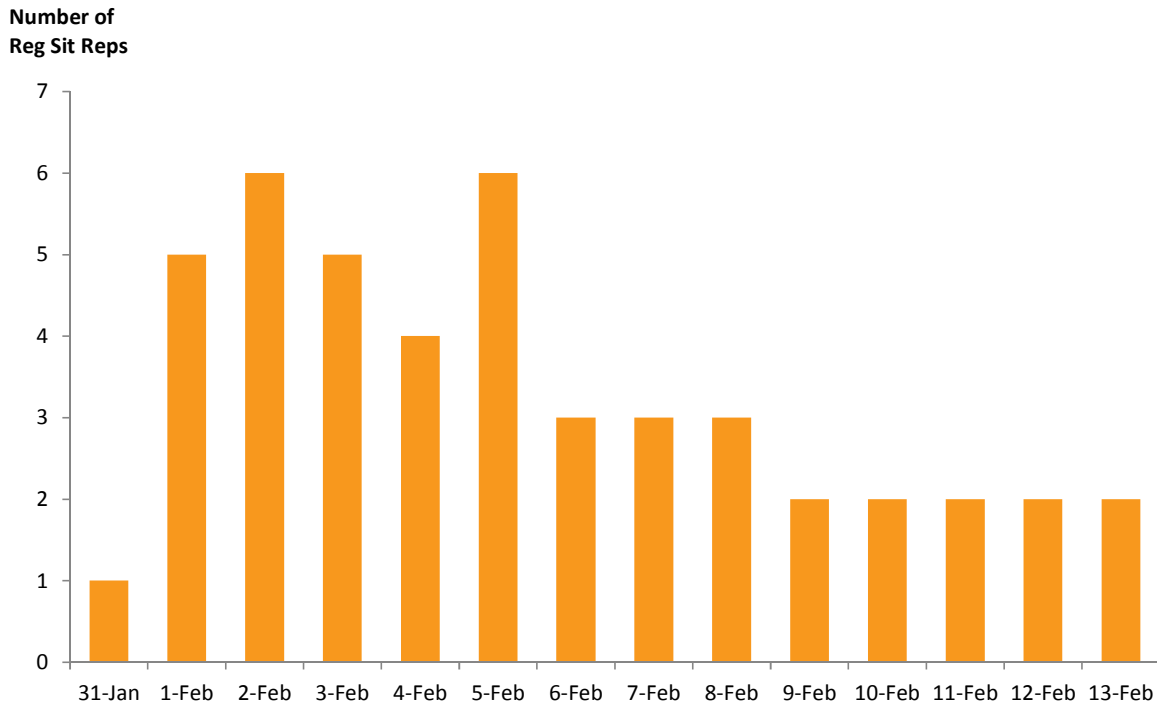
Members of the ROC indicated that much of the challenge faced in managing vertical communication to the SOC resulted from insufficient resources, either in the IMT to provide the information or in the ROC to provide sufficient capacity to meet upwards reporting requirements. This was further exacerbated by insufficient clarity on the reporting requirements, which meant that the limited resources could not fulfil the requirements as efficiently as possible.

Local knowledge was integrated into the incident management structures more effectively at the O'Sullivan incident than Lower Hotham

In addition to the level of resourcing in the IMT, the O'Sullivan incident was also broadly effective in the composition of incident management personnel. Integration of local knowledge into the IMT is a recommendation that has been made in previous MIRs. Integrating local knowledge effectively in to the fire response requires local government representatives or senior bush fire brigade officers to commit to formal involvement in the IMT. The O'Sullivan incident had a more consistent and formalised approach to incorporating the knowledge of local representatives into the IMT. The IMT included personnel from Local Government, for example the local Shire's Community Emergency Service Manager and the local Police sergeant. This ensured that local knowledge was being utilised in IMT decision making and provided a direct conduit for local agencies to receive information from the IMT.

In contrast, the Lower Hotham IMT only had informal avenues for integrating local knowledge. There were very few shifts in which Local Government or volunteer representatives held key IMT roles. There was one early shift where the local Chief Bush Fire Control Officer (CBFCO) was in the role of Deputy Operations Officer. The CBFCO maintained contact with the IMT in the latter part of the incident, but not in a formal IMT role. The IMT was also able to access Local Government knowledge informally through

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[44] Regional Situation Reports from Great Southern ROC uploaded to the information log on WebEOC

the location of the IMT at the Shire office. This provided some integration of local knowledge, but not to the extent that would be enabled by having key local personnel holding IMT roles throughout the duration of the incident.

While the O'Sullivan incident more effectively integrated knowledge from local representatives into the IMT, there were some missed opportunities in operations. One example was in the operations of the USAR team identifying defendable houses in the fire zone. Volunteers suggested that this could have been enhanced by using local volunteers with knowledge of the area accompanying the USAR team.

5 Key finding 2: Break downs in key systems, processes and policies caused frustrations and sometimes significant levels of risk

There were a number of instances where key systems, processes and policies broke down, which caused frustrations in operations and sometimes exposed firefighters and communities to higher levels of risk. The most important of these were:

- break downs in the systems and processes for deployment and tracking of resources

- shortcomings in systems and processes for the vertical communication of information

- challenges in the application of the traffic management policy.

Each of these three break downs are explored in this section.

5.1 Systems and processes for deployment and tracking of resources broke down, causing frustrations and risk

The systems and processes for deployment and tracking of resources broke down in three aspects:

- The process for vertical communications of resource requests sometimes broke down, with the ROC sometimes being bypassed and the SOC sometimes deploying resources without being requested by the IMT.

- Deploying and tracking resources was also made difficult by the lack of a resource management system and the break down in the T card tracking system.

- These break downs caused frustrations for the IMT, ROC and SOC and sometimes put crews and operations at risk.

Vertical communications of resource requests sometimes broke down

The vertical communications procedures between the IMT, ROC and SOC allow for requests to be made by the IMT to the ROC for resources if they are not available locally. The ROC then coordinates and prioritises all regional resource requests to support the resourcing of each incident. Where resources are unable to be sourced from the region, the ROC may request the SOC to assist with the supply of resources. The SOC will coordinate and prioritise all resources across the state, and if required interstate and internationally, to ensure all regions and incidents have sufficient resources.

While the structure of the ROC and SOC align with AIIMS functions, they do not command or control individual incidents. [45,46] The AIIMS structure described by AIIMS 4 is an incident management structure and is limited to the operation of the IMT, with no guidance on levels above the IMT. While the WAFES manual outlines the relationship between the IMT, ROC and SOC, there was uncertainty over how this integrates with the incident structures set out in AIIMS, resulting in some personnel lacking clarity over the operations of the ROC and SOC and their interactions with the IMT. This exacerbates break downs in

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[45] WAFES Manual Part Five – Regional Operations Centre (ROC)
[46] WAFES Manual Part Three – State Operations Centre (SOC)

the vertical communications of resource requests. The Australasian Fire and Emergency Service Authorities Council (AFAC) is currently undertaking work to clarify the application of AIIMS at regional and state coordination levels.

The process for vertical communication of resource requests broke down in three ways:

- instances of resource requests being made by the IMT to the ROC and not being acknowledged or followed up

- instances of resource requests being made directly from personnel at the incident to the SOC, bypassing the ROC

- instances of the SOC deploying resources without the knowledge of the IC or IMT

Requests for additional resources are made from the ROC to the SOC through the Requests Log on WebEOC. However, WebEOC is primarily a tool for recording and communicating information and requests. The process to track requests from the initial request to completion has limitations, as updates must be made manually in WebEOC and can only be seen within the detail of the relevant log. This was a source of frustration for some stakeholders who were not sure if resource requests had been received and were being addressed. This was exacerbated where IMT personnel (such as P&W personnel in most cases) did not have access to WebEOC.

Members of the IMT observed that the ROC was sometimes bypassed in communication of resource requirements, with personnel on the incident ground directly requesting resources. In most cases, this would be the result of the vertical communications process not being followed properly. There was also one case identified where the break down in the vertical communication of resource requirements resulted from misalignment between this and other operational processes. Under the DFES Ops Directive for air operations, the Duty Air Operations Officer fulfils the Aircraft Officer role on the IMT and is required to have continuous liaison with the State Duty Air Coordinator. The State Duty Air Coordinator then prioritises tasking and advises on release of aircraft.[47] This presents a potential break down in the vertical communications to deploy air operations, as information and requests may flow directly between the Aircraft Officer in the IMT and the SOC, thereby bypassing the IC and ROC. Reflecting this, there were reports of air attack supervisors in the IMT arranging deployments directly through the State Air Desk without consulting the IMT.

The process to request the deployment of aerial suppression resources to support an incident is also inconsistent with the vertical communications process. DFES and P&W have established joint procedures for deployment of aerial suppression operations. Under these procedures, requests for aerial suppression resources to support an incident are made through each fire agency's routine reporting lines.[47] Under the DFES Ops Directives, the requests are made by the IC or ROC to the DFES Communication Centre (COMCEN), which then notifies the State Operations Air Desk. The Air Desk then undertakes tasking of the aerial suppression assets and then notifies COMCEN.[48] Request logs from WebEOC show that the requests for aerial suppression resources to be deployed to the incidents were made through WebEOC, which is line with the vertical communications of resource needs outlined in the WAFES manual but not fully aligned to the process under the joint aerial fire suppression operating procedures. Air operations personnel reported that this presented a break down in the request process to the Air Desk, because it does not monitor WebEOC for requests under the established joint DFES / P&W procedures. This presented a risk of delays in processing requests for aerial suppression resources to support the incidents. However, in practice WebEOC documentation indicates that requests for aerial

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[47] DFES and P&W, Western Australian Aerial Fire Suppression Operating Procedures 2014-15
[48] DFES Ops Directive 3.11 – Air Operations

support made through WebEOC were acted on promptly within a few hours. This was enabled by the SOC Duty Aircraft Coordinator having access to WebEOC.

The vertical communications process for resource requests sometimes broke down with IMT members observing that the SOC sometimes deployed resources on its own initiative, without a request from the IMT through the ROC. This may have been a result of insufficient vertical communication of information (discussed in Section 5.2), leading the SOC to anticipate resource requirements based on limited information from the incident. Deployment of resources without the knowledge of the IMT is inconsistent with AIIMS. Under the AIIMS principle of functional management the IC is accountable for all functions carried out by the IMT. The IC will have oversight of the resources in use, resources required, resources requested, resources being deployed and resources being re-deployed or demobilised. This was not the case when resources were being deployed without the knowledge of the IMT. Consistent deployment of resources by the SOC outside of the AIIMS structure indicates that there is insufficient clarity on the role of the SOC and an inadequate knowledge of AIIMS and its implications on the role of the ROC and SOC in supporting the IMT to manage incidents.

Systems for managing and tracking resource deployments were absent or not used effectively

WA does not have an integrated multi-agency resource management system. There is no integrated way of identifying and tracking resources. This impacted on the ability of all levels of the response to effectively plan and coordinate resources. As a consequence, resource deployments were not always optimal and personnel on the fireground were sometimes put at risk.

WebEOC is used to make resource requests, but it is not a resource management or tracking system. WebEOC does not have the ability to identify available resources to meet requests, or to track the deployment of resources to incidents across the state. This hindered planning of resources at the incident and regional level. The IMT needs to be able to forecast resource requirements and plan ahead for shift resourcing, taking into account fatigue management. However, it was difficult to plan how best to utilise resources, as there was no single record of the different circumstances, deployment durations and fatigue management policies for all resources from different agencies and volunteer associations. There were instances of crews being deployed without adequate consideration given to fatigue management, which puts personnel at risk. It also made it difficult to efficiently manage the financial implications of deployments over time.

At the regional level, there was no single source of information on available resources in the region from all agencies. This made it difficult for the ROC to coordinate resources to support the incident. This sometimes resulted in the ROC requesting resources from the SOC without being aware of available resources in the region. Resource deployments were not always optimal as a result, and may have impacted the availability of resources to support incidents in other parts of the state.

Previous MIRs have recommended….

…that all agencies engaged in bushfire response should develop expeditious procedures for the mobilisation of resources in support of other agencies (Parkerville).

This recommendation was made in response to a finding of the Parkerville review that the system to mobilise resources from other Local Government areas is cumbersome and could cause delays in mobilising inter-agency support. The absence of an integrated inter-agency system to identify and coordinate resource deployments for the Lower Hotham and O'Sullivan incidents meant that this continued to be an issue. At the regional level, the ROC did not have a single system to identify and mobilise resources from Local Government or P&W.

In the case of Lower Hotham, the impact on resource deployments was exacerbated by the location of the incident in relation to the DFES regional boundaries. The ROC manual states that if a region has insufficient resources to effectively support IMTs, the ROC must request additional resources from the SOC. The Shire of Boddington is part of the DFES Great Southern region, based out of Albany. As per the ROC manual, the Great Southern ROC was required to resource the incident from within this region, to the extent it could, before requesting resources from the SOC. This resulted in some inefficient resource deployments, with crews travelling to Lower Hotham from more distant regions in the Great Southern region, despite resources being available in shires neighbouring to Boddington, such as the Shire of Murray. The appropriateness of the Great Southern and South West regional boundaries is currently under consideration by DFES.

Resources deployed on to the fireground are tracked using the physical system of T cards and an Incident Management Board. Resources should be recorded on a T card prior to tasking. The organised placement of T cards on the Incident Management Board at the control point then tracks the location of the resources.[49] Movements of crews on the fireground should be communicated back to the control point to enable the placement of T cards to be updated. The T card system can work well at small and/or low complexity incidents, but is less effective at larger and more complex incidents, particularly where there are multiple divisions and sectors. The T card system of tracking resources at the incident was not always effective at the Lower Hotham and O'Sullivan incidents. It does not facilitate graphical tracking of resources, which was a challenge given the large area and multiple divisions and sectors involved at both incidents. The T card system was difficult to maintain accurately for the number of resources on the fireground at both incidents. This sometimes created risk to crews on the fireground. A number of examples were provided by IMT members and by volunteers of crews being missing or getting lost on the fireground, in one instance resulting in another crew having to spend its shift locating a missing crew. While there were no instances of crews being put in significant danger as a result, the break down in accurately tracking resources on the fireground presents a risk if there are any changes in conditions or strategies.

Previous MIRs have recommended….

…that Automatic Vehicle Location technology should be adopted to enable a better appreciation of the deployment and location of appliances at an incident, in order to increase situational awareness (Parkerville)

…that DFES, in consultation with bushfire volunteers should develop a procedure for the controlled entry and exit of volunteers to the fire ground. (Parkerville)

…consideration of the joint development of an electronic Incident Resource Management System to be used across all agencies and linked to the Automatic Vehicle Location technology (Parkerville)

These recommendations highlight the importance of having resource tracking on the fireground as part of an overall inter-agency resource management system. The absence of resource tracking and management systems is reflected in the break downs in deployment and tracking of resources experienced at the Lower Hotham and O'Sullivan incidents.

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[49] DFES, Standard Operating Procedure 3.2.6 – T Cards and Incident Management Boards, January 2015

Break downs in the processes for deploying resources caused frustrations and sometimes created risk to crews and operations

Break downs in the deployment of resources, in particular deployments made without the knowledge of the IMT, caused issues at both the Lower Hotham and O'Sullivan incidents. The unexpected arrival of resources to incidents meant that their deployment on to the fireground could not be planned, resulting in under-utilisation of resources for operations. It was also distracting to the IMT and created additional unplanned effort, such as arranging additional welfare, briefings and tasking. This in turn had a negative impact on the experience of crews, with feedback from crews of not being effectively tasked and utilised because the IMT had not been aware of their deployment. One example of this is illustrated below.

The deployment of crews from the Goldfields region without IMT knowledge

Crews deployed to the Lower Hotham incident from the Goldfields region observed that the SOC were requesting resources that the IMT were not aware of, with the MOC and SOC contacting chiefs directly and not going through the RDC of the region. This is consistent with reports from IMT members and volunteers of resources and crews arriving at the incident without the IMT being aware of their deployment.

WebEOC records indicate that the IMT were not aware of this deployment, which is consistent with the reports from the Goldfields crew. However, it is possible that IMT members would have been made aware through emails or phone calls, which may not be reflected on WebEOC.

WebEOC request logs relating to strike teams from the Goldfields demonstrate break downs that occurred in the process for requesting and deploying resources from this region. The two request logs relating to the incoming deployment of Goldfields strike teams are shown below.

Request log 3976 on 2 Feb

2 Feb 12:04 – ROC requests resources to man the Great Southern strike team appliances

2 Feb 13:37 – SOC advises that the resources will be sought from surrounding regions

2 Feb 14:30 – SOC advises that Goldfields/Midlands are currently chasing a full crew, will confirm numbers shortly

2 Feb 16:49 – SOC marks task as complete with advice that interstate will arrive the next day

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Request log 4559 on 5 Feb

5 Feb 12:58 – ROC provides details of Goldfields/Midlands strike team to be deployed to Lower Hotham on Thurs, Fri and Sat (5-7 Feb) and requests accommodation

5 Feb 14:13 – ROC assigns request to IMT Logistics Officer

8 Feb 08:59 – ROC marks task as complete as the time has now passed

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This example illustrates a number of break downs in the resource request and deployment process. The resource request on 2 Feb, in which the SOC indicated that the Goldfields/Midlands region had been approached for resources, was fulfilled without resources being deployed from the Goldfields/Midlands region. The ROC and IMT would not have been expecting a deployment from the region.

The second request, on 5 Feb, confirmed a strike team was being deployed that day and would require accommodation. This request was passed on to the IMT Logistics Officer – however the Logistics Officer was from an interstate agency and may not have had access or familiarity with WebEOC. The task was never actioned, indicating that the information regarding the incoming Goldfields/Midlands strike team was not processed by the IMT.

Redeployment of resources away from the fireground or expected deployments not being fulfilled presented risks to the fireground operations (see below for an example). The incident strategies and sector plans are developed on the basis of expected resources being available to carry out the planned operations. Where resources have been redeployed without the knowledge of the IMT or resource requests are not fulfilled, these operations can no longer be undertaken as planned.

> ### The deployment of a strike team away from the fireground mid-shift without the knowledge of the IC, Operations Officer or Divisional Commander
>
> There were reports from IMT members of the deployment of a strike team away from the fireground at O'Sullivan during a shift, without the knowledge of the IC, Operations Officer or Divisional Commander.
>
> This report appears to be consistent with records in the WebEOC Request and Information Logs.
>
> > #### Request Log 5026:
> >
> > *7 Feb 11:35* – ROC Logistics requests the extension of the deployment of a task force of 8 trucks for the next two days after consultation with the IMT
> >
> > *7 Feb 16:20* – MOC Logistics marks request complete noting that the resources are required to return to Metro
>
> Consistent with the updates to *Request Log 5026*, there are reports from IMT members of the 8 trucks leaving the fireground at around 1730.
>
> A subsequent Information Log suggests that this re-deployment was made without the knowledge and approval of the IC.
>
> > #### Information Log 5423:
> >
> > *7 Feb 18:30* – ROC Planning attaches the forward planning of deployed crews, as discussed with the IMT DFES Liaison Officers. The attached planned deployment shows the taskforce still in place for the following two day shifts.
>
> The deployment of the strike team away from the fireground left a shortage of water capacity for fire suppression operations on the sector, potentially impacting on operations.

Deployment or redeployment of resources by the SOC without the knowledge of the IMT also presents a safety risk to crews, as the IMT may not be aware of the location of all resources on the fireground. This is exacerbated by the lack of an integrated resource tracking system. Resources that are deployed to the incident without the knowledge of the IMT may then be tasked at a division or sector level. This may result in crews undertaking operations that are not known to other parts of the IMT, putting the crews at risk.

5.2 Shortcomings in systems and processes for the vertical communication of information were frustrating at state, regional and incident levels

Vertical communication of information primarily took place through WebEOC. However, the use of WebEOC created a focus on reporting upwards, that was distracting for the IMT and ROC. It also resulted in information being communicated that was not always timely, accurate or comprehensive, which created frustrations for the SOC. The processes for communication between the IMT and fireground sometimes broke down, impacting on the effectiveness of operations and the ability of the IMT to plan

ahead. Some processes for communicating information outside of WebEOC were inconsistent with AIIMS.

The use of WebEOC for vertical communication of information created a focus on reporting upwards and sometimes resulted in information not always being timely, accurate or appropriate

Under the DFES All Hazard Emergency Management Arrangements, all operational personnel are required to maintain communication with their functional counterpart at state, region and incident level. This vertical communication is an information sharing relationship to enable the functions at each level to fulfil their role.[50] DFES uses WebEOC to facilitate vertical communication of situational awareness, operational information and resource requirements between the IMT, ROC/MOC and SOC. The SOC refers to the WebEOC information log to maintain state wide situational awareness of all incidents.[51] The ROC gathers information from IMTs on an ongoing basis and ensures information is maintained on the WebEOC information log, including Regional Situation Reports.[52] WebEOC is intended to be used for Level 2 and 3 incidents by the IMT, ROC/MOC and SOC.[53] However, it was only recently been rolled out to the IMT.

The use of WebEOC for vertical communication meant that it was a key source of situational awareness information for the SOC and created a focus at the ROC and IMT for providing information through the system. Stemming from this, a frequently made observation was that the perceived importance of WebEOC for maintaining situational awareness at state level created a focus at the regional and incident level on reporting information up the line. This resulted in some resources at the IMT and ROC spending considerable time on ensuring WebEOC was being kept up to date. The effort required to maintain WebEOC was compounded by the lack of familiarity of some users with WebEOC. The system is usually only used for Level 2 and Level 3 incidents, which means that some DFES personnel may not have had working experience of using WebEOC. It was only recently rolled out for the IMT, which means that not all personnel have been trained. People from other agencies who had temporary WebEOC accounts created would have had no experience with the system at all.

The issues in the use of WebEOC for vertical communications resulted in information not always being timely, accurate or appropriate. The SOC experienced insufficient information being communicated up to them, preventing them from achieving the strategic oversight and coordination that is required of the SOC. This resulted in the SOC seeking information from the ROCs, who in turn were seeking information from the IMTs, outside of regular reporting rhythms. This was reflected in the experience of the ROCs, where stakeholders noted that they would often receive additional requests for information from the SOC. This break down in vertical communications resulted in information often being out of date by the time it reached the SOC.

There was some concern expressed that the information communicated through WebEOC was not always accurate or complete. This was primarily a result of not all agencies, in particular P&W, having access to WebEOC. Whilst WebEOC is the SEMC endorsed crisis information management system for emergency management agencies in WA[54], P&W have made a conscious decision not to use WebEOC. A consequence of this is that P&W IMT personnel would not have oversight over the information provided through WebEOC and could not verify its accuracy. One example of inaccurate information during the

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[50] DFES, WAFES Manual Part Two – DFES All Hazard Emergency Management Arrangements

[51] DFES WAFES Manual Part Three – State Operations Centre (SOC)

[52] DFES WAFES Manual Part Five – Regional Operations Centre (ROC)

[53] DFES, WebEOC User Business Rules, April 2015. WebEOC is a web-enabled system used for incident management by DFES. Currently, DFES uses the Information Log, the Request Log, the State Preparedness Board and the Incident Action Plan

[54] In September 2008, SEMC endorsed the concept of a common crisis information management system (Resolution 69/2008) and further endorsed that the preferred system is WebEOC (Resolution 70/2008).

O'Sullivan incident was an information log in WebEOC noting that no evacuation plan was in place for Windy Harbour, at the O'Sullivan incident. This log was later amended to refer to evacuation plans for air evacuation that were in place and had been discussed at IMT.[55] Incomplete or inaccurate information contained in WebEOC may lead to sub-optimal decisions being made on the coordination of resources.

The use of WebEOC for the vertical communication of information did not work well for IAPs developed in WebEOC. The WebEOC user guidelines advise that Level 2 IMTs with network coverage and all Level 3 IMTs are required to use the WebEOC online IAP. However, the format of the WebEOC online IAP was perceived as not being conducive to informing people on the fireground of the plan for the shift, which is the primary objective of the IAP. In a printed form the sections, in particular the incident objectives, break across pages. This could make it difficult for division and sector commanders to use the IAP in the field. Reflecting this, stakeholders at incident, regional and state level observed that developing IAPs in WebEOC had evolved towards an upward reporting tool, rather than having a primary focus of being delivered down to direct fireground activity.

Figure 24: Incident objectives taken from the Lower Hotham WebEOC IAP for the shift from 04/02/15 2000 to 05/02/15 0800

Objectives

Control Objective 1	Ensure the northern control line is maintained throughout the night. (Northern Division)
Control Objective 2	Consolidate and construct a contol line on the western flank of the fire prior to the next severe fire day (Western Division)
Control Objective 3	Construct and consolidate a control line along Trees Road prior to the next severe weather day (Southern Division)
Control Objective 4	Ensure asset protection is provided for all people and assets along Harvey-Quindanning Road prior to and during fire attack. (Asset Division)
Control Objective 5	
Control Objective 6	

Processes for communication between the IMT and fireground sometimes broke down

IMT members from both incidents reported some break downs occurring in the communication of information down from the IMT to the fireground. There were reports of inadequate briefing and operational guidance provided to fireground operations at both incidents, but at the Lower Hotham incident in particular. This appears to be the result of insufficient IMT resourcing in planning and in the staging area, as has been discussed in Section 4.2.

Members of the Lower Hotham IMT from both DFES and P&W observed that there were sometimes break downs in communication of information upwards from the fireground to the IMT. Sector and division commanders did not always provide sufficient information back through the chain of command for the IMT to maintain up to date situational awareness. This impacted on the ability of the IMT to plan effectively and make informed decisions.

It is difficult to determine the exact cause of this break down in communication, but there are a number of potential contributing factors. Sector and division commanders may have been unfamiliar with the requirements of their role in a large and long running fire incident to provide regular upward communication of information. Under-resourcing in the IMT may have meant that it did not have the capacity to provide guidance to sector and division commanders on reporting requirements. There were also reports of limited mobile reception, difficult radio communications resulting from the terrain and lack of clarity on radio channels that would have hindered the ability of sector and division commanders to maintain contact with the IMT.

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[55] WebEOC O'Sullivan Information Log 4939

Some processes that were used for vertical communication of information are inconsistent with AIIMS

The break down in vertical communication of information through WebEOC resulted in some alternative avenues for vertical communications being established that are inconsistent with AIIMS. Members of the IMT at O'Sullivan observed that additional Deputy ICs were put in place to facilitate information flow out of the IMT. For six shifts between 5 and 9 February, there were two or three Deputy ICs instead of just the one that is the minimum required under Westplan – Fire for Level 3 incidents. This could indicate that the break down in vertical communication of information from the incident through to the SOC was being addressed by agencies by putting in additional deputy ICs. While this is within the AIIMS structure, which is designed to be scalable to meet requirements, putting in additional deputy ICs to address the break down in vertical communication of information may have resulted in reporting lines that are inconsistent with AIIMS.

The process for managing public information at the State level also relied on vertical communication of information that is inconsistent with AIIMS. One of the roles of the SOC is to release strategic and State level media to inform the community. In order to do this, the Public Information unit in the SOC receives information from the Public Information section of IMTs.[56] Consistent with this process, stakeholders at both state and incident level observed the State Public Information unit receiving information directly from the IMT Public Information section. However, this process for communicating public information differs from the process for communicating situational awareness more broadly, which goes from the IMT to the ROC then SOC. Stakeholders at state level saw discrepancies in the information as a result. It is also inconsistent with the AIIMS principle of functional management where the IC remains accountable for all functions. Under AIIMS, warnings and information that are issued must be authorised by the IC.[57] However, the process where the SOC receives information to inform the community directly from the IMT Public Information Unit may bypass the IC. Reflecting this, there were reports from incident level stakeholders that information contained in state media was inaccurate or out of date, such as in relation to warning levels and road closures.

5.3 The application of the traffic management policy was challenging, which impacted the fire response and caused frustration for operations and the community

There is a state policy that provides guidance for agencies on conducting traffic management activities related to emergencies. The O'Sullivan incident experienced issues with road closures and vehicle control points that impacted on the local community, businesses and some groups involved in the fire response. However, the agencies involved in the O'Sullivan incident found that the state policy did not provide sufficient guidance to manage these issues.

The state has a policy to guide traffic management during an emergency

The policy and guidelines for traffic management activities during emergencies is detailed in the State Emergency Management Policy 4.8 and supporting Traffic Management During Emergencies Guide.[58] Under the traffic management policy, the IC has overall responsibility for the management of traffic during an emergency. Traffic management strategies should be developed in consultation with the road

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[56] WAFES Manual Part Three – State Operations Centre (SOC)

[57] Australasian Fire and Emergency Service Authorities Council 2013, AIIMS Aide-memoire for the Public Information function

[58] The guide was developed following a previous incident, and new guidelines are being reviewed by the SEMC in late 2015.

owner and will be performed by WA Police initially. Vehicle Control Points (VCPs) may be established to control road access. VCPs may be full road closures allowing access for emergency vehicles or any other persons meeting specified criteria authorised by the IC, or may be partial closures where lane control is initiated or a system of restricted access is implemented as determined by the IC in consultation with WA Police. The guidelines do not specify the criteria or the system to be used for restricted access, leaving it to the IC to determine in accordance with the circumstances of the emergency.[59]

Previous MIRs have recommended….

…that (the predecessor of) DFES and WA Police jointly examine the Traffic Management System developed in response to the 2009 Victorian bushfires and seek its adaptation to use in WA with additional attention to the access and egress by bona fide residents to areas that are evacuated. (Perth Hills)

…that a Restricted Access Permit system for the entry/ re-entry of residents, based on the one developed for the Parkerville Stoneville Mt Helena Bushfire should be finalised (Parkerville)

These previous recommendations highlight that traffic management and partial road closures have been issues at previous major incidents. The experience of the O'Sullivan incident indicates that issues relating to traffic management have not yet been sufficiently addressed, or are not sufficiently well understood by personnel required to implement traffic management arrangements.

The state policy and guide did not provide sufficient guidance to enable road closures to be implemented effectively at the O'Sullivan incident

The state policy and guide provide the context and intent of traffic management for emergencies, but those involved in road closures at the O'Sullivan incident found that it did not provide the clear guidance, tools and processes to implement traffic management activities. For example, the guide states that a restricted access VCP could be managed with wristbands or passes, but doesn't provide the detailed procedures and templates, such as sample passes and registration templates, that would enable the IMT to implement the system with ease. There were many other aspects of the traffic management policy and guidelines that are not clear. These primarily related to three issues:

- the responsibilities of the IC and IMT throughout the phases of traffic management

- the respective roles and required coordination between the IMT, police and road owners

- the procedures for implementing a restricted access system and transitioning partial road closures into recovery.[60]

Managing traffic and road closures can be very resource intensive, particularly in a rural area with many access tracks and therefore many VCPs. Insufficient clarity in the state policy and guide impacted the capacity of already constrained resources to manage road closures, as the agencies involved were attempting to develop systems and processes through the course of the incident. This also meant that traffic management policies and processes were applied differently in different places and at different times. For example, there were no consistent rules determining restricted access through partial road closure VCPs.

The fire behaviour also compounded the difficulty of managing road closures effectively. To be effective in ensuring safety while minimising disruption, the traffic management plan requires up to date

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[59] State Emergency Management Committee, Traffic Management During Emergencies Guide, December 2014
[60] There is currently a restricted access permits working group looking at this aspect of the traffic management policy

information from the fireground to inform decisions on VCPs. However, the rapidly moving and at times unpredictable fire made it difficult to maintain up to date information for all affected roads.

This resulted in some fire responders not being able to operate effectively and caused frustrations for local community and businesses

The issues experienced with traffic management at the O'Sullivan incident impacted on some aspects of the fire response and were a source of frustration for local community and businesses. Part of the fire response was undertaken by local farmers with their own fire appliances. However, as these are private appliances they were initially not granted entry through the restricted access VCPs. This resulted in farmers being unable to assist neighbouring properties, or assisting and being unable to return through VCPs, instead finding alternative routes on local access tracks. Available firefighting resources would either not be utilised or the whereabouts of people on the fireground would be unknown as a result.

Outside of the immediate danger of the fire, support agencies were involved in maintaining and re-establishing critical infrastructure. However, the time taken to establish access for these agencies through the VCPs impacted on their ability to conduct their operations. Both WaterCorp and Western Power were constrained in their operations by the time it took to establish access through VCPs. While there were often legitimate safety concerns preventing access through VCPs, a lack of clarity in the process for arranging permits added to the uncertainty for support agencies and had the potential to introduce further delays.

Local Government and local volunteers reported that road closures and VCPs were the most significant complaint from the community in relation to the fire. This was made more difficult by the voluntary evacuation of Northcliffe, with many residents choosing to stay and defend. Some of those who stayed were local businesses, including local dairy farmers. Ensuring the security and continuity of their business was a key priority for them, and the time it took to establish access through partial closure VCPs caused frustration as a result. Another issue that arose from the voluntary evacuation of Northcliffe was that those who remained were inside the restricted fire zone. As a result, these people were not able to access supplies and information from town, as they would then not be able to return home through the VCP. Community meetings to provide information were being held in Northcliffe up until 3 February, after the voluntary evacuation and road closures were in place.

The frustrations of the local community and businesses of the VCPs at the O'Sullivan incident may mean that people are less likely to choose to leave in future incidents. This will put communities at risk and could make the operational response more difficult to manage. While it is difficult to control all aspects of traffic management and road closures in a long running bushfire, clearer guidance in the traffic management policy could mitigate issues in future.

6 Key finding 3: While there are many examples of DFES and P&W working well together, differences in culture, expertise and approaches constrain collaborative effort

A major bushfire typically brings together personnel from multiple agencies to respond to the incident. The response to the Lower Hotham and O'Sullivan incidents was managed by a mix of DFES, P&W and Local Government personnel, including volunteer services. The IMT for each incident was predominantly comprised of DFES and P&W personnel. There were many examples of DFES and P&W working well together, particularly where relationships were already established. DFES and P&W personnel commented that inter-agency relationships have improved over recent years. However, differences in the agencies' culture, expertise and approaches constrained collaboration in some instances. Less than optimal collaboration sometimes impacted the effectiveness of the response to the incidents. It is difficult for organisations to find the optimal point of collaboration, but there are some positive examples that DFES and P&W can draw on.

6.1 DFES and P&W have different cultures, expertise and approaches, in part stemming from their different organisational remits

DFES and P&W have different organisational remits, which manifests in differences between the agencies in their respective culture, areas of expertise and approaches (see Figure 25). There were some instances where collaboration between agencies brought together complementary areas of expertise that contributed to the response to the Lower Hotham and O'Sullivan incidents.

Figure 25: Differences between DFES and P&W in cultures, expertise and approach

	DFES	P&W
Organisational remit	• Emergency response • Multi-hazard	• Land management • Single hazard - fire
Culture	• Clear lines of command to support a rapid response, resources are coordinated centrally through COMCEN	• Bottom up approach to coordinating resources through district and regional offices
Areas of expertise	• Combat and support services to respond to multiple hazards in urban and rural environments	• Prescribed burning program means that expertise in forest fire is embedded across P&W
Approach to IMTs	• Centralised approach with some AIIMS functions fulfilled at the state and regional level • Preformed IMTs of 11 people in the metro area • IMT capabilities recognised through training and endorsement	• Decentralised approach with AIIMS functions fulfilled at the incident level • Preformed IMTs of ~50 people in the regions • IMT capabilities recognised through red card certification

DFES is primarily focused on emergency response whereas P&W is focused on land management, which impacts the culture of each agency

DFES is primarily an emergency services agency. It manages emergencies, including developing the capability of its workforce to respond to emergencies and supporting communities to prevent and mitigate hazard risks. The FES Commissioner is the hazard management agency in WA for a range of hazards, of which fire is one.[61] In line with this role, DFES delivers its operational services through an 'all hazards' approach. The expertise of DFES in responding to fire is grounded in its organisational remit for managing emergency situations.

The role of P&W is quite different. It is a land management agency, primarily concerned with protecting and conserving the state's natural environment. Fire management is only one aspect of its land management responsibilities, including prescribed burning, working with the community to ensure bushfire preparedness, and responding to fires on P&W-managed land. P&W's fire expertise is grounded in its organisational remit for land management. Its approach to fire is to manage lands under its care to protect people and built and natural assets from bushfire damage and to use planned fire to achieve land, forest and wildlife management objectives.[62]

The differences in the organisational remit of DFES and P&W shapes the culture of each agency

These differences in organisational remit shape the respective cultures of DFES and P&W. Personnel from both agencies and from Local Government and volunteers referred to a hierarchical culture in DFES. This is consistent with its role in multi-hazard emergency response, where clear lines of command

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[61] DFES Annual Report 2013-14
[62] P&W Annual Report 2013-14

and control support a rapid and effective response to emergency situations. An example of this cultural difference is how the agencies coordinate the response to fire in their jurisdictions. Coordination of DFES resources to respond to fire is centrally directed, with mobilisation and management of resources coordinated through the central COMCEN, which receives emergency triple-zero calls state-wide, and the relevant ROC. In contrast, the coordination of P&W resources to respond to fire is through its network of District and Regional offices.[63]

The differences in the organisational remit of DFES and P&W determines their respective areas of expertise and impacts their approach to managing incidents

DFES and P&W have different areas of expertise in managing fire and there are some differences in their approach to managing incidents. To support its operations in multi hazard emergency management, DFES provides a number of combat and support services, such as search and rescue in urban, marine, land and air environments and rescue from transport emergencies. This brings expertise in responding to emergencies in a range of urban and rural environments, including both structural fire and bushfire.

A core part of P&W's fire management activities is prescribed burning, in line with its land management role. P&W uses prescribed burning for a number of purposes. The primary objective is community protection, through mitigating the severity of bushfires by reducing fuel loads. Other purposes include maintaining biodiversity, rehabilitating vegetation and to conduct fire research. In 2014-15, P&W's prescribed burn program covered almost 150,000 hectares in the south-west forest regions. This means that P&W have experience in managing forest fires in a controlled and hence less pressured situation, as well as experience in responding to bushfires on P&W lands. P&W's organisational remit means that the agency has expertise in managing long running campaign forest fires on public land, which provides bushfire specialisation through the operational levels of the agency. Reflecting the responsibility of the FES Commissioner as the Hazard Management Agency (HMA) for fire, DFES has broader expertise across a range of urban and rural fires, including bushfire. The broader emergency combat and support expertise that DFES brings, such as search and rescue, brings additional expertise that is valuable as bushfires increasingly impact on the rural urban interface.

Previous MIRs have recommended….

…that DFES should increase, develop and maintain bushfire skills and expertise through the establishment of a dedicated bushfire command. Appointments to senior positions within the command should include people with experience and credibility in bushfire firefighting and management. (Parkerville)

This previous recommendation recognises that bushfire fighting expertise and experience is a core part of the organisational remit of DFES. This is reflected in its status as the HMA for fire, in legislation that provides a mechanism for the FES commissioner to assume control of a bushfire, and the Westplan – Fire requirement for level 3 bushfires to fall under the control of the FES commissioner.

The importance for DFES of bushfire expertise is reflected in the number of personnel accredited as Level 3 and Level 2 ICs (22 and 53 respectively – see Figure 15 in Section 4.1). DFES has bushfire expertise through different levels of the agency, including at senior levels. For example, two of the current Assistant Commissioners have significant prior experience in bushfire management, including one who was previously at the Bush Fires Board of WA.

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[63] Westplan – Fire, Part 4 - Response

DFES and P&W take a different approach to preparing the resourcing and deployment of IMTs, reflecting the different types of incidents that they typically respond to. The AIIMS structure is designed to allow for IMTs to scale up according to the needs of the incident. However, the level of IMT resourcing needed for the incidents that each agency typically responds to tends to be quite different, resulting from the different types of incidents in their jurisdiction. DFES is responsible for multiple hazards, of which fire is one but also include cyclone, flood and storm events that can occur over an extended period. Different characteristics of these hazard events have an impact on response and IMT requirements. Fire incidents that DFES respond to are often metro based with a relatively short duration. In contrast, fire is the only hazard that P&W respond to, predominantly in rural settings and often with an extended duration. These different types of incident require different levels of IMT resourcing, which is reflected in differences in preformed IMTs between the two agencies. P&W have five preformed IMTs consisting of around 50 people, designed to respond to Level 3 bushfire incidents.[64] P&W staff may be on multiple rosters, and the rosters of the five preformed teams are designed so that only one preformed team is guaranteed to be available at any time during the bushfire season. In contrast, DFES have five metropolitan based preformed IMTs of around 11 people. Regionally, DFES and P&W have also documented regional arrangements (for the DFES regions of Metro, Lower South West, South West, and Great Southern) that attempt to formalise Level 2 incident management. However, resourcing based on these plans is usually superseded by both agencies' State priorities.

Another reason for differences in the preformed teams between agencies is different approaches to resourcing the AIIMS functions at the incident, regional and state level. There is currently insufficient clarity between agencies on the implications of these different approaches. P&W have a decentralised model, with AIIMS functions fulfilled at the local incident level. This is reflected in the larger P&W preformed teams. In contrast, DFES have a more centralised approach, with the SOC and ROC undertaking some aspects of the AIIMS functions. This reduces the number of personnel that DFES would consider as being required to be on the IMT. Two examples of this are described below.

- **Mapping:** The SOC and ROC both include Mapping Officer roles, which indicate that DFES may prepare maps at state or regional level. This would reduce the level of resourcing that DFES would need to resource this function at incident level. In contrast, P&W preformed IMTs include two Mapping Officers and a Modelling and Predictions Officer.

- **Logistics:** The SOC and ROC both have a Logistics Officer, which indicates that DFES may obtain and coordinate resources through the state or regional level. This would reduce the level of resourcing that DFES would need to resource logistics at the incident level. In contrast, P&W preformed IMTs have a logistics function of 12 people, including a Logistics Officer, deputy Logistics Officer, three in Supply, one in Facilities, three in Ground Support, two in Catering and one in Finance.

The deployment of a fully staffed P&W preformed team is not as a first response and will depend on the requirements of the incident. In the event of a major bushfire incident, the differences between DFES and P&W in resourcing and deployment arrangements of preformed teams means that P&W may have larger preformed IMTs that can be deployed to an incident. However, the P&W preformed teams, together with the state fire response agencies more broadly, do not have the capacity to resource two concurrent and extended Level 3 incidents with ease.

The agencies also have a different process for recognising IMT capabilities. DFES recognises IMT capabilities through training and endorsement. The DFES pathway to endorsement is based on completing prerequisites (for example, holding IC Level 2 endorsement to be eligible for Level 3 endorsement), approved nomination for endorsement, completion of specified courses, and

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[64] P&W Pre-formed Team Complement 2014-15

endorsement.[65] P&W recognises IMT capabilities through its red card certification process. This is explicit in the specific capabilities that must be demonstrated in order to receive certification, with the expectation that each capability has been demonstrated in the field. For example, the P&W IC red card certification specifies 51 capabilities that the person must demonstrate compliance with for Level 2 certification, with an additional 46 capabilities for Level 3 certification.[66] Different processes for recognising IMT capabilities means that in a multi-agency IMT, people will not be familiar with the experience and capabilities of people from other agencies unless there is a pre-existing working relationship. As a result, IMT personnel reported that it took time to build trusting relationships and to become familiar with the skills and experience of IMT members from other agencies.

Previous MIRs have recommended….

…that the Interagency Bushfire Management Committee develop a consistent program of education, training (including media), testing and review of Level 3 Incident Controllers, including provision for a formal review of the performance of individual Level 3 Incident Controllers after every incident. (Perth Hills)

This previous recommendation reflected the fact that the predecessors of DFES and P&W trained staff, including Level 3 ICs, separately. Through the IBMC, agencies have discussed a uniform accreditation process. Work is currently being undertaken by AFAC towards establishing a National Level 3 Certification process. While this process is ongoing, the IBMC has agreed that accreditation will continue to be undertaken at agency level.[67] Through the IBMC, agreements have also been to hold pre-season training workshops for Level 2 and Level 3 ICs.

6.2 While the different areas of expertise were sometimes well utilised, a lack of understanding and poor interoperability often hindered collaboration

The different areas of expertise brought by the agencies can be complementary and can strengthen the response to bushfires. There were some instances where this was well utilised. However, collaboration was often hindered by a lack of understanding of these differences. Poor interoperability between agencies, with a lack of shared platforms and approaches, also hindered collaboration.

There were instances where different areas of expertise brought by different agencies was valued and well utilised

A number of stakeholders made the comment that DFES and P&W bring complementary areas of expertise to the response to bushfires. In particular, it was noted that the expertise of DFES in asset protection complemented P&W expertise in the containment of rural fires, which was important given the potential impact of the bushfires on urban infrastructure. One example of this was the use of the DFES USAR team. This capability was used in both the Lower Hotham and O'Sullivan incidents, drawing on DFES expertise in search and rescue and in responding to structural fires. At the O'Sullivan incident,

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[65] DFES Training Pathways for Endorsement IC Level 1, Level 2, Level 3

[66] P&W Incident Controller Red Card Certification

[67] IBMC minutes, August 2014

USAR teams assessed property for structural damage, assessed whether properties in Northcliffe were defendable, and assessed critical infrastructure such as bridges on the South Western Highway.[68]

The deployment of the USAR team at the O'Sullivan incident reflected the fact that the joint agency IMT was able to identify and utilise DFES expertise. However, once deployed, the USAR team did not seamlessly operate within the AIIMS structure of the IMT, which resulted in a disconnect between USAR and other parts of the IMT. For example, while the USAR team developed reports of their shift operations, these were passed on to the ROC and some DFES personnel but not formally to the IMT Operations Officer.[69] USAR are typically deployed for rapid damage assessment, and so the processes to integrate reporting into the IMT are not formalised. Not having the USAR team fully integrated into the AIIMS structure resulted in the broader IMT having an incomplete picture of all fireground operations. This is reflected in the IAPs, with very few of the IAPs containing information on the USAR operations.[70]

A lack of understanding and trust between DFES and P&W sometimes meant that their expertise was not always used effectively

DFES and P&W personnel consistently referred to a lack of trust between some individuals within the two agencies. This mistrust was perceived to be the result of a lack of understanding of the respective expertise brought by each agency. While it is difficult to make an objective assessment of perceived mistrust, there are examples that the expertise brought by each agency was not always well understood. Two examples of this are provided below.

Air intelligence was deployed to both the Lower Hotham and O'Sullivan incidents. There were reports of air intelligence not being used as effectively as it could have been, in particular not being tasked when air intelligence resources were available. It was perceived that this was due to a lack of understanding of the predominantly P&W personnel within the IMT of the capabilities brought by the DFES air intelligence resources, but equally the issues could have arisen due to inconsistencies in the communication process for aerial resources discussed in Section 5.1. In response to being under-utilised, the air intelligence team self-deployed to tasks that could be of use to the response, keeping the IMT informed and providing the resulting intelligence back to the IMT. While this ensured that the resources were utilised, there is a possibility that they could have been more effectively deployed if tasked by Planning with the knowledge and oversight of operations and strategies across the whole incident.

Another example provided was in the operations to assess and clear roads before they were re-opened at O'Sullivan. It was reported that this was initially undertaken by the DFES USAR team, then undertaken again by P&W on subsequent days. The IAP sector plans provide some indication of this. There is a Hazardous Tree Road Inspection sector plan for the 7 February day shift, which notes that a USAR taskforce will undertake hazardous tree assessments. The sector plan specifies the taskforce leader only as "USAR", suggesting that there was limited knowledge of the planned operations of this sector. The IAPs of 9 to 12 February include a roads sector plan, specifying that hazardous tree assessments and remedial action to be undertaken by interstate personnel assisted by P&W staff, with the P&W operating procedures for assessing and removing hazardous trees attached. This indicates that there was not a consistent understanding between DFES teams and P&W teams on the role of USAR in road assessments, potentially resulting in some duplication of assessments undertaken by USAR.

Previous MIRs have recommended….

… that (the predecessors of) DFES and P&W and local government conduct joint prescribed burning

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[68] USAR situation reports for O'Sullivan, 3-5 February
[69] Email correspondence with the Manjimup ROC on 5 February
[70] O'Sullivan IAP documentation

programs to reduce fuel load, improve inter-operability and develop a mutual understanding of the firefighting techniques of each agency (Perth Hills)

…that DFES and P&W should use joint exercises to identify agreed firefighting approaches for common or likely scenarios (Parkerville)

These previous recommendations recognise that each agency has different areas of expertise and different firefighting approaches, which can be understood through joint exercises and joint operations. There was evidence that the expertise and approaches of different agencies was not fully understood at the Lower Hotham and O'Sullivan incidents, indicating that any joint exercises and operations that have been conducted have not yet overcome this lack of understanding.

The differences between DFES and P&W extends to a lack of shared platforms and approaches, resulting in poor interoperability that constrains collaboration

The differences between DFES and P&W extend to different platforms and approaches that resulted in poor interoperability. This was evident in different IAPs being used, communication and reporting through WebEOC, different approaches to resourcing and the use of different operational tools. Poor interoperability hindered collaboration at the Lower Hotham and O'Sullivan incidents.

Different approaches to IAPs

Efforts have been made to standardise key operational forms, including IAPs, in the past. This resulted in the creation of the 'toolbox' which included a standard IAP form. The WebEOC forms are intended to be consistent with these, as indicated below. However, different approaches to the use of IAPs persisted, indicated by the WebEOC Form 1 being used at Lower Hotham where WebEOC was being used to develop IAPs, and the toolbox IAP forms being used where WebEOC was not used. The O'Sullivan IMT only used one format of IAP forms, consistent with the toolbox format.

Figure 26: Examples of manual and WebEOC formats for the IAP Form 1 used at Lower Hotham

Example 1 – 31/01 night shift

Example 2 – 04/02 night shift

The use of different formats of IAP caused some delays in using the IAP effectively when being picked up on a subsequent shift by personnel unfamiliar with the format used. This was exacerbated by the use of WebEOC IAPs for shifts where the incoming Planning Officer was from P&W, and so did not have established access to WebEOC. As a result, there were reports of up to an hour being spent at the start of new shifts trying to access the IAP for the shift that had been developed in WebEOC.

Different approaches to the use of IAPs extended to changes being made between shifts without being sufficiently documented for the incoming IC. Ideally there would be consistency in the content of the direction and objectives provided in IAPs between shifts. However, there may be instances where this content needs to change during the shift, such as a change in incident objectives. Reports were made of changes being made to the content of IAPs, such as incident objectives, between shifts. The reasons for these changes were not always sufficiently documented in order to provide an adequate handover to the incoming IC. This lack of clarity over changes in IAPs hindered interoperability between agencies.

Different systems for communication and reporting

Issues associated with inter-agency access to WebEOC went beyond the format and accessibility of IAPs. WebEOC has been endorsed by SEMC as the preferred common crisis information management system to be used by emergency management agencies in WA.[71] It is used by several government agencies, including WA Police and WA Health, but not all agencies. P&W do not use the WebEOC system, as the

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[71] In September 2008, SEMC endorsed the concept of a common crisis information management system (Resolution 69/2008) and further endorsed that the preferred system is WebEOC (Resolution 70/2008).

agency considers itself as not primarily being an emergency service and is therefore not resourced to procure, maintain or operate an emergency incident management system. This means that the use of WebEOC as a tool to report information to the region and state caused some issues for P&W due to not having access to the system or, if an account was set up, being unfamiliar with the system. One impact of this was that P&W IMT personnel would not be able to see the information being provided in WebEOC, which in some cases resulted in inaccurate or incomplete information being reported upwards. This shortcoming in the use of WebEOC is discussed in Section 5.2. Another issue was that P&W personnel were not always clear on the reporting requirements through WebEOC. In the case of the O'Sullivan incident, this was mitigated on some shifts by DFES incident control personnel taking responsibility for reporting through WebEOC.

Different approaches to managing and coordinating resources

DFES and P&W have different approaches to managing and coordinating resources for incidents. Management of the P&W response to fire on P&W managed land is through its network of District and Regional offices and work centres. DFES manages and coordinates its resources in a major incident through the chain of command structure through the ROC/MOC and SOC. Different approaches to managing and coordinating resources was a challenge at the O'Sullivan incident, which was initially managed by P&W as a Level 1 and 2 incident but was then escalated to Level 3. Once the incident was escalated to Level 3, the process for coordinating resources changed from P&W's process to follow the DFES chain of command structure through the ROC. The predominantly P&W personnel on the O'Sullivan IMT had less familiarity with the DFES process for requesting and coordinating resources, which may have hindered the vertical resource management process.

The intent of involving P&W personnel in the ROC is to support a coordinated approach between DFES and P&W. Where a region's level of preparedness is red (major) or higher, the DFES Regional Duty Coordinator requests a P&W Duty Officer to be present at the ROC. The role of the P&W Duty Officer in the ROC is not specified in the WAFES manual. P&W personnel were involved in the ROCs as Liaison Officers, but there was a lack of familiarity and clarity of their roles. This may have hindered a coordinated approach to resourcing at both incidents.

A siloed approach to coordinating resources is also embedded in to DFES policy through the WAFES manual:

"Once IMT requests are received and prioritised, the human and/or physical resources are to be sourced from within DFES and/or Local Government in the first instance. This is undertaken through predetermined supply arrangements or by contractual agreements for the supply of aircraft, equipment or machinery as per the DFES contracts. Where insufficient resources are available to meet critical requests (high risk) the Regional Superintendent is to advise the SOC of the situation."[72]

This indicates that there is not a consistent multiagency approach to sourcing resources for an incident, as the request goes to the SOC before identifying and sourcing available P&W resources from within the region. Consistent with this, stakeholders involved in the O'Sullivan incident reported that resources were deployed by the SOC from outside the region, despite P&W resources in the region being available. This meant that resource deployments were not always optimal. While each ROC did have a P&W Liaison Officer, the intent of this in relation to supporting coordination and joint resourcing decisions was not fully realised.

Another difference between DFES and P&W in the approach to managing resources is the authorisation of contract resources. P&W delegations are more decentralised, allowing for contractors to be signed off by IMT logistics personnel, whereas DFES requires approval to be given by the ROC.

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[72] DFES, WAFES Manual, Part Five: Regional Operations Centre (ROC), Section 2.3.2 Procure Resources (pages 17-18)

The impact of having different approaches to managing and coordinating resources is compounded by the lack of an integrated resource management system, discussed in Section 5.1.

Different fatigue management policies

Fatigue management policies were another area of difference between agencies in how resources are managed. Shift arrangements for DFES personnel are determined by the Fire Services Enterprise Bargaining Agreement (EBA), which has a schedule covering fatigue management for non-rostered shift workers. [73] Separately, a fatigue management policy is being drafted, which will provide additional guidelines around the responsibilities of individuals and supervisors in managing fatigue but will not supersede hours of work set by industrial agreements. [74] P&W also have a fatigue management policy specifically for fire operations, which provides guidance on shift durations and breaks and guidelines on how supervisors can manage fatigue of teams. [75] Volunteer associations may have different policies again. Figure 27 shows the key aspects of each policy on shift durations.

Figure 27: DFES and P&W policy on shift arrangements

DFES – Fire Services EBA, Schedule 6	P&W SOP 12 – Fatigue Management in Fire Operations Including Prescribed Burning
Maximum shift length of 18 hours followed by an 8 hour break, extendable to 24 hours in justified circumstances subject to Superintendent approval. After the first shift, 12 hour shifts are the default. Maximum of 84 hours in a 7 day period.	Supervisors endeavour for work plus travel hours to be no more than 16 hours during a 24 hour period, recognising that in some cases longer shifts may be required, especially on the first day of an incident. Where shifts exceed 12 hours, including travel time, then on completion of five day shifts or three nights a minimum 24 hour break must be provided.

It was reported that different approaches to fatigue management between agencies made it difficult to manage multi-agency resources at both incidents. However, it was also noted that factoring in different fatigue management policies of different agencies could be addressed through an integrated resource management system, as discussed in Section 5.1.

Different models of fire prediction

There were different fire prediction systems and models used by DFES and P&W. Both agencies draw on multiple fire prediction systems and models as well as fireground information to develop fire behaviour predictions for the various vegetation types. This sometimes involves the use of different tools. For example, one of the tools that DFES uses for fire prediction analysis is the Aurora fire simulator software (with the outputs analysed and validated by a bushfire behaviour analyst), developed in collaboration with the University of Western Australia (UWA) and Landgate. P&W did not use this tool, instead using the manual calculation method based on Vesta modelling and spot forecasts. It is beyond the scope of this MIR to assess whether different fire prediction models were accurate or not.

Having multiple fire prediction models to draw on is useful, as it can result in a more informed view of the potential impact of the fire. However, stakeholders reported that it took time to reconcile the outputs of different fire prediction models to come to a common view of the likely fire behaviour. This was exacerbated by the different lengths of time required to produce fire predictions from different models, for example where spot forecasts and Vesta modelling were manually incorporated into

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[73] WA Fire Service EBA 2014, Schedule 6
[74] DFES, Fatigue Management Policy (DRAFT)
[75] P&W, SOP 12, Fatigue Management in Fire Operations Including Prescribed Burning

predictions. Delays in establishing a common view of anticipated fire behaviour meant that decisions made by the SOC on the strategic coordination of resources across the state were less well informed. At the incident level, IMT decisions on fireground objectives and resourcing were also less well informed.

In recognition of the uncertainties created by using different fire prediction models, the IBMC has been discussing a common WA approach to fire prediction models since 2011. At the time of the Lower Hotham and O'Sullivan incidents, this had not been finalised, with ongoing discussion regarding the adoption of a common WA position on recommendations made by independent consultants on the Fire Predictive Guidelines. As of June 2015, these discussions have been resolved with the IBMC, on behalf of DFES, P&W and local government, endorsing the recommendations of the independent consultants regarding Fire Predictive Guides.[76]

Different maps

DFES and P&W use different maps and have different processes for developing fireground maps. This hindered the effective use of air intelligence at the O'Sullivan incident. Mapping information developed by air intelligence is sent directly to the DFES GIS unit at State, where it is auto-populated on to FES maps and comes back to the IMT. For the O'Sullivan incident, this air intelligence was then reconciled with P&W maps for use by the IMT. The additional time resulting from integrating the DFES and P&W maps and processes resulted in the air intelligence not being timely and therefore not accurate in some cases.

Previous MIRs have recommended…

…that WA fire agencies adopt a common set of standing orders, operational procedures, training and competencies for rural firefighting that are produced in hard copy, leading to integrated multi-agency training, IMTs, Regional and State coordination/control centres. (Black Cat Creek)

…that the Executive Teams of both DFES and P&W should meet quarterly to review and agree joint improvements relating to issues of interoperability, complementarity and the alignment of firefighting doctrine. The establishment of a unified command in joint State Operations Centre, Regional Operations Centre and Incident Management Teams should be pursued as an overarching goal. (Parkerville)

The recommendation from the Black Cat Creek review was made in the context of bushfire response being dispersed across over a hundred Local Governments as well as DFES and (the predecessor of) P&W. All DFES operational doctrine and standard operating procedures are available on the external portal, facilitating common processes between DFES and volunteers, including Local Government brigades.

Through the IBMC, agencies are working towards common doctrine. However, this is a difficult and complex task, and there is still more to be done to establish common processes between DFES and P&W. This resulted in poor interoperability at the Lower Hotham and O'Sullivan incidents.

6.3 Collaboration is challenging, but there are some positive examples to draw inspiration from

Collaboration is difficult to achieve, with organisational accountabilities and responsibilities often working against interagency collaboration. The agency response to the Lower Hotham and O'Sullivan incidents suggests that there is currently insufficient collaboration between DFES, P&W and Local

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[76] IBMC meeting minutes, October 2014 and June 2015

Government. Differences between agencies have not been overcome to support successful collaboration during major incidents and outside of emergencies. However, there were some positive examples demonstrated in the response to the two incidents that prove the value of collaboration.

It is often hard to find the 'sweet spot' between too little and too much collaboration

Theories of collaboration suggest that there is a 'sweet spot' of collaboration between too little and too much collaboration. Finding this 'sweet spot' of collaboration can be a challenge. Figure 28 shows the typical indicators and implications of too little and too much collaboration.

Figure 28: Indicators and implications of too little and too much collaboration[77]

Too little collaboration	Too much collaboration
Indicated by: • Collaboration based on informal networks • Collaborate on anything rather than identifying strategic opportunities • No credit given for supporting other groups **Implications:** • Duplication of effort • Incoherent services • New opportunities underexploited • Negative stereotyping	**Indicated by:** • Senior people assume collaboration is easier than it is • Collaborate on everything rather than identifying strategic opportunities • Little recognition of distinct strengths and weaknesses **Implications:** • Senior people are consumed by coordinating everyone • Frustration and conflict • Distinctions between areas are lost

The relationship between DFES and P&W at the Lower Hotham and O'Sullivan incidents often displayed the characteristics of too little collaboration

The differences between DFES and P&W and their implications on the response to major fire incidents were readily identified by personnel from both agencies. Despite this, differences have not been resolved sufficiently to enable DFES and P&W to take a collaborative response to major incidents. Both DFES and P&W personnel consistently acknowledged that collaboration between the agencies in relation to fire hazards is insufficient and hinders the response.

The relationship between DFES and P&W often displayed the characteristics of too little collaboration. Where collaboration did take place in the Lower Hotham and O'Sullivan incidents, it tended to arise only from informal networks. Reflecting this, members of the IMT based outside of the metropolitan area often commented that they worked well with their counterparts from the other agency if they already had an established relationship, but that otherwise collaboration was limited. DFES and P&W personnel

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[77] Brown and Eisenhardt, *Competing on the edge: Strategy as structured chaos*, 1998

have sought to involve DFES staff in P&W preformed teams in the past. However, competing organisational rosters and different working arrangements, in particular different fatigue management systems, have meant it has not been possible to achieve this on a continuing basis.

Insufficient collaboration between DFES and P&W at a strategic agency level manifested in many ways during the response to the Lower Hotham and O'Sullivan incidents. The examples discussed in Section 6.2 of expertise not being well utilised and poor interoperability provide strong indications of insufficient collaboration leading to an incoherent approach. There was duplication of effort at the SOC, where the functions did not fully integrate the personnel of different agencies. The physical layout of the SOC is designed to be able to integrate all agencies into single functions, with seating and signposting in place to facilitate this. However, members of the SOC from DFES and P&W reported that there was physical and operational separation between agencies within the functions. One reason for this is that the agencies operate differently, with DFES taking a more centralised approach than P&W to resourcing AIIMS functions (as discussed in Section 6.1). As well as resulting in duplication of effort, the SOC functions would not have been able to draw on the expertise and knowledge of the different agencies as efficiently as possible.

Effective collaboration requires an understanding and acknowledgement of the roles that each party brings. DFES and P&W personnel reported that while understanding and trust between the agencies has improved over recent years, it is not yet at the level required for consistent and effective collaboration. As a result, insufficient collaboration between DFES and P&W may be a result of a lack of understanding and trust.

However, there were some examples of good collaboration at the Lower Hotham and O'Sullivan incidents

There were some examples of good collaboration that facilitated a more effective agency response to the Lower Hotham and O'Sullivan incidents. One example of this was the regional agreement for inter-agency bushfire arrangements between the P&W Warren and South West regions and the DFES South West and Lower South West regions. The O'Sullivan incident occurred within the region covered by this agreement. The agreement outlines the commitment of DFES and P&W to participate in joint pre and post-season briefings and joint training exercises, with an expectation that at least one pre-season training exercise will be conducted, and outlines protocols for inter-agency communication and information management. It also specifies that a regional inter-agency IMT will be established incorporating personnel from DFES, P&W and Local Government to fill Level 2 positions, to be on standby dependent on certain risk-based triggers.[78] DFES and P&W personnel from the region noted that these arrangements facilitated collaboration between the agencies for the O'Sullivan incident. The key links between agencies were already established for the season, which meant that there was frequent communication between the agencies at the regional level as the O'Sullivan incident escalated.

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[78] DFES and P&W Regional Inter-Agency Bushfire Command, Control and Coordination Arrangements, 2014-15 Bushfire season, arrangements between P&W Warren and South West Regions and DFES South West and Lower South West Regions

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Previous MIRs have recommended….

…that WA adopts a culture of joint IMTs in future. At Regional and State levels, DFES and (the predecessor of) P&W maintain standing contributions. (Black Cat Creek)

This previous recommendation reflected an observation that joint inter-agency IMTs allow the incident response to draw on the expertise of all agencies and can help with coordinating IMT resources to ensure the IMT has sufficient capacity. Both the Lower Hotham and O'Sullivan IMTs consisted of personnel from DFES, P&W and Local Government, as well as personnel from interstate agencies. The South West regional agreement demonstrates that agreements for joint IMTs are in place in this region. However, there is not a formal process for developing joint IMTs with standing contributions across the state.

Another example of good inter-agency collaboration was the operation of the ISG and OASG for O'Sullivan. The role of the ISG and OASG is to provide inter-agency support to incident management (through the IC) and regional coordination (through the Operational Area Manager) respectively. Each group is composed of representatives from multiple agencies including utilities, infrastructure and Local Government, to provide information, expert advice, support and resources during the response.[79] There were positive reports of the effectiveness of both groups, for example one member of the ROC commenting that the ISG and OASG were "as good as you can get".

One aspect of the effectiveness of the ISG and OASG was that they were convened quickly, particularly the ISG. The ISG was requested on the 1 Feb with the first teleconference meeting being held a few hours afterwards at 1600 on 1 Feb.[80] An OASG was already established for the Waroona incident. Given that many of the same personnel would be required to participate in an OASG for O'Sullivan, the OASG discussed the escalating situation at the O'Sullivan incident in the 1 Feb 0900 OASG meeting. The first OASG meeting for O'Sullivan was then held later that day at 1500.

Representatives from the ISG and OASG reported that they were an effective forum to make decisions requiring the coordination and input of multiple agencies involved in the response. Three examples of this are shown below.

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[79] SEMP 4.1 – Incident Management
[80] Recorded in the first Regional Situation Report on 1 Feb after the O'Sullivan incident was escalated to Level 3

Figure 29: Examples of OASG decision making[81]

Location of Walpole Evacuation Centre

- *5 Feb 1530 meeting* – Department for Child Protection and Family Support (CPFS) requested Denmark instead of Walpole as a possible evacuation centre

- *5 Feb 1530 meeting* – OASG agreed to Denmark location

- *6 Feb 0830 meeting* – Walpole relocation centre has been set up at Denmark this morning

Outbreak of gastroenteritis

- *5 Feb 1530 meeting* – Health reported an outbreak of gastro within firefighter accommodation

- *6 Feb 0830 meeting* – Hand sanitiser has been delivered this morning

- *7 Feb 0830 meeting* – On the previous day, a nurse gave a brief information session and provided hand sanitiser

Community advice on mobile communications

- *7 Feb 0830 meeting* – Telstra advised that mobile communications in Northcliffe could be under strain and requested the volunteers and community are asked not to upload media files to the internet

- *7 Feb 0830 meeting* – Shire Recovery Coordinator took an action to relay the message to the community meeting at 1200

Both the ISG and OASG reported that the groups were effective because they have established working relationships developed through regular meetings and training exercises conducted through the Local Emergency Management Committee (LEMC) and District Emergency Management Committee (DEMC). The groups have also worked together in previous emergency situations, for example the ISG has been convened for two previous fires in the past three years.

As a result, agency representatives are familiar with their roles in the group and have common expectations of the meetings. This helps establish the informal working relationships. It has also enabled the formal development of standardised templates. The DEMC has developed standardised templates and forms to support OASG meetings, such as an agenda template, action item template and minute template.

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[81] O'Sullivan OASG Meeting Minutes

7 To improve the effectiveness of the response to fire, the MIR recommends that agencies focus their joint efforts on three key priorities

This MIR has reviewed the effectiveness of the agencies' response to the Lower Hotham and O'Sullivan incidents. It is apparent from the key findings of the MIR that addressing the root causes of the effectiveness of the response requires a joint effort between agencies, in particular between DFES, P&W and Local Government. An effective response to a large and complex bushfire requires an IMT that draws on the resources and expertise of all fire agencies. With multiple agencies involved in the response, action taken to prevent break downs in key systems, processes and policies needs to be supported by all agencies. Where differences between agencies are constraining the collaboration required for an effective response, agencies must work together to overcome them.

Many recommendations for improving all aspects of managing the fire hazard have been made by previous reviews in WA and in other jurisdictions, of which many are relevant to the key findings of this MIR (see recommendations of the most recent MIRs in Appendix A). The challenge is in identifying the most promising opportunities for agencies to focus their joint effort and then collaborating effectively to implement these opportunities. However, collaboration between organisations often fails to deliver its full promise. DFES, P&W and Local Government must first create the conditions that will enable them to collaborate on opportunities to improve the effectiveness of their response to fire. Collaboration is most likely to be successful where it focuses on a small number of opportunities that will have the greatest impact. With this in mind, the MIR recommends that agencies focus their efforts on three priorities to deliver an improved inter-agency response to future major fire incidents:

1. Establish multi-agency preformed IMTs

2. Clarify the role of the ROC and SOC and their reporting relationships

3. Develop an integrated inter-agency resource management system

The conditions for establishing successful collaboration and the three recommendations are discussed below.

7.1 DFES, P&W and Local Government need to create the conditions for successful collaboration

Opportunities for improvement that require agencies to collaborate have been identified in previous MIRs. These opportunities have not always been implemented, in part because there has not been a strong foundation for agencies to work together to improve their joint response to fire. The agencies must first establish the conditions for successful collaboration in order to successfully pursue opportunities for improvement that will improve the inter-agency response to fire.

Personnel from DFES, P&W and Local Government reported that differences between the agencies constrained collaboration in the response to both the Lower Hotham and O'Sullivan fires. For complex operations such as responding to major fire incidents there are likely to be many opportunities to improve collaboration. Acknowledging this is a crucial initial step but determining exactly how collaboration can be improved is more problematic.

Collaboration between organisations often fails to deliver its full promise. The anticipated benefits are not always realised, the underpinning relationships are not always maintained and the benefits may not always outweigh the costs. Collaboration therefore requires the right conditions to be successful. The mixed success achieved through collaborations is evidence that the conditions required for successful collaboration are difficult to achieve.

Collaboration can be an integral component of an organisation's path to implementing its own goals. This means it is important to begin with a deep understanding of the strategic aspirations of each prospective collaborator. Establishing and recognising mutual goals, purpose and benefit is essential for successful collaborations. Ventures without this commonality either do not get past the initial idea or never deliver the anticipated outcomes. It is important that each of the collaborating parties is clear on what specific benefits it is seeking from the collaboration and recognises what each of the parties brings to the collaboration.

One may presume that agencies responding to a fire have a broadly common goal to control it. This is not necessarily reflected in the way that different agencies conduct firefighting operations. Different agencies take different approaches to responding to fire, which may be indicative of different priorities. Although these different priorities may contribute to suppressing a fire their separate pursuit does not necessarily equate to collaboration or deliver the potential benefits of collaboration. This is to be expected in circumstances where agencies have different capabilities, experience and resourcing levels.

In addition to establishing mutual goals, purpose and benefit, there are four enablers and four barriers to successful collaboration that must be addressed. These are set out in Figure 30 below.

Figure 30: Enablers of and barriers to collaboration
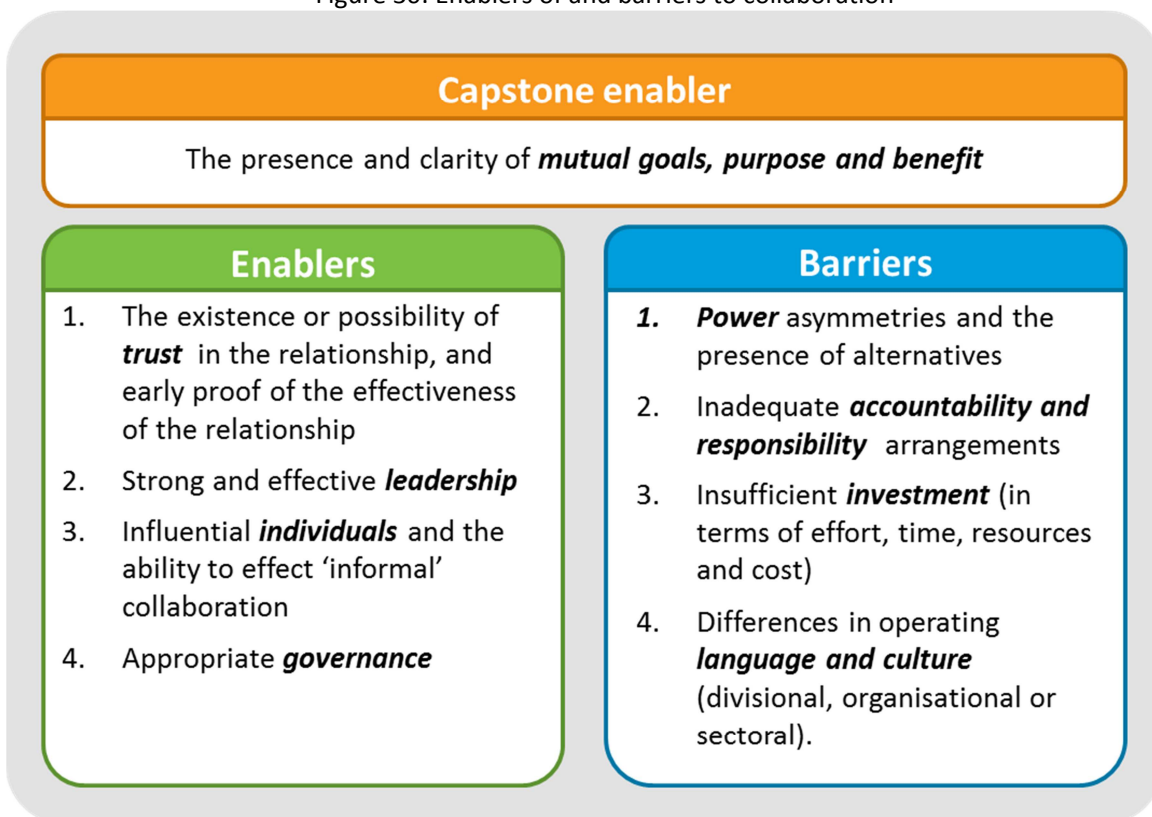
The key enablers and barriers to collaboration, and their implications for DFES, P&W and Local Government for collaborating in response to major fire incidents, are examined in more detail in Appendix B.

The fire agencies have a great deal to offer one another in terms of knowledge, skills, relationships and assets. DFES has a mandate to provide the necessary leadership in responding to major fire incidents, owing to the provisions of Westplan – Fire and its status as the Hazard Management Agency for fire. This is not to say that other agencies are not required to demonstrate leadership, but that other agencies may look to DFES to provide leadership in pursuing collaboration. Ultimately if the outcomes of collaboration in responding to fire are to be improved, it must be driven by all agencies and be informed by the insights of leaders within them.

There is a broad spectrum of collaborative forms, from consultation (requiring low participant engagement) to close alliances and partnerships (requiring high participant engagement). Collaborations that require high levels of participant engagement are more difficult to achieve, requiring greater effort to put in place the enablers of collaboration and remove the barriers. The MIR recommends three opportunities for agencies to focus their collaborative efforts initially. Successful implementation of these opportunities will nurture the enablers and weaken the barriers to collaboration. This will establish a strong foundation for increasingly engaged and effective modes of collaboration in the inter-agency response to fire.

7.2 The MIR makes three recommendations to pursue promising opportunities for collaboration to improve the inter-agency response to fire

Many recommendations for improving all aspects of managing the fire hazard have been made by previous reviews in WA and in other jurisdictions. Many of these are relevant to the effectiveness of the agency response to the Lower Hotham and O'Sullivan incidents, as has been noted through the key findings. However, the challenge is in identifying the most promising opportunities for agencies to focus their joint effort and then collaborating effectively to implement these opportunities.

Successful collaborations are typically able to find the 'sweet spot' between too much collaboration and not enough collaboration. During the Lower Hotham and O'Sullivan incidents, the relationship between DFES and P&W in particular displayed the characteristics of too little collaboration (as discussed in Section 6.3). The challenge for successful collaboration in managing the fire hazard is further complicated by the need for both agencies to work with Local Government and volunteers.

Collaboration is more likely to be successful if it is targeted. DFES, P&W and Local Government should therefore narrow the focus of their collaborative effort to a small number of opportunities that will have the greatest impact. With this in mind, the MIR recommends that agencies focus their efforts initially on three priorities to deliver an improved inter-agency response to future major fire incidents:

1. Establish multi-agency preformed IMTs
2. Clarify the role of the ROC and SOC and their reporting relationships
3. Develop an integrated inter-agency resource management system

These three broad priorities incorporate other specific opportunities that will support their successful implementation. For example, establishing multi-agency preformed IMTs will be more successful if agencies adopt common systems and processes for communication and reporting. By focusing effort on these three key priorities initially, agencies will be more likely to get sufficient traction on a broader set of opportunities to improve the inter-agency response to future major fire incidents. Each of the three recommendations is explored further below.

7.2.1 Establish multi-agency preformed IMTs

Establish multi-agency preformed IMTs
An effective IMT for large and complex fire incidents requires the capacity and expertise of multiple agencies. Establishing multi-agency preformed IMTs will have three main benefits: • adequate IMT resources can be deployed with ease • strong working relationships will be built between IMT members • common approaches to incident management and fire response can be embedded.

Questions to be answered	Critical success factors
• What should be the target capacity of multi-agency preformed IMTs and how will this depend on the requirements of the incident? • Which agencies should participate? • What systems and processes need to be common to enable a multi-agency IMT to function effectively? (e.g. IAPs, accreditation) • Will preformed multi-agency IMTs be multi or single hazard?	• Preformed IMTs must be available for deployment during high risk periods • Regular training exercises are required to build working relationships and establish common approaches • Any barriers preventing the preformed IMT from operating as an integrated team are removed • Any barriers to participation of different agencies are removed

An effective IMT for large and complex fire incidents requires the capacity and expertise of multiple agencies. Establishing multi-agency preformed IMTs will make it easier to deploy adequate IMT resourcing, will build working relationships between IMT members and will help to establish common approaches across agencies. There are a number of practical challenges that agencies will need to overcome in order to successfully establish multi-agency preformed IMTs. Some of these challenges include different working arrangements, balancing business as usual commitments, integrating local knowledge that covers all high risk local government areas, integrating personnel involved in the initial response, building in scalability of teams. Through creating the conditions for collaboration (as discussed in Section 7.1), agencies will be better equipped to work together to find a joint solution.

Adequate IMT resources can be deployed with ease

The experience of the response to the Lower Hotham and O'Sullivan incidents indicates that it is difficult to quickly deploy adequate IMT resources to escalating incidents, particularly if there are concurrent incidents. Preformed IMTs can be rostered to be on call during high risk periods and deployed to escalating incidents as required, as was demonstrated by the deployment of P&W preformed teams to the O'Sullivan incident. However, P&W does not currently have sufficient capacity to resource more than one preformed team to be guaranteed as available at any one time, and a preformed team consisting of primarily P&W staff does not explicitly facilitate integration of multiple agencies in to the IMT. Establishing multi-agency preformed IMTs will increase capacity by drawing on the resources of multiple agencies. It can also be difficult to deploy an IMT that adequately draws on the expertise of all agencies. Having multi-agency preformed IMTs will mean it is easier to ensure that the required expertise is incorporated into the teams prior to being deployed to an incident. Multi-agency preformed IMTs would still need to allow for the integration of local government and local knowledge, which will be dependent on the location of any incident.

Strong working relationships will be built between IMT members

IMTs where strong working relationships are already established between team members are likely to be more effective in managing an incident. This was observed by IMT members through this MIR, such as in comments on the time required to establish effective relationships with new IMT members. It is also supported by research indicating that IMTs where working relationships have previously been formed demonstrate higher performance, such as attending to more fireground events more effectively, producing higher quality reports, making timelier decisions, developing greater situation awareness and showing greater teamwork.[82] Preformed IMTs train together and are deployed to incidents together, which means that everyone has greater familiarity with how they need to work with other team members to fulfil their role. There will also be continuity in key IMT roles. Having preformed IMTs that are multi-agency provides an opportunity to build trusting working relationships between personnel from different agencies, which could otherwise be difficult to achieve. This will help to build understanding, respect and trust between agencies, which will support a more collaborative inter-agency response to major fire incidents.

Common approaches to incident management and fire response can be embedded

Multi-agency preformed teams can embed common approaches to incident management and to fire response. Working together in a preformed IMT allows personnel from different agencies to gain familiarity with agreed common approaches, and to establish a common understanding of their roles on the IMT. This can address the interoperability issues that result from the agencies' different ways of working. There are specific opportunities to improve interoperability between agencies that will enhance the effectiveness of a multi-agency preformed IMT. One clear opportunity highlighted by the MIR is common systems for communication and reporting across all agencies. A multi-agency IMT needs a single system that is used by all personnel, which is not currently the case. Developing IAPs is an important task of the IMT, which requires a single agreed IAP format in use by all agencies that participate in a multi-agency IMT. Currently, a single multi-agency IAP format has been agreed but is not always used. To ensure that operational resources are managed consistently by a multi-agency IMT, there needs to be a commonly agreed approach to setting up staging areas. These are just a few of the potential opportunities for improving interoperability. As multi-agency preformed IMTs are established and start to train and deploy together, other opportunities are likely to be identified and pursued.

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[82] Bushfire CRC and AFAC, Fire Note Issue 106, The Influence of Familiarity on Teamwork and Decision Making, April 2013

7.2.2 Clarify the role of the ROC and SOC and their reporting relationships

Clarify the role of the ROC and SOC and their reporting relationships
The ROC and SOC have important coordination roles under the State Emergency Management Arrangements to support both the incident and the broader region and state. Clarifying the role of the ROC and SOC, their reporting relationships, and how the command structures of other agencies are integrated, will have three main benefits: • the ROC and SOC can perform their functions effectively   • no inconsistencies, gaps or duplication in the activities of the IMT, ROC and SOC   • transparency of incident management

Questions to be answered	Critical success factors
• What are the sources of information and tools that will be used for reporting? • How should the reporting rhythm be determined? • How should the ROC and SOC be resourced? • How should other agencies be integrated into the ROC and SOC? • How should the roles of the SOC, ROC and IMT be distinguished from each other while remaining consistent with the principles of AIIMS?	• The ROC, SOC and IMT are multi-agency teams, so all response agencies need to be involved in clarifying the roles and reporting relationships • The roles of the ROC and SOC and their reporting relationships should be consistent with the principles of AIIMS

The ROC and SOC have important coordination roles to support both the incident and the broader region and state. Clarifying their roles and reporting relationships, and how the command structures of other agencies are integrated into them, will enable the ROC and SOC to perform their functions effectively, with no inconsistencies, gaps or duplication in the activities of the IMT, ROC and SOC. This will provide greater transparency over incident management.

The ROC and SOC can perform their functions effectively

The MIR observed that there are different interpretations of the functions of the ROC and SOC, particularly between members of the IMT and the SOC. This manifested in the SOC making operational decisions for the incident that the IMT considered to be in their remit. Clarifying the roles of each level in respect to each other will ensure that the SOC and ROC are supporting the incident in the most effective way. Clarity of reporting relationships to the ROC and SOC were not always clear, particularly for personnel outside of DFES who were less familiar with this coordination structure. There is also insufficient clarity over how the command structures of other agencies are integrated into the ROC and SOC reporting relationships. Ensuring clarity of reporting relationships will mean that the ROC and SOC receive the information they need to perform their functions effectively.

DFES, P&W and Local Government may identify some specific aspects of the roles of the ROC and SOC that would benefit from additional clarification. This could include reviewing any processes where the alignment to the regional and state coordination hierarchy is unclear, such as state media messaging and aerial operations. There may be an opportunity to clarify the information requirements of the functions in each level, such as access to spatial data. The issue that DFES has noted regarding the regional boundaries could also be considered in clarifying the role of the ROC.

No inconsistencies, gaps or duplication in the activities of the IMT, ROC and SOC

Insufficient clarity over the roles and reporting relationships for the ROC and SOC, and how the command structures of other agencies are integrated into them, resulted in inconsistencies, gaps and duplication in the activities of the IMT, ROC and SOC at the Lower Hotham and O'Sullivan incidents. There were instances where there were inconsistencies between the activities of the IMT and of the SOC, such as the re-deployment of resources away from the fireground. Clarifying where the responsibility for such decisions sits will reduce the likelihood of inconsistencies in the response to future incidents. Gaps in the strategic coordination roles of the ROC and SOC resulting from inadequate information will be mitigated with greater clarity over reporting relationships and greater clarity over how the command structures of other agencies integrate into the ROC and SOC.

Transparency of incident management

Insufficient clarity over the roles of the ROC and SOC leading to inconsistent activities relative to the IMT means that there is not complete transparency of the management of the incident. This was evident in the Lower Hotham and O'Sullivan incidents with the deployment of resources to the incident without IMT knowledge. Addressing this would enable the IMT to manage the incident more effectively. Similarly, insufficient clarify over reporting relationships means that the ROC and SOC do not have completely transparency of the incident. Addressing this would enable the ROC and SOC to undertake their strategic oversight and coordination roles more effectively.

7.2.3 Develop an integrated inter-agency resource management system

Develop an integrated inter-agency resource management system
Large and complex fire incidents require resources from multiple agencies. Developing an integrated inter-agency resource management system will have three main benefits: • identifying potential resources will be more straightforward • the status and location of resource deployments can be tracked • planning of deployments can take into account all relevant information

Questions to be answered	Critical success factors
• What is the best approach to ensuring the system comprehensively captures the resources of all agencies? • What will be the role of the WebEOC request log? • How will the system be maintained under business as usual and during incidents?	• It includes information on the resources of all fire response agencies and all relevant information to inform decision making on resource deployment • The information is kept up to date • It is accessible for both maintaining and using information

An integrated inter-agency resource management system will improve the response to fire by supporting agencies to identify potential resources, track deployments and plan deployments more effectively. As a result, incidents will be sufficiently resourced and deployed resources will be utilised appropriately while minimising risk. WebEOC is currently used to manage resource requests from the ROC to the SOC. However, the process to track requests from the initial request to completion has limitations, as updates must be made manually in WebEOC and can only be seen within the detail of the relevant log.

Identifying potential resources will be more straightforward

The experience of the Lower Hotham and O'Sullivan incidents, which both required a multi-agency response, indicates that it is difficult to identify resources from multiple agencies to be able to quickly deploy adequate resources to an incident. For example, DFES personnel did not have clear visibility of available P&W and Local Government resources without directly making contact. An integrated inter-agency resource management system would address this issue, making it more straightforward to draw on the expertise and capacity of all agencies to resource incidents appropriately. It would require all agencies, including local governments, to allow their resources to be mobilised through this system. At the incident, region and state level it will be easier to balance competing resource priorities, so that deployments can be made from the agencies and regions that are best placed to provide support. The ROC and SOC will also be able to ensure there are sufficient resources on standby in high risk areas. The benefits of an integrated inter-agency resource management system will be greater if there is also a common approach to recognising key competencies, such as IMT role and level accreditation.

The status and location of resource deployments can be tracked

There were issues reported with tracking the status of resource deployments across the state, with the IMT and ROC not having transparency over incoming resources. An integrated inter-agency resource management system could address this gap, enabling the IMT to manage logistics for incoming resources and plan deployments more effectively. The ROC and SOC will also have transparency over whether resources have been deployed in line with requests. The benefits of tracking resource deployments would be enhanced if a multi-agency resource management system is also linked to electronic resource tracking. P&W has vehicle location technology available, and DFES is currently implementing Automatic Vehicle Location technology. However, there is not currently a common system. Linking a multi-agency resource management system to a common vehicle location system would make it possible for multi-agency teams to track the movements of deployed resources on the fireground in real time. This would enable the IMT to identify any unplanned movements in fireground resources that could put operations or crews at risk. Further down the track, there may be opportunities presented by the emerging technology of wearable devices, which can be used to track and manage fatigue issues. However, this technology is still relatively new.

Planning of deployments can take into account all relevant information

An integrated inter-agency resource management system will be able to bring together all the relevant information for resources, not just on skills and expertise but also information on expected deployment durations, prior deployments, and fatigue management arrangements. Currently, this information is not easily accessible to planning officers at incident, region or state level. It is difficult for the IMT to plan ahead for the deployment of resources on to the fireground, and any factors impacting fatigue may not be taken into account. For the ROC and SOC, it is difficult to balance competing resourcing demands across the region and state. Addressing this information gap through an integrated inter-agency resource management system will mean that planning officers at every level can plan resource deployments more effectively with less risk to incident operations and crews.

Appendix A Recommendations of recent MIRs

A.1 Mick Keelty AO, A Shared Responsibility: The Report of the Perth Hills Bushfire February 2011 Review (2011)

1. The Fire and Emergency Services Authority and the Department of Environment and Conservation develop and finalise their Memorandum of Understanding and commit to working in partnership.

2. Emergency Management Western Australia establish an inter-agency working group to continue the development of the new single emergency services Act.

3. The State Government transfer responsibility for declaring bushfire prone areas from local government to the Western Australian Planning Commission. The Western Australian Planning Commission should urgently assess those areas that should be declared bushfire prone.

4. The State Government give legislative effect to the *Planning for Bush Fire Protection Guidelines*.

5. Local Government recognise the work of the Gas Technical Regulatory Council and ensure any amendments to the Australian Standard are enforced. Local Government provide information to residents on any changes to the Australian Standard relating to tethering gas tanks and encourage property owners to take action to comply with the Standard.

6. The Fire and Emergency Services Authority, in partnership with local governments, conduct more focused pre-season bushfire education, which emphasises:

   ◦ Water supply is not guaranteed during a bushfire

   ◦ Power supply is not guaranteed during a bushfire

   ◦ Saving life will be a priority over saving property so expect to be evacuated

   ◦ Once evacuated, access to affected areas may not be possible for several days

   ◦ Water "bombing" by aircraft cannot be guaranteed in bushfire

   ◦ SMS warnings are advice only and may not be timely.

7. The Fire and Emergency Services Authority (FESA) review its distribution of information material, including *Prepare. Act. Survive*. FESA should also consider including the community in pre-season exercising, in consultation with the Department for Child Protection and local governments.

8. Local governments continue to include information on bushfire risk and preparedness with rates notices.

9. The Fire and Emergency Services Authority work in partnership with the Real Estate Institute of Western Australia to develop a package of information for new residents moving into bushfire prone areas, and a process to ensure this information is provided through real estate agents.

10. The Department of Education oversee the provision of bushfire education in schools that are located in bushfire prone areas, ensuring that all schools in these areas incorporate key bushfire messages in their curriculum.

11. The Fire and Emergency Services Authority consider alternative wording to Total Fire Ban that ensures people gain a more complete understanding of what actions are prohibited.

12. The Fire and Emergency Services Authority work in partnership with Main Roads Western Australia and local governments to develop and implement a comprehensive strategy for the use of mobile variable message boards to alert the community to the declaration of a total fire ban and what it means.

13. The State Government consider resourcing the Department of Environment and Conservation and local governments to develop and administer a comprehensive prescribed burning program in Perth's urban/rural interface to compliment DEC's existing landscape-scale program.

14. The Fire and Emergency Services Authority, the Department of Environment and Conservation and local governments take proactive steps to conduct their prescribed burning programs as joint exercises. This will give effect to:

    ◦ Reducing fuel load

    ◦ Improving inter-operability

    ◦ A mutual understanding of the fire fighting techniques of each agency.

15. The Fire and Emergency Services Authority and local governments ensure that the ability to:

◦ measure and map fuel loads

◦ maintain fuel load databases

◦ draw up prescriptions for, and oversee controlled burns

◦ are included as key competencies in any future recruitment of Chief Bushfire Control Officers and Community and Emergency Services Managers.

16. The State Government give its full support to the Western Australian Local Government Association's *Send to Solve* initiative.

17. Local governments consider increasing the number of green waste collections carried out each year to encourage a more proactive approach to property (and vegetation) maintenance by residents.

18. The Western Australian Local Government Association explore the feasibility of local governments utilising aerial and satellite imagery to monitor firebreaks and fuel loads on private property.

19. The State Government reaffirm its 2009 decision to approve DEC exercising greater flexibility in managing smoke within national guidelines, in order to achieve its prescribed burn program.

20. The Fire and Emergency Services Authority, the Department of Environment and Conservation and local governments closely monitor the research and development of alternative fuel reduction techniques to ensure that the most efficient and effective programs are adopted.

21. The Fire and Emergency Services Authority, the Department of Environment and Conservation and local governments jointly develop a single, integrated system for fuel load assessment and management. The system should enable public access to allow members of the community to access information about the fuel load in a given locality.

22. The State Government ensure that the continued development of the Fire and Emergency Service Authority's Integrated Bushfire Risk Management System is dependent on an independent comparative assessment of its functionality and cost effectiveness against the Spatial Support System used by the Department of Environment and Conservation.

23. The Interagency Bushfire Management committee develop and oversee a work program to:

    ◦ conduct site specific assessments to assess current fuel loads

    ◦ assess, analyse and prioritise bushfire risk on land within and adjacent to communities

    ◦ develop a three year rolling mitigation works program with annual implementation and review.

    ◦ This work should commence independently of any decision on the most effective

    ◦ online integrated system. All data collected should be uploaded to the SLIP.

24. The Fire and Emergency Services Authority convene a facilitated debriefing session between the families who remained behind to protect their properties, and the incident controllers. This session should include open discussion and explain the decisions of all parties – including how the incident controllers determined priorities, and why residents chose not follow their advice to evacuate. The learning outcomes should be promulgated across all agencies and incorporated in future level 3 incident controller training programs.

25. The Fire and Emergency Services Authority immediately comply with the provisions of WESTPLAN BUSHFIRE and formally declare incidents at their appropriate level and document and communicate those decisions in a similar way to the systems used by the Department of Environment and Conservation and the Western Australian Police.

26. The Fire and Emergency Services Authority develop formal procedures for mandating the completion of Incident Action Plans, ensuring the documents are detailed and that they record critical decision making.

27. The Fire and Emergency Services Authority review its use of the Australian Interagency Incident Management System to ensure that the most appropriate resources (including aerial resources) are used to respond to an incident. If resources are rejected during an incident either through the decision making process or other grounds, the reason for the decision should be documented

28. The Fire and Emergency Services Authority (FESA) review its program to decommission vehicles and ensure that when such vehicles are offered during an incident that FESA staff adhere to FESA's own policy of "Use of Private Vehicles in Fires".

29. The Fire and Emergency Services Authority and the Department of Environment and Conservation ensure that their Incident Controllers identify critical infrastructure as part of their initial assessment and preparation of Incident Action Plans when attending major incidents.

30. Main Roads Western Australia undertake more frequent examinations of its bridges located in areas prone to bushfire and ensure that the risk posed to loss of infrastructure in a fire is understood by local authorities.

31. The Fire and Emergency Services Authority and the Western Australian Police ensure they receive all necessary legal clarification in relation to *Bushfire Responsibilities of Police Officers – Powers Used in Assisting Fire Authorities in Responding to Bushfires*, to be promulgated across FESA and WAPOL.

32. The Western Australian Police and the Fire and Emergency Services Authority jointly examine the Traffic Management System developed in response to the 2009 Victorian bushfires and seek its adaptation to use in WA with additional attention to the access and egress by bona fide residents to areas that are evacuated.

33. The Fire and Emergency Services Authority and the ABC commence a thorough review of emergency warning messages. This review should give consideration to:

    ◦ The content, structure and presentation of emergency warning messages

    ◦ Media access to the Incident Management Team and State Operations Centre.

    This review should be expanded to include other media organisations should they demonstrate a willingness and capacity to contribute.

34. FESA develop in partnership with other emergency service agencies a "one source: one message" multi layered system similar to that recommended by the Victoria Bushfire royal Commission.

35. FESA and local governments jointly review radio communications capability prior to the 2011/12 bushfire season with a view to improving the current delivery of service to firefighters.

36. The Department for Child Protection, the Western Australian Police and the Fire and Emergency Services Authority develop improved arrangements for communicating the loss of home and possessions to persons gathered at evacuation centres with a view to increasing privacy.

37. Hazard Management Agencies overseeing the response to incidents on the urban fringe select evacuation centres that are well within the urban environment and unlikely to be impacted by the incident.

38. Local governments institute a comprehensive program to assess fuel loads and bushfire preparedness on private properties. The program should give reference to the creation and maintenance of a Building Protection Zone, in line with FESA guidelines. This program should be implemented and managed under the *Bush Fires Act 1954* in a manner similar to the fire break inspection program.

39. State and locals governments:

    ◦ recognise that regardless of future declarations of bushfire prone areas, the existing planning and building problems in the Perth Hills related to bushfire risk will persist;

    ◦ urge residents in these areas to retrofit their homes and evaporative air conditioners in compliance with AS 3959 - 2009;

    ◦ examine options to retrospectively bring these areas into compliance with *Planning for Bushfire Protection Guidelines.*

40. The State Government mandate that the title deeds for relevant properties be amended to indicate if the property is in a declared bushfire prone area.

41. Western Power and the Water Corporation continue to work collaboratively to assess options to better protect the power supply to water pumping stations in bushfire prone areas.

42. The State Government recognise the projected changes in climate and potential impact on future fire events.

43. The State Emergency Management Committee amend State Emergency Management Policy 4.1 (*Operational Management*) to:

    ◦ give clear and explicit direction about when and how an incident should be declared

    ◦ clearly articulate the actions to be taken

    ◦ clearly define accountabilities

    ◦ provide detailed criteria for elevating issues and engaging other agencies.

44. The State Government amend section 50 of the *Emergency Management Act 2005* to allow the Chair of the State Emergency Coordination Group to declare an emergency situation.

45. Emergency Management Western Australia and the State Emergency Management Committee amend WESTPLAN-BUSHFIRE to require State Emergency Coordination Group meetings to be held at the State Coordination Centre in West Leederville.

46. The State Government restructure the Fire and Emergency Services Authority as a Department. As part of this restructure, Emergency Management Western Australia should either be:

    ◦ clearly separated from the fire and emergency services response function; or

    ◦ moved to the Department of the Premier and Cabinet; or

    ◦ moved to the Attorney-General's department.

47. Emergency Management Western Australia develop mechanisms to calculate the estimated total cost of a fire to the community.

48. The State Government move the responsibility for the management and distribution of the Emergency Services Levy to the Department of Finance.

49. Emergency service agencies undertake more consultation and joint exercising involving the Fire and Emergency Services Authority, the Department of Environment, the Western Australian Police, the Department for Child Protection, local governments and volunteers – including Volunteer Bush Fire Brigades. This should include field exercises which test:

    ◦ Evacuation centres

    ◦ Critical infrastructure (including at the local level)

    ◦ Traffic management, including road blocks.

    Consideration should also be given to involving the community in exercising (see Recommendation 7) and using prescribed burns as exercises (see Recommendation 14). More detailed planning for exercises should be included in a revised WESTPLANBUSHFIRE to be endorsed by the State Emergency Management Committee.

50. *The State Government transfer responsibility for the installation, removal, maintenance of fire hydrants to the Water Corporation, in accordance with the recommendations of the 2006 CDJSC Inquiry into Fire and Emergency Services Legislation.*

51. The Water Corporation immediately review the outstanding orders for hydrant repairs and develop strategies to reduce the backlog.

52. The Fire and Emergency Services Authority and local governments ensure that Community Emergency Service Managers are physically based in local government.

53. The Fire and Emergency Services Authority and local governments examine the current competencies of Chief Bushfire Control Officers and Community Emergency Services Managers (or Community Fire Managers) and consider what further development is needed to ensure these staff are capable of:

    ◦ measuring and mapping fuel loads

    ◦ maintaining fuel load databases

    ◦ drawing up prescriptions for, and overseeing controlled burns

    ◦ building effective working relationships with all relevant stakeholders.

54. The Interagency Bushfire Management Committee develop a consistent program of education, training (including media), testing and review of Level 3 Incident Controllers. This should include provision for a formal review of the performance of individual Level 3 Incident Controllers after every incident.

55. The State Government review implementation of the Special Inquiry's recommendations in two years.

A.2 Mick Keelty AO, Appreciating the Risk: Report of the Special Inquiry into the November 2011 Margaret River Bushfire (2011)

1. The Department of Environment and Conservation review its current policies and operational guidelines in particular by

   - strengthening the governance of operations by ensuring the Guidelines are relevant and practical;

   - ensuring the processes that are implemented for prescribed burns are:

     - value adding to the decisions and approvals required;

     - informed by substantive input;

     - focussed on outcome rather than process.

   - completing the draft management plan for the Leeuwin-Naturaliste Capes Area Parks and Reserves in accordance with the provisions of the *Conservation and Land Management Act 1989*.

   - exploring the possibility of automating and streamlining the various processes for formulating a prescription for prescribed burns for ease of access and updating; and

   - clarifying the guidance provided to decision makers as to the 'edging' and security of prescribed burns.

2. The Department of Environment and Conservation urgently undertake a review of its risk management practices as they relate to prescribed burns including but not limited to:

   - reviewing risk management practices to ensure that they are in accordance with AS/NZS ISO 31000:2009;

   - finalising and implementing the new complexity model developed in house by the DEC;

   - 3) considering a broader set of parameters of risk by conducting an environmental scan or similar tool for areas under consideration for a prescribed burn;

   - updating the prescribed fire plans to reflect the broader risk considerations discovered through environmental scanning;

   - better informing the risk considerations by updating the 'Red Book' to reflect current research on burning in coastal heath; and

   - reconsidering the utility of the 'Red Flag Burn' notification on files and either.

3. The Department of Environment and Conservation review its implementation of the findings of the Ferguson Review conducted in 2010.

4. The Department of Environment and Conservation be supported to conduct further research into the fuel management of coastal heath in the south west of Western Australia exploring alternatives to burning as well as best practice for burning.

5. The Department of Environment and Conservation explore human resourcing models that:

    ◦   make succession planning a priority;

    ◦   look at options for the attraction and retention of staff; and

    ◦   review how the salary levels of staff matches the decision making required in major activities such as prescribed burns.

6. The Department of Environment and Conservation review its practices and procedures in the undertaking of prescribed burns so as to fully utilise the skills available to it in a seamless way including but not limited to:

    ◦   volunteer bushfire brigades, especially in regard to use as a source of local advice;

    ◦   staff of the Fire and Emergency Services Authority of Western Australia.

7. The Department of Environment and Conservation review the utility of its current regional model in terms of the capability of operational centres such as Kirup to service major fire activity on land proximate to the rural urban area (this recommendation should also be considered in the context of Recommendation 5).

8. The Department of Environment and Conservation develop and implement a strategy to better inform the community about the complexities and decisions surrounding prescribed burns when they are undertaken in the rural urban area.

9. The response operation to the Margaret River bushfire in November 2011 be the subject of a review with independent oversight.

10. The Government consider enacting legislation to facilitate the review of all future major incidents, including but not limited to fire, earthquake, storm and marine inundation, and the emergency response to them.

A.3   Leading Emergency Services, Major Incident Review for the 2012 Black Cat Creek Fire (2012)

1. Critical operational procedures such as 'Red Flag Warnings', on a common fireground need to be consistent across DFES, DEC and Local Government. In particular, the operational procedure of Red Flag Warnings needs to be adopted by all WA fire agencies.

2. All agencies ensure fire managers are trained to correctly interpret the new Spot Fire Weather Forecast and to familiarise themselves with the entire format – ensuring consideration of the whole forecast - not just the tabular data containing the 12 hour forecast.

3. As a minimum requirement, all vehicles entering the fire ground must be fitted with an accessible fire blanket – one per person in each vehicle plus roll down, in-cab, radiant heat shields.

4. Once Recommendation 1 has been actioned, all agencies give greater priority to the promulgation of 'Red Flag Warnings' in order to enhance situational awareness on the fireground.

5. DFES or P&W (depending on land tenure) is mandated to take over control of emergency incidents from Local Government once they have been declared Level 2 incidents. WESTPLAN BUSHFIRE and legislation to be amended accordingly.

6. DFES and Local Government Bushfire Brigades ensure that only those with the required AIIMS competence have the authority to manage Level 1 incidents, noting they may not be Fire Control Officers.

7. Future coordination/support/control of integrated emergency management across all agencies in Albany needs to be merged and located in a single joint facility. This issue needs to be reviewed state-wide.

8. WA adopts a culture of joint IMTs in future. At Regional and State levels, DFES and DEC maintain standing contributions.

9. WA fire agencies adopt a common set of standing orders, operational procedures, training and competencies for rural firefighting that are produced in hard copy, leading to integrated multi-agency training, IMTs, Regional and State coordination/control centres.

10. In due course, acts of bravery are considered and recommendations for awards are submitted, including commendations for the delivery of First Aid.

A.4   State Emergency Management Committee, Parkerville Stoneville Mt Helena Bushfire Review (2014)

Legislation, Policies and Plans

◦ The forthcoming review by SEMC of SEMP 4.4 Recovery Coordination and Westplan – Recovery Coordination and SEMP 4.1 Incident Management should include consideration of:

  ◦ the process for establishing a State Emergency Coordination Group (SECG) and the frequency of SECG meetings during an emergency

  ◦ clarifying of the criteria for declaring an incident at Level 2 or 3

  ◦ Clarifying the criteria for handing over control of the incident from the Controlling Agency to local government and the transition from response to recovery

  ◦ the development of processes to ensure that 'betterment' is considered in recovery plans, including the identification of roles and responsibilities

Bushfire Prevention

◦ Staff and consultants skilled in community engagement practice should be specifically included in bushfire risk management planning and preparedness building programs undertaken by State agencies and/or local government.

Bushfire Preparedness

- SEMC Secretariat Community Emergency Management Officers should work with the Shire to document the Shire of Mundaring's learnings from the Parkerville Stoneville Mt Helena fire with a view to sharing this with other local authorities particularly those facing similar situations in order to extend the range of tools available to assist local governments to understand their roles and responsibilities in future emergencies.

- DFES should review its training courses and Standard Operating Procedures to satisfy itself that all incident management personnel have the required level of understanding of WA emergency management arrangements, including those that relate to the roles of the Incident Management Team and Incident Support Group and the declaration of incident levels.

Leadership Expertise in rural-urban interface fire leadership

- DFES should increase and maintain urban interface bushfire skills and expertise. Appointments to senior roles within the agency should include people with experience and credibility in bushfire firefighting and management.

- The Executive Teams of both DFES and P&W should meet quarterly to review and agree joint improvements relating to issues of interoperability, complementarity and the alignment of firefighting doctrine. The establishment of a unified command in joint State Operations Centre, Regional Operations Centre and Incident Management Teams should be pursued as an overarching goal.

- In addition to regular meetings of the DFES/P&W Interagency Bushfire Management Committee, the two organisations should use joint exercises to identify agreed firefighting approaches for common or likely scenarios.

Bushfire Response

- Standard Operating Procedure 1 (Mobilisation Zone 2, Perth Hills area) should be reviewed to ensure that appropriate escalation triggers and levels of operational readiness are in place for future periods when severe fire weather conditions are forecast.

- Appropriately equipped Incident Control Centres should be identified and/or established throughout the Perth Hills to meet the requirements of a fully resourced Incident Management Team in future bushfire events.

- 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.

- Whenever a Bush Fires Act 1954 section 13 transfer of control is invoked, the Incident level of an event should also be reviewed and any changes documented.

- All agencies engaged in bushfire response should develop expeditious procedures for the mobilisation of resources in support of other agencies. See discussion in Section 7.1.

- Radio infrastructure in the Perth Hills should be reviewed to assess whether it is practicable for radio and/or mobile phone coverage to be improved to achieve better coverage across the area.

- The role of the Ground Controller should be reaffirmed in operational doctrine and reinforced in Incident Management Team training. During incidents involving aircraft the appointment of a Ground Controller should be confirmed by the Incident Controller.

- Procedures should be reviewed to address the risks associated with response aircraft all working from one forward operating base, including the need for a designated fire protection unit to be available in the event of an aircraft-related fire or other emergency incident.

- Training and awareness raising should be conducted to enhance the appreciation and understanding of DFES State and Regional operational personnel, including potential Incident Management Team members, of the nationally adopted Bushfire Alert and Messaging Matrix, in order to ensure that the most appropriate alert levels and associated community messaging are applied during bushfire incidents.

- Procedures should be established to monitor the use of heavy plant during a bushfire incident, including the tasking of support appliances. Procedures should provide for the appointment of a dedicated Machinery Supervisor as prescribed within the Australasian Interservice Incident Management System.

- Automatic Vehicle Location technology should be adopted to enable a better appreciation of the deployment and location of appliances at an incident, in order to increase situational awareness.

- Consideration should be given to an automatic 'Advice' notice being issued as soon as a fire is reported in a pre- determined high risk area such as the Darling Scarp on days when adverse fire weather conditions are forecast.

- Relevant policies and Westplans should be amended to require that full consultation occurs between the Controlling Agency and the Department for Child Protection and Family Support regarding the location of the evacuation centre(s) in a bushfire incident.

- DFES should prepare a Standard Operating Procedure for the conduct of community meetings, and have available the appropriate audio visual and other equipment, to ensure that such meetings are able to fulfil their function in providing information and direction.

- A Restricted Access Permit system for the entry/ re-entry of residents, based on the one developed for the Parkerville Stoneville Mt Helena Bushfire should be finalised.

- DFES, in consultation with bushfire volunteers should develop a procedure for the controlled entry and exit of volunteers to the fire ground.

- Every effort should be made to enhance the ability of communications personnel to cope with fast moving and time critical fire events by providing and maintaining:

  - ongoing extensive communications training;

  - advanced vehicle capability for clear communication within areas of radio coverage dead spots;

  - ability to receive Air intelligence live streaming;

  - map production facilities;

  - deployment of multiple Incident Control Vehicles when required;

  - all Incident Control Vehicles with access to DFES Information Technology Systems.

Recovery

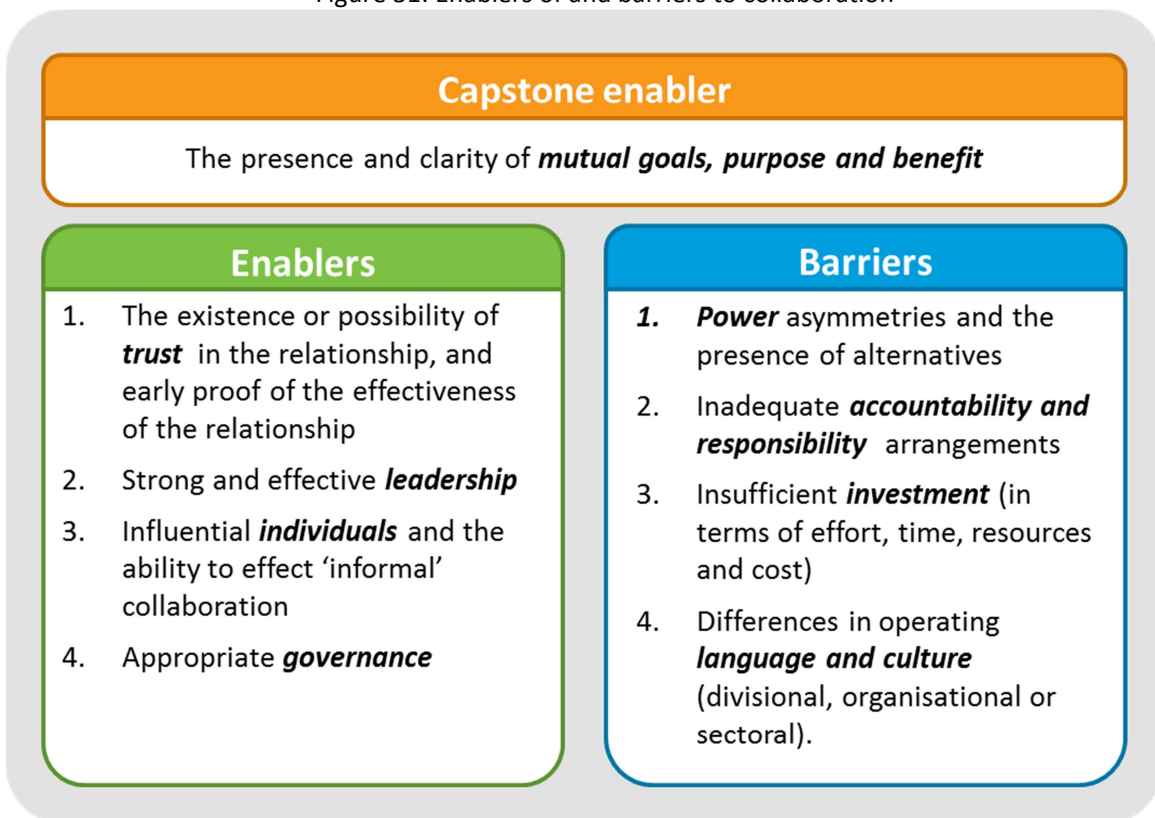- SEMP 4.4 and Westplan – Recovery Coordination should be amended to:

- clarify the wording around handing over control of the incident from the Controlling Agency to local government and the transition from response to recovery;

- include principles and criteria that will assist the Controlling Agency and local government to determine the best time to effect a hand over of control of the incident;

- make explicit the roles and responsibilities of the parties involved in the handover of control of the incident;

- specify the information required in the needs and impact assessments provided to local government by the Controlling Agency so that local government is given sufficient information to take control of incidents;

- clarify the roles, responsibilities and the title of the State Recovery Controller and ensure that the appropriate wording is reflected in Westplans and State Emergency Management Policies.

- Consultation with the Board of the Lord Mayor's Distress Relief Fund and other disaster appeal organisers should be undertaken to determine the potential for software development to consolidate the application and approval process, including provision of templates and application forms.

- Development of a template contract for the clean-up of affected properties to speed-up the process.

- Consultation should be undertaken with agencies and organisations that are engaged in emergency welfare provision to identify more effective ways to provide a consistent message to the community that non-cash donations are not required.

Appendix B Enablers and barriers to collaboration

B.1   The conditions for collaboration must be actively pursued to secure success

Collaboration requires the right conditions to be successful. In addition to establishing mutual goals, purpose and benefit, there are four enablers and four barriers to successful collaboration that must be addressed (see Figure 31 below). However the enablers and barriers have varying degrees of importance depending on what kind of collaborative relationship is being pursued. The more intensive the form of collaboration, the further to the right on the span shown in Figure 31, the more critical it is to have <u>all</u> the enablers in place and <u>all</u> the barriers overcome.

Figure 31: Enablers of and barriers to collaboration

Capstone enabler

The presence and clarity of ***mutual goals, purpose and benefit***

Enablers

1. The existence or possibility of ***trust*** in the relationship, and early proof of the effectiveness of the relationship
2. Strong and effective ***leadership***
3. Influential ***individuals*** and the ability to effect 'informal' collaboration
4. Appropriate ***governance***

Barriers

1. ***Power*** asymmetries and the presence of alternatives
2. Inadequate ***accountability and responsibility*** arrangements
3. Insufficient ***investment*** (in terms of effort, time, resources and cost)
4. Differences in operating ***language and culture*** (divisional, organisational or sectoral).

Each of the key enablers and barriers, and their implications for DFES, P&W and Local Government for collaborating in response to major fire incidents, is explored below.

B.2   There are four enablers for collaboration to put in place

Trust

A trusting relationship among potential or actual collaborators is a necessary element of successful collaboration. A history of poor interactions may undermine an attempt to develop collaborative ventures. A trusting relationship also requires 'proof'. This refers to those results (often small, early wins) which go some way to proving that the parties are committed and that benefit can be secured. Naturally, this trust-building process can take time.

As examined in Sections 5.3.1-2, personnel experienced a trust deficit in the course of responding to both fires. A lack of understanding between the agencies limited the potential of their collaborative efforts. Acknowledging the patience and commitment that is required to build trust, particularly where there is a history of a trust deficit, is an important step in strengthening the foundation of this collaboration enabler.

Leadership

Leaders are critical to bring stakeholders together to engage and collaborate. Every other aspect of collaboration is in some way reliant on strong and effective leadership to mediate, approve resources, shape and agree agendas, overcome their own organisation's natural inertia, to provide and maintain momentum, and to maintain a sense of shared purpose and endeavour. Leadership is not necessarily located only at 'the top.' It also includes 'organic' leaders who emerge from the stakeholder group and who have the respect and trust of the various parties.

DFES has a mandate to provide the necessary leadership in responding to major fire incidents, owing to the provisions of Westplan – Fire and its status as the Hazard Management Agency for fire. This is not to say that other agencies are not required to demonstrate leadership in collaboration, but that other agencies may look to DFES to provide leadership in pursuing collaboration. If collaboration is to be successful it must be driven by senior personnel within all agencies. People that are accountable for the performance of the agencies and can that are competent to lead strategic decision making.

Individuals

'Influential people' are necessary to make collaboration work. This enabler can be seen both narrowly; influential individuals, and broadly; the influence of individuals. The second point recognises that much of the informal side of collaboration occurs at the level of personal relationships. Individuals can also undermine effective collaboration. This reliance on crucial individuals highlights the importance of continuity of participation in collaborations. Where this cannot be secured, there should at least be continuity in individuals' skillsets.

The MIR has observed numerous instances of informal collaboration achieved through strong individual relationships, leading to successful collaboration between the agencies. The South West regional agreement referred to in section 5.3.3 is an example of this. The question then becomes how the agencies can build on those strong individual relationships to extend successes to broader inter-agency collaboration. Establishing pre-formed inter-agency IMTs is an example of one opportunity that could provide the conduit for that extension.

Governance

The mechanics of a collaborative effort are an important ingredient, and are naturally challenging when they are required to fit over, or between, different organisations. These mechanics include the negotiation and arrangement of risk, reward, resources and information sharing, the stipulation of authority and control through to the preparation of common plans and agendas. There is no single

model for effective governance of collaborations; it needs to be suited to the purpose and the parties. Structural arrangements *within* organisations can also make collaboration more or less likely and more or less difficult. Certain organisational structures may group functions in a way that works against or even prevents collaboration.

There are a number of examples that can be drawn upon to elucidate the importance of this enabler in the context of responding to major incidents. Opportunities for collaboration could take the form of establishing preformed inter-agency's IMT's or a shared resource management system (discussed further in Section 7.2). In the case of preformed IMTs, consideration would have to be given to how resources from different agencies are allocated and how agencies share the required funding. To implement a shared resource management system, consideration would have to be given to the decision making structure and protocols that will determine what resources are needed and how they are to be used.

B.3   The four barriers to collaboration should be considered and addressed

Power

Power is important both when setting up a collaboration and throughout the collaborative process. It requires proper attention and treatment. Differences in relative capacity, resources and status are liable to undermine a collaborative venture, particularly when one party believes it can behave unilaterally and achieve their intent alone or through other mechanisms. Collaborative ventures entail a certain 'mutuality' which cannot be fostered if one or more parties are exercising their power (over the other party).

The challenge for the fire agencies is to navigate the barrier of power dynamics within the context of the regulatory requirements for fire and emergency management.

Accountability and responsibility

Collaboration can impact on the formal accountability of agencies within the system of government. Accountability and responsibility blurring or uncertainty can also be problematic for the formation and execution of collaborative ventures. Collaborative ventures need a clear demarcation of accountability, responsibility and roles. Internal organisational accountabilities can also directly enable collaboration within the organisation as well as with other organisations. For example, individualised rewards and incentives tied to accountabilities may lead to a competitive culture, or narrow accountabilities may reduce the incentive to collaborate with external organisations.

Agencies do have legal responsibilities and are expected to use their statutory powers to fulfil them. Beginning with an acceptance that statutory mandates will always be present in some form, novel thinking could procure promising collaboration opportunities. Accountability and Responsibility has a close nexus to the first barrier to collaboration, power.

Investment

The investment in time, resources and energy for a collaborative venture can be large and inability or unwillingness to meet the required investment is a common cause of failure. Collaboration requires devoted resources to proceed; be this in the form of allocated personnel or a willingness to share resources between participants in the collaboration.

Delivering on the goals of collaboration will require investment from all agencies. Each agency has different funding pressures. Expectations placed on agencies to contribute ought to bear a nexus to their

level of funding, availability of personnel and the responsibilities that they are charged with. Local Governments and volunteer fire brigades are comparatively limited in the level of resourcing they are able to contribute to collaborative efforts. Maintaining an awareness of the mutual goals constituting the "capstone enabler" is a valuable means of overcoming the often stubborn barrier of investment expectations.

Language and Culture

Divisions reflect and create differences. Agencies and even groups within them develop coherent and distinct ways of seeing and acting in the world: their culture. These cultures can support or undermine collaboration. The need to communicate across different professional languages and agency cultures creates difficulties for collaborative ventures. This indicates the need to deeply understand the origins, motivations, intentions and meanings of collaboration participants.

Differences in culture between the fire agencies, in part arising from different organisational remits, were highlighted by the MIR as a barrier to collaboration in the response to the Lower Hotham and O'Sullivan incidents (see Section 6). Overcoming the prevalent cultural barriers is an essential step in establishing and maintaining trust between the agencies.