SHIRE OF GNOWANGERUP

STANDARD OPERATING PROCEDURES FOR BUSH FIRE BRIGADES

AMENDMENT NO:2

DATE: FEBRUARY 2016

GNOWANGERUP BUSH FIRE BRIGADES

STANDARD OPERATING PROCEDURES – (SOP'S)

CONTENTS

VOLUNTEER BUSHFIRE BRIGADE PROFILE 1

SOP 1- INCIDENT NOTIFICATION PROCEDURES 2

BRIGADES 2

SOP 2 – CALL OUT PROCEDURE 3

INITIAL NOTIFICATION 3

SOP 3 – BUSHFIRE RESPONSE 4

INTRODUCTION 4

PRINCIPLES/PLANNING FACTORS 4

PROCEDURES 5

ARRIVAL 5

INITIAL ATTACK 6

SOP 4 – RED FLAG WARNINGS 8

INTRODUCTION 8

PROCEDURES 8

SOP 5 – SAFE USE OF FUEL CANS 10

INTRODUCTION 10

PROCEDURES 10

SOP 6 – USE OF A CLASS FOAM AT INCIDENTS 14

INTRODUCTION 14

PROCEDURES 14

SOP 7 – CREW SAFETY AT BUSHFIRES 17

INTRODUCTION 17

PROCEDURES 17

SOP 8 - ENTRAPMENT AT BUSHFIRE 20

INTRODUCTION 20

PROCEDURES 20
SOP 9 – SAFE USE OF DRIP TORCHES 22
INTRODUCTION 22
PROCEDURES 22
HAZARDS AND PRECAUTIONS 35
SOP 10 – DIEBACK HYGIENE 37
REFERENCE 37
INTRODUCTION 37
DIEBACK MANAGEMENT PROCEDURES 37
SOP 11 – BUSH FIRE SMOKE EXPOSURE 39
INTRODUCTION 39
PROCEDURES 39
SOP 12 – GROUND CONTROL OF AERIAL SUPPRESSION PLATFORMS . 43
INTRODUCTION 43
PROCEDURES 43
SOP 13 – BRIGADE INTERNAL CALL OUT PROCEDURE 48
SOP 14 – CREWING OF BRIGADE FIRE APPLIANCES 49
Standard Crew of Appliances 49
SOP 15 – DRIVING GUIDELINES FOR THE SHIRE OF GNOWANGERUP BUSHFIRE BRIGADES 50
SOP 16 – ALCOHOL CONSUMPTION 51
SOP 17 – BUSHFIRE RADIOS 52
SOP 18 – PERSONAL PROTECTIVE EQUIPMENT FOR ALL BUSHFIRE BRIGADE FIREFIGHTERS AT FIRE-GROUND 53
STANDARD DRESS FOR ALL FIREFIGHTING PERSONNEL WILL BE: 53
MINIMUM STANDARD FOR BUSHFIRE FIGHTING: 53
EQUIVALENT STANDARD FOR FIREFIGHTERS 53
ORDERING PROTECTIVE CLOTHING 53
SOP 19 – USE AN OF INCIDENT CONTROL SYSTEM 54
INTRODUCTION 54
INITIAL ICS & FCP 54

SOP 20 – FIRE REPORTS..... 55

FIRE INCIDENT REPORTS 55

SOP 21 – ELECTRICAL HAZARDS..... 56

INTRODUCTION..... 56

SOP 22- RESPONSE TO WILD FIRES AT RUBBISH TIPS 58

NOTIFICATION..... 58

Types of Fire..... 58

SOP 23 – CLOSURE OF ROADS TO ASSIST FIRE CONTROL..... 59

SOP 24 – ACCIDENT REPORTING..... 60

INSURANCE CLAIMS..... 60

SOP 25 – MAINTENANCE OF FIRE APPLIANCES 61

OPERATING LEVEL MAINTENANCE 61

REFERENCES USED:..... 62

VOLUNTEER BUSHFIRE BRIGADE PROFILE

The Shire of Gnowangerup has adopted the following profile for its volunteer Bushfire Brigades to assist with the development of Emergency Services Levy (ESL) Funding Applications and Five Year Plans, ensuring brigades have sufficiently trained crews able to deal safely and effectively with the normal range of incidents they may expect to encounter.

All Bushfire Brigades within the Shire are to conform with the requirements as set down by DFES for the profile of “Minimum Training” for Gnowangerup and “Settlement” for Ongerup and Borden.

Gnowangerup - Urban Defensive

Recommended Minimum Training

- AIIMS Awareness
- Introduction to Fire Fighting
- Bushfire Fighting
- First Aid
- Introduction to Structural Fire Fighting

Borden & Ongerup Settlements:

- Introduction to Bushfire Fighting
- Introduction to Structural Awareness

SOP 1- INCIDENT NOTIFICATION PROCEDURES

BRIGADES

The Brigade member assuming the Fire Control Officer or Incident Controller role at a fire incident shall notify the Shire of Gnowangerup and the Chief Bush Fire Control Officer:

a. When mobile to a fire incident

b. Upon arrival at a fire incident

c. Shire and/or Chief Fire Officer to notify 000

SOP 2 – CALL OUT PROCEDURE

INITIAL NOTIFICATION

Notification of fires can take place at any time during the day or night. In some instances, fires are reported through the Emergency 000 system.

The Emergency 000 notifies one of the following, in order of precedence:

The Chief Bush Fire Control Officer;
The Fire Control Officer for the Brigade area where the fire has been reported.

OR

Alternatively, notification of fires by members of the public (not through the 000 system) may be directed to:

- The Gnowangerup Roadhouse on 9827 1239 **(for Gnowangerup only**) during business hours; or
- The Chief Bush Fire Control Officer
- The Fire Control Officer for the Brigade area where the fire has been reported.
- The Base Radio Operator
- The Shire of Gnowangerup

Once the Chief Bushfire Control Officer and Shire of Gnowangerup is notified of a fire within the Shire of Gnowangerup's area of responsibility, they will in turn:

- Alert the applicable Fire Control Officer or Brigade members that a fire has been reported in their Brigade area;
- Provide assistance where requested to the Brigade in terms of backup resources, logistics and weather forecasts;
- Where the reported fire has potential implications for either Conservation & Land Management or Fire & Emergency Services, notify those agencies.

SOP 3 – BUSHFIRE RESPONSE

INTRODUCTION

1. This SOP outlines the principles and procedures for members use during the *Initial Attack* phase of bushfire response. Further information is provided at *Directive 3.5 – Bushfire.*

PRINCIPLES/PLANNING FACTORS

2. The following principles/planning factors apply to all bushfire incidents:

PRINCIPLE	DESCRIPTION
Crew Safety	Approach and treat the fire in a manner that ensures the safety of the emergency response crew. Adhere to LACES and isolate or mitigate known/observed hazards prior to commencing firefighting operations
PPE	Afford crews the required protection at all times
Water Supply	Identify a secure supply of water to support firefighting operations
Observe Local Conditions	• **Meteorological Conditions.** Note temperature, wind speed, direction and severe weather events. Request spot forecasts regularly. Know when wind changes are due and disseminate information to all levels. • **Fuel Loads.** There may be variations providing opportunities to create breaks, back burn or switch from defensive to offensive strategies. • **Topography.** Slope and aspect will affect fire behavior and rate of spread.
Observe Fire Behaviour	Identify the head of the fire and, if possible, contain immediately. If not, work on the flanks where the fire intensity will be lower to pinch out the head fire.
Contain to Control	Apply resources to contain the spread of the fire and then extinguish.
Site Control	Isolate areas of risk (including locations in the anticipated path of the fire) from public access. Request WAPOL assistance if required
Public Exposure	Apply resources to prevent the spread of the fire and associated hazards (e.g. smoke plumes) in order to minimize further risk to the public.
Public Information	Identify key elements of public information and advise the community as early as possible
Confirm Site Safe for Departure	Conduct thorough overhaul to ensure all sources of re-ignition are eliminated

PROCEDURES

3. **Bushfire Control Phases:** As a bushfire escalates, IC need to transition through three phases where the approach to control will alter significantly. The three bushfire control phases are as follows:

CONTROL PHASE	CHARACTERISTICS	IMT OBJECTIVES	KEY CONSIDERATIONS
Initial Attack (Level 1)	• First hour • Mobilization of assets (ground and air) to immediately restrict fire spread	**Contain** **Extinguish**	• Control of resources • Prioritization of effort
Extended Attack (Level 2)	**Offensive Operations** Acknowledgement that initial attack has failed • Additional resources required • Resource relief-in-place • IMT required to control and plan • Public Information required • Authorized powers considered	**Limit Spread** **Protect Life and Property** **Contain-Extinguish**	• Resourced L2 IMT • Public Information • Logistic support (ROC) • Inter-agency support (SOC)
	Defensive Operations (option) Acknowledgement that offensive operations are not suited to current fire behavior • Life and asset protection prioritized • Relocation required • Authorised powers enacted	**Protect Life and Property**	• Resourced L2 IMT • Task Force operations • Public information • Relocation • Logistic support (ROC) • Inter-agency support (SOC)
Campaign (Level 3)	• Continuous, extended, shift-based operations • SOC operating continuously as link between ROC and SECG/EMWA • Emergency Situation declared	**Protect** **Control** **Inform**	• Resourced L3 IMT • Resourcing • Fatigue Management • Public information

Direction regarding extended attack and Campaign type bushfires are concerned with IMT, ROC and SOC functions and are beyond the scope of this SOP.

ARRIVAL

4. **General:** Approach and arrival to bushfires by appliances must be undertaken so as not to expose crews to the hazard.

5. **Approach:** Approaches to bushfire incidents are to be as follows:

Turnout and approach is to be by the quickest and safest known route under emergency call conditions (beacons and sirens activated)
Final approaches (after last known traffic hazard) may be under emergency beacons only
Static appliances are to be located in a safe position adjacent to the incident where there is no risk of the appliance becoming involved in the hazard

6. **General:** An initial attack on a bushfire is characterised by prioritising efforts to immediately restrict the spread of fire to enable containment and extinguishment.

7. **Initial Actions:** Upon arrival at a bushfire incident, IC are to undertake the following:

- Advise to base, based on first visual impressions
- Provide initial incident classification to the COMCEN
- Assess the scene (initial size-up) and secure the area
- Effect rescue if safe to do so

8. **Initial Size-Up**: The initial size-up of bushfires is to incorporate assessment of the following.

CONSIDERATION	NOTES
Life Involvement/Immediate Threat	Initial tasking is to reflect the immediate threat posed by the fire to life and property.
Weather	Current wind speed and temperature in order to predict direction and rate of spread
Fuel Load and Configuration	Will determine safe tactical firefighting methods
Capability of Initial Response	Do the threats to life and property, current weather and fuel load represent conditions beyond the capability of the initial response? If so, request further mobilization of specific resources both ground and air based.
Observed Hazards	Ensure initial objectives are safe to achieve: • Note the location of overhead power lines and the conditions of poles • Note fence lines and other hazards to vehicle movement
Communications	Create a robust comms plan (based on VHF & UHF channels) capable of being expanded into sectors from the outset
Incident Site Control Requirements	Control entry to the incident site of public and vehicles/traffic Manage the hazard presented by smoke plumes
Additional Resource Requirements	Request additional mobilization early. Consider the need for aerial suppression

9. **Initial Objectives:** The initial objectives at a bushfire are as follows:

- Ensure the protection of community members and keeping them informed
- Protection of property, critical infrastructure and community assets
- Protection of conservation and environmental values
- Knock-down the running fire and establish a perimeter
- Contain and extinguish the fire

10. **Incident Classification** Initial incident classifications may be confirmed or upgraded at any time during an incident. Incident Controllers are to re-assess their initial classification at the conclusion of their size-up and when the evolving situation demands.

11. **Mobilisation of Additional Assets:** Level 1 IC are authorised to request required resources (by type, not specific identification) up to and within the 2nd Alarm classification without upgrading the alarm classification irrespective of the need to sectorise. In this manner, unnecessary structural assets are not mobilised in order to gain bushfire assets from urban stations. An upgrade of a bushfire incident to 3rd Alarm is in essence acknowledging the scope of the incident is now beyond the Level 1 IC and a DO led IMT is required.

12. **Control Point and Command Channel:** Upon request for additional assets, IC of bushfires are required to nominate a Control Point (CP) where all resources will be dispatched to by the COMCEN, and the VHF command channel on which approaching resources can contact the IC and notify their impending arrival. Control points should demonstrate the following characteristics.

CHARACTERISTIC	NOTES
Size/Space	A CP must be capable of accepting and staging the requested resources
Safety	A CP cannot be in the path of the fire, nor create a hazard to traffic/the general public
Communications	A CP must be able to maintain communications with the Shire. (Fireground communications may be performed from a separate location).

SOP 4 – RED FLAG WARNINGS

INTRODUCTION

1. Incident experience across Australia, in particular during major bushfires, has shown that a lack of access to timely and critical information by personnel at an incident has led to injuries and fatalities. Red Flag Warnings are a message system that provides a process to ensure critical information (such as fire weather changes) is confirmed as received to the lowest levels and understood by all personnel at the incident.

2. **Principal / Planning Factors**: The following principles/planning factors apply to all Red Flag Warnings.

PRINCIPLE	DESCRIPTION
Critical Information	Red Flag Warnings are to be precise messages which convey present or impending hazards to emergency responders outside the normal shift or deployment briefings, e.g. weather changes, hazardous materials, fire behaviour, structural integrity, equipment failures etc.
Hierarchy Control	Red Flag Warnings are to be initiated within the command hierarchy – IC, Ops Officer, Div. Commander, Sector Commander
100% Coverage	Red Flag Warnings must be passed to all personnel at the incident, including those from other agencies or private sectors.
Receive & Acknowledge	At all levels, Red Flag Warnings are to be acknowledged on receipt through confirmation of the message back to the sender
Record of Event	The transmission, receipts and acknowledgement of the Red Flag Warnings is to be lodged at each level within the chain of command
Pager message Not Acceptable	Paging is not acceptable as a primary method of conveying Red Flag Warnings, paging may be used as a backup only

PROCEDURES

3. **Text Format**: The standard message text of a Red Flag Warning is as follows:

> **'RED FLAG WARNING:** Personnel are advised of <*actual/forecast where appropriate*> conditions that may present a hazard to personnel as follows <*actual/forecast conditions*>. Personnel are to <*describe specific actions required to be taken*>. This message is to be passed to all personnel under your command.
>
> **ACKNOWLEDGE'**

4. **Recording, Receipt & Acknowledgement:** All Red Flag Warnings issued through the incident chain of command are to be recorded in incident diaries and WEB EOC to indicate that they have been received and acknowledged as understood. The aim is to confirm that the message has been received in its entirety throughout the response structure. Additional detail is as follows.

INITIATOR ACTIOSN	INCIDENT DIARY/ Web EOC RECORD DETAILS
Record Text	• The decision to send • Text of the RED Flag Warning
Detail Recipients	• Recipients
Send Message	
Record Acknowledgement	• Confirm acknowledgement receipt individually as it is received (log time)
Record Message Passage	• Record confirmation that message has been passed to the next level
Record Confirmation of Successful Passage	

RECEIVER ACTIONS	INCIDENT DIARY/ Web EOC RECORD DETAILS
Record Text	• Text of the RED Flag Warning
Detail Recipients	• Recipients
Send Message	
Record Acknowledgement	• Confirm acknowledgement receipt individually as it is received (log time)
Record Message Passage Upward	• Confirmation of group receipt and reporting up to the chain of command

SOP 5 – SAFE USE OF FUEL CANS

INTRODUCTION

1. Fuel cans are likely to become pressurised due to high ambient temperatures, direct sun, proximity to heat sources (e.g. exhaust, fire) and vibration. If opened too quickly, pressurised fuel and fuel vapours will discharge. There is the potential for the fuel to ignite and cause significant injury to personnel.

Personnel must be aware of this hazard and apply safe operating procedures when opening fuel cans.

2. **Safety Precautions.** The following precautions are designed to ensure safe use of fuel cans:

- Fuel cans are not to be opened on a fire or incident ground (e.g. the hot zone)
- Never open a fuel can within 5m of either an ignition source or other personnel
- Always wear a minimum of Level 1 PPC (i.e. long sleeves and long pants) including:
    - Safety Glasses/Goggles
    - Level 1 Tunic
    - Gloves
    - Helmet (with the visor down)

PROCEDURES

3. **Fuel Can Maintenance.** All operational personnel are reminded to take the following steps as part of regular equipment/maintenance checks:

- Remove all fuel cans from their bracket,
- Check the fuel cans for any visible damage or leaks,
- Ensure the outside of the fuel cans are clean and dry,
- Ensure fuel can bracket is clean, dry and free from debris,
- Ensure anti-explosive mesh is present in fuel can.

Routine care and maintenance of fuel cans will help ensure unserviceable or at-risk fuel cans do not create a potential hazard on vehicles. Any fuel cans found to be damaged and at risk of leaking are to be removed from service and replaced immediately.

Funnels are to be removed from the fuel can and stored in a locker to limit dirt/debris entering the fuel system. This will also prevent blow-back (the situation where fuel expelled under pressure hits the funnel and deflects onto the person opening the fuel can).

The rubber mat covering the surface of the Light Tanker tray is used to prevent excessive heating of the bottom of the can; further insulation housing would hinder surrounding air movement, reduction of convection heat, and would also trap fumes.

All 5L fuel cans are fitted with anti-explosion mesh. This is designed to act like a baffle in the event that fuel vapours ignite within the can.

4. **Preparedness.** Prior to entering the fire ground and each time the vehicle travels to the water point or staging area for replenishment, a vehicle check is to be conducted including:

- water tank level
- pump engine fuel level
- vehicle fuel level
- vehicle damage
- leaf/debris build-up
- drinking water/refreshments

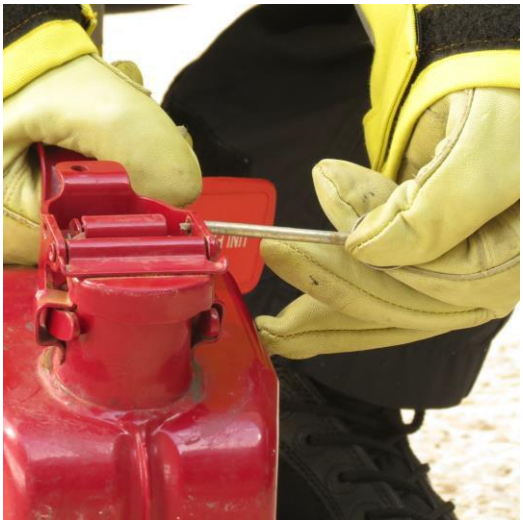
Operational personnel are directed to remove fuel cans from ALL Career and Volunteer Light Tankers on arrival at an incident and place the fuel can at either;

1. A control point;
2. With your additional appliance responding to the incident (other than a Light Tanker); or
3. A shaded area that will not be impacted by fire.

5. **Refuelling.** In order to minimise the risks associated with refuelling pump motors, refuelling will only occur when the vehicle is in a safe area (e.g. a water point, staging area, well-ventilated area, cold zone). The greatest risk of injury caused by pressurised fuel occurs when the fuel can is being opened. Ensure minimum PPE is worn and fuel can is opened in an area completely free of any potential ignition sources. This procedure is to be followed for refuelling of all static motors on all vehicles where fuel cans are utilised as the refuelling method:

- Move vehicle to a clear area (e.g. off the fire ground)
- Ensure pump engine is not running.
- Remove the fuel can from the vehicle.
- Ensure minimum PPE is worn.
- Ensure a 5m radius safe zone free of ignition sources (including the vehicle) and other personnel.
- Follow correct fuel can opening technique (see Annex A for photographic instructions):
  - Kneel behind the fuel can with cap facing away from the body.
  - Fully withdraw the retaining pin.
  - Lift cap handle slowly to allow pressure build up to vent, with any venting away from the body.
  - Control opening with hand pressure as required.
  - Lift cap handle completely once venting has ceased.
- Prior to pouring fuel from the fuel can into the pump engine fuel tank ensure that your feet are on the ground, you earth yourself by touching the appliance, and the pouring funnel is in contact with the fuel tank. This will reduce the potential for ignition due to static.
- Always clean off excess fuel from the tank with a rag.
- Do not re-enter the fire ground if PPE has been splashed with fuel (find alternate PPE).

Fuel cans on vehicles or held at stations/units must not be overfilled. Fuel vapours will expand when exposed to heat and an expansion chamber for the vapours must be maintained. Fuel cans should only be filled to a maximum of 80% of total capacity. The easiest way to ensure the fuel can is not overfilled is at the petrol bowser, i.e. only put 4L into a 5L fuel can, or 16L into a 20L fuel can.

SOP 5	Fuel Can Opening Technique	ANNEX A
	1. <u>Position 5m clear area from ignition source and other personnel</u> • Safety Eyewear • Helmet Visor down • Wild fire gloves • Level 1 tunic • Level 1 pants / cargo pants • T shirt under tunic • Firefighting boots	
	2. <u>Position behind fuel can</u> • Kneeling position • Opening facing away from operator	
	3. <u>Remove safety pin</u> • Ensure bayonet luges secure	
	4. <u>Apply pressure to front of cap whist releasing bayonet luges</u>	
	5. <u>Fuel Pressure in can to be released slowly under control</u> • Ensure head and upper body is away from opening	

	6. <u>Allow for full pressure venting under control before fully opening</u>

SOP 6 – USE OF A CLASS FOAM AT INCIDENTS

INTRODUCTION

1. Suppressants such as A Class foam greatly enhance the penetration and insulation properties of water. Used correctly, A Class foam generates efficiencies during attack and mop-up phases by preventing re-ignition of previously suppressed fuels. Some foam concentrates pose a risk to the environment and there are restrictions imposed on their use near sensitive waterways and agricultural/horticultural areas. Further information is provided at D3.5 – Bushfires.

2. **Characteristic**s: Operators are to note the following characteristics of suppressants.

CHARACTERISTIC	NOTES
Concentrate Compatibility	The compatibility of suppressant concentrates vary – the mixing of some concentrates can result in coagulation. The mixing of concentrates is to be avoided.
Concentrate Biological Degradation - Land	Fire suppressants biodegrade relatively quickly in soil. Complete chemical and biological degradation of fire suppressant solution (0.1-1.0%) occurs within 14-30 days. Wetting agent used by DFES is 80% biodegradable within 72 hours.
Concentrate Biological Degradation – Water	Fire suppressants poses a risk to aquatic and water-based ecosystems due to the immediate dispersal and contact with aquatic fauna and flora within the biodegradation period.

PROCEDURES

3. **Application Ratios**: Suppressant is supplied in concentrate form and must be mixed with water and aspirated for use. The general range of mix ratios is 0.1-1.0%. Lower foam concentrations deliver a more fluid, greater penetrating and less persistent suppressant. Further guidance is as follows.[1]

DESIRED EFFECT	MIX RATIO (%)	DESCRIPTION	BRANCH	
			CONVENTIONAL (Non-aspirating)	FOAM (Aspirating)
Enhanced Penetration	0.1 – 0.3	FOAM SOLUTION	✓	
	0.3 – 0.5	WET FOAM	✓	✓
Fuel Insulation	0.5 – 0.7	FLUID FOAM		✓
	0.7 – 1.0	DRY FOAM		✓

[1]The information should be used as a **guide only**. Fire intensity, fuel types, fuel condition, and weather conditions such as temperature, relative humidity and wind will influence the generation/delivery method and mix ratio selected for a given fire.

4. **Requesting/Ordering:** A Class foam in support of incidents is requested and ordered by the Shire Administration staff member for Bushfire Brigades. The guidance of *D4.1 – Recourses* is produced in Table 2

5.

Metro: **All Hours Incident Bulk Supplies**	Mercury Firesafety Foam Watch[2]	Through COMCEN
	GOSNELLS SES Unit Cockburn SES Unit WANNEROO BFB Station	Through COMCEN
Country: **All Hours Incident Bulk Supplies**	Regional Offices at: NORTHAM BUNBURY GERALDTON ALBANY	Through COMCEN/RDC/ROC

6. **Environmental Considerations**: Suppressants pose environmental risk to waterways, some agricultural pursuits and some fauna. IC are to ensure Dept. Environment Regulation (DER) and the applicable water authorities are notified when suppressants/wetting agents enter a water body. Prior to authorising the use of suppressants, IC are to ensure the following environmental aspects are considered.

CONSIDERATION	NOTES
Protection of Aquatic Environments	• All possible care is to be taken to ensure that suppressants/wetting agents do not enter water bodies (e.g. dams, lakes, swamps, rivers and creeks) • Consider methods to prevent suppressants/wetting agent run-off contacting aquatic environments
Protection of Agricultural Interests	• Rural brigades should make every endeavour to identify all organic/certified agricultural properties within their area. • IC should make every reasonable effort to alert organic/certified property owner/occupier(s) to potential issues that may arise as a result of contamination from fire suppressants/wetting agents • Consider methods and instructions to prevent suppressants/wettings agent application and run-off contacting procedure, certified organic produce and certified properties.
Protection of Domestic Water Supplies	• Domestic water storages contaminated with suppressants/wetting agents are to be flushed before re-use

7. **Clean-up:** All firefighting appliances and equipment used with foam production are to be flushed thoroughly with clean water after use

---

[2] Foamwatch is delivered in palletised 640-1000 litre orders through the following bulk supply options:

- 32/20 litre drums
- 4/200 litre drums
- 1/1000 litre bulk bin

[3] 2 pallets of A Class foam at each location. 2 pallets = 64 x 20 litre drums.

8. **Safety:** Safety considerations and guidance for operators using A Class foam concentrate and suppressants are as follow.

CONSIDERATION	NOTES
MSDS Guidance	All personnel are to adhere to the manufacturers guidance as detailed on the product MSDS
Prevention of Personal Contamination	• Avoid inhalation of Foam Vapours. Decant foam concentrate in well-ventilated areas. • Avoid ingestion of Foam Concentrate. Foam concentrate, and to a lesser degree foam solution, can be harmful. If ingestion occurs, seek IMMEDIATE medical attention. • Wear Level 1 PPE, gloves and goggles where the risk of contamination exists (e.g. decanting) • Wipe up any spilt concentrate
Personal Decontamination	In the event of personnel coming into contact with foam concentrate: • Eyes or Skin. Immediately flush with clean water and seek medical assistance if required. • Soaked Clothing. Remove and flush with copious amounts of water as soon as possible • If any side effects occur from exposure to the foam concentrates (i.e.. dry red itchy skin) seek medical advice.
Disposal	Dispose of all used foam containers in an environmentally responsible manner.

SOP 7 – CREW SAFETY AT BUSHFIRES

INTRODUCTION

1. The responsibility for safety at work commences with the individual. The following procedures are designed to minimise the inherent risks associated with operational firefighting. Whilst LACES is designed to prompt safe planning of bushfire workplaces for team leaders and individuals alike, the following procedures are aimed at developing broad safety routines that support both LACES and organisational OHS objectives

PROCEDURES

2. **Crew Safe Working Practices.** The following work practices are designed to minimise risk to firefighters at bushfires.

PRACTICE	NOTES
Personal Safety	• Understand your task • Maintain visual or electronic communications • Always adhere to PPE standards • Work from an anchor point – where practical work from burnt or clear ground • Identify an escape route • Withdraw if you feel threatened • Avoid burnt out trees as branches or the tree may fall under high wind conditions or seemingly benign circumstances
Protective Water Supply	• Ensure that the appliance maintains a 25% minimum reserve of water for crew and vehicle protection.
Safe Driving	• Observe safe driving practices - drive cautiously when driving in smoke or rough terrain • Activate beacons and headlights on the fire ground • Do not park appliances where they may obstruct or limit access to escape routes • Do not take trailers off-road. Vehicles with trailers have limited maneuverability and limit access and maneuver for other appliances • At least one crew member must remain with the appliance at all times. • Park appliances on burnt or clear ground facing the escape route
Aerial Suppression	• Clear the drop zone where water bombing is being undertaken..
Report Near-Misses	• All near miss accidents are to be reported
Refueling	• In order to minimise the risks associated with refueling pump motors in dangerous environments, refueling will only occur when the vehicle is in a safe area (e.g. a water point or staging area) • At this time, Vehicle Task Preparation will occur, and fuel levels monitored. • For the safe use of Jerry Cans, refer to *SOP 5 – Safe Use of Fuel Cans*

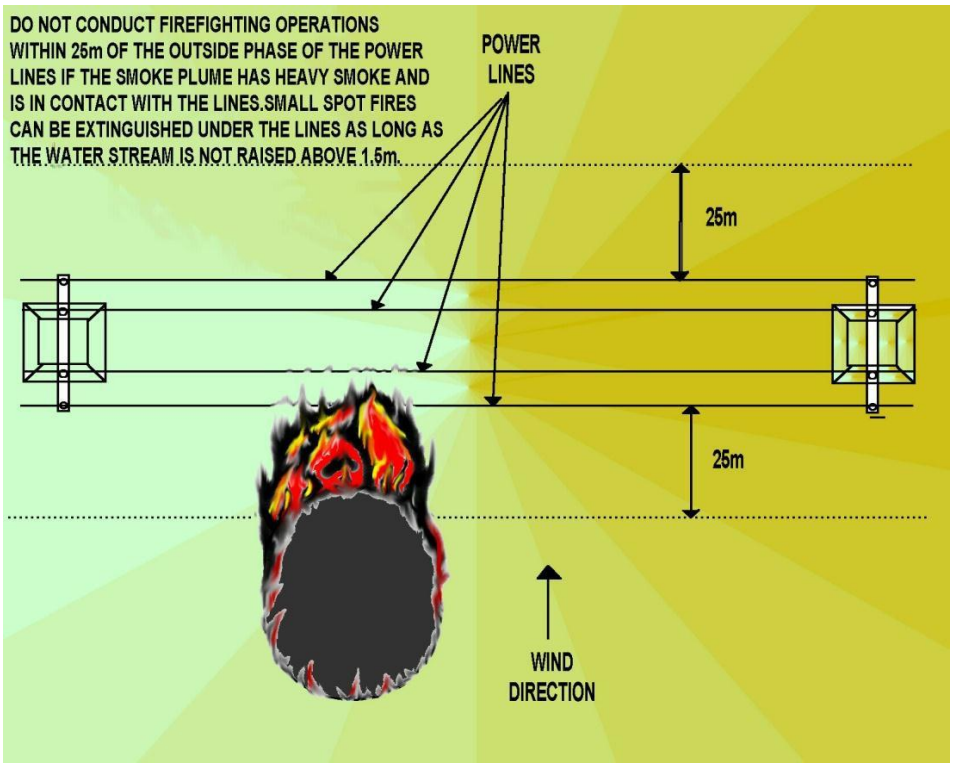
3. **Crew Leader Task Safety Check.** Crew leaders are charged with the safety of their crews. Before commencing a task, crew leaders are to undertake the following safety check.

ITEM	NOTES
Task Understood	• Obtain a briefing at the control point before being allocated a sector and undertaking firefighting operations - if unsure, ask.
PPE	• Ensure all crew members are wearing the correct PPE
Communications	• Ensure communications are established with the Sector Commander, Divisional Commander, Incident Management Team.
Recall Signal	• Ensure all crews are aware of the agreed emergency warning signal (e.g. Three short blasts with the horn or siren)
Protective Water Supply	• Ensure that the appliance maintains a 25% minimum reserve of water for crew and vehicle protection.
Anchor point	• Identify an anchor point (a secure point from which to start the construction of a fire line). A secure anchor point will minimise the chance of being out flanked by the fire while the line is being constructed).
Escape Routes	• Escape routes should be marked on the sector map. If there are none marked on the sector map, reverse down the fire line to identify if there is room to turn around in the event of an emergency.
Safe Work Practices	• Avoid driving into dense smoke where visibility is reduced. • Avoid parking in areas at risk from direct impact of flames or radiant heat. • Remain alert at all times to the location of the fire - if unsure, ask. • Be aware of the potential for the fire to generate its own local conditions in addition to the prevailing weather conditions.

4. **Special Risks**

Firefighting Operations in close proximity to high voltage power lines poses a significant risk to crews. In order to provide a safe working environment the following measures should be observed.

ITEM	NOTES
Notification of Power Authority	• Assume all lines are energized. Contact the Power Authority and inform them of the threat to the Power Lines
Safe Working Distances	• Do not fight the fire within 25m of the power line zone (fig 1) • If the smoke plume impinges on the power lines do not direct a water stream inside the zone • Water streams of no more than 1.5m in height can be directed inside the zone provided the smoke is not impinging on the power lines
Vehicle Clearance	• When moving a vehicle under power lines, always pass under wires more than 25m away from the fire or smoke plume.



SOP 8 - ENTRAPMENT AT BUSHFIRE

INTRODUCTION

1. The following procedure is designed to ensure the safety of firefighters entrapped by an encroaching bushfire and subject to a likely burnover of their appliance.

PROCEDURES

2. **Prevention.** Prevention of entrapment situations is supported through the following:

PROCEDURE	NOTES
Maintain Situational Awareness	• Ensure crews are initially briefed on the task and risks • Ensure crews remain aware of the current and forecast situation
Maintain Sound Work Practices	• Maintain the minimum 25% water reserves on appliances for personal protection • Undertake suppression tasks with due reference to LACES: ○ **L Lookout**. Seek positions of observation and regularly patrol ○ **A Awareness**. Maintain situational awareness and act decisively ○ **C Communications**. Brief to a known and well understood emergency warning/recall signal. Update regularly. ○ **E Escape Routes**. Constantly re-assess potential escape routes during tasking ○ **S Safety Zone**. Work from a known anchor point • Ensure all crew understand the concept of the "*dead man zone*"

3. **Burnover Procedure.** Appliance based bushfire entrapment procedure is as follows.

PROCEDURE	NOTES
Notify Commanders of Emergency Situation	• Transmit Emergency Message • Activate beacons/emergency warning devices and siren. • Notify Sector Commander/IMT of the location and the situation. • Request aerial assistance (water bombers/helitaks) if available.
Cease Operations	• Branch operators are to close down all branches and place them on the ground. All crews are to return to the vehicle. • Close down and remove the delivery lines at the pump (except for personal protection lines).
Prepare and Protect the Appliance	• Park appliance on a burnt/cleared area in a position that affords as much protection as possible for the crew (e.g. rear of the appliance facing the fire front). • Leave the pump running at a speed that allows the protective sprays to operate. • Close all doors, windows, air vents and leave the engine running on fast idle, turn air conditioner to recirculate and drop curtains (if available). • Turn on beacons and headlights

Prepare Crew	• Conduct a head count to ensure all the crew are present and mount the appliance. • Take cover in the cabin. • Crew are to crouch below window level. • Dress in full PPE and cover crew with blankets/protection, **do not hose down crew**. • Drink water to minimise the risk of dehydration • ***STAY INSIDE THE VEHICLE***
Protect Crew	• On imminent fire contact, operate protective sprays. (Ensure the spray pattern envelopes the cab and if possible protects the pump from burnover temperatures which may exceed the stall temperature of the pump motor.) • Wait for the fire front to pass. Immediately after the fire front has passed, account for all the crew and check the vehicle for damage. • Note: Do not hose down crew members with water prior to the fire front passing as the conduction of heat through the clothing may induce steam burns.

4. What to Expect:

Cabin Internal Temperature Rise	As the fire front approaches, the intensity of the heat will increase along with the amount of smoke and embers. Radiated heat will transfer directly to inside the cabin.
Cabin Infiltrated by Smoke	• Smoke gradually gets inside the vehicle and fumes will be released from the interior of the appliance. • Stay as close to the floor as possible to minimize smoke inhalation. • Cover mouth with a moist cloth.
Appliance External fittings Catch Alight	Tyres and external plastic body parts may catch alight. In more extreme cases the vehicle interior may catch on fire.
Fuel Tanks	Fuel tanks are very unlikely to explode. Fuel jerries and drip torches not fitted with anti-explosive mesh may however be at risk.

5. After the Fire Front Has Passed.

Observe the Fire	Stay in the vehicle until the fire front has passed and the temperature has dropped outside.
Exit the Vehicle	• Once the fire front has passed and the temperature has dropped cautiously exit the vehicle. Be careful - internal parts will be extremely hot. • If possible, extinguish remaining fire in immediate area including vehicle. • Take portable radios (VHF and UHF). • Take first aid kits and oxy-viva. • **Under no circumstances are crews to re-enter or move the vehicle.** • Maintain a safe distance from the vehicle.
Move to a Safe Refuge	Move to a safe area (e.g. a strip of land that has already burnt).
Check Health of Crew	Stay covered in PPE and blankets, continue to drink water and await assistance.
Re-Establish Communications	Send a SITREP to the Sector Commander/Operations Officer.
Preserve the Scene	The vehicle must be checked by a qualified technician prior to recovery. The scene must be preserved to aid subsequent investigation.

SOP 9 – SAFE USE OF DRIP TORCHES

INTRODUCTION

1. A drip torch is a device which holds, distributes and ignites a fuel mixture in a controlled manner in order to deliberately ignite surface fuel loads (see Figure 1). This SOP details the safe use of drip torches in support of bushfire-fighting operations.

2. **Authorised Uses.** Drip torches are only to be used for prescribed burning and authorised lighting activities under the direction and control of an IC/OIC.

PROCEDURES

3. **Drip Torch Operation.** Drip torches are to be operated in accordance with the following procedures.

PROCEDURE	NOTES
Receive Back burn Task	• Ensure task is authorised by IC • Understand burn pattern (eg. continuous line/spot/multiple ignition lines/multiple operators etc.), required rate of ignition and intent of burn • Use the torch on the designated burn area only
Don PPE	• Wear Level 1 Bushfire-fighting PPE (including gloves and goggles) when filling, lighting, using and extinguishing a drip torch

Prepare Drip Torch for Task	• Ensure adequate fuel to complete the burn - fill with pre-mixed fuel only[1] in a location isolated from ignition sources using a funnel
	• ***DFES Operations Authorised Pre-Mix***
	  ○ Three parts (75%) Diesel : One Part (25%) Petrol
	• Check tap is functioning
	• Check filler cap is secure, seals correctly and 'O' ring is in place
	• Ensure drip torch air valve is orientated away from handle as per *Figure 1*
	  ○ *Drip Torch Components*

Ensure Safety of Others	• Ensure that there is no risk to other personnel in the vicinity

Complete Task	• Move to task area
	• ***Ignition Sequence***
	  ○ Loosen air vent screw
	  ○ Ensure wand tap is on
	  ○ Tilt drip torch so that the wand is pointing to the ground.
	  ○ Allow fuel to drip from the nozzle to the wick (gauze)
	  ○ Ignite pilot flame at wick
	  ○ Observe and regulate flow using wand tap
	• Drip burning fuel onto vegetation and complete the burn under the direction of the OIC.

[1] Do not mix individual fuels in the drip torch

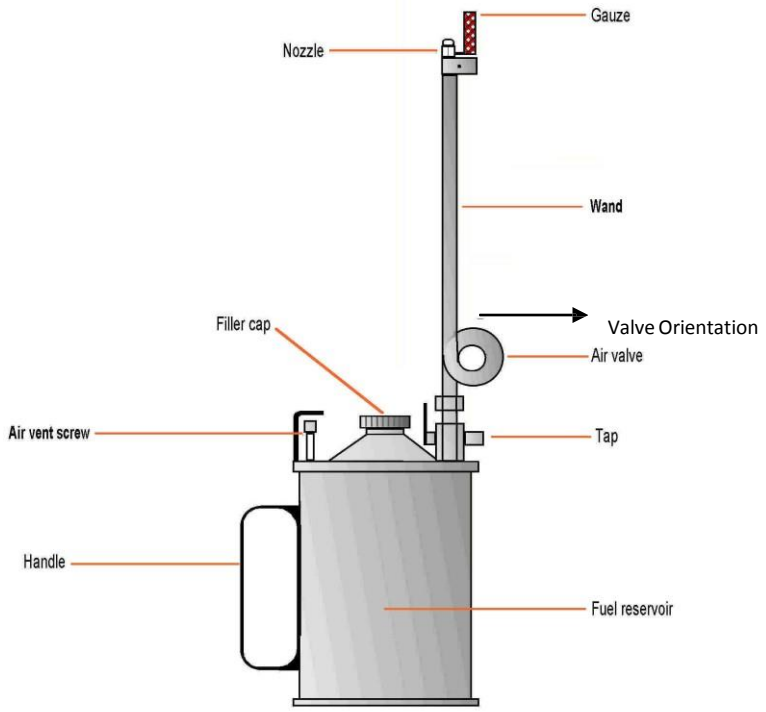


Figure 1 – Drip Torch Components

HAZARDS AND PRECAUTIONS

4. **General Safety Precautions:** The following precautions are designed to ensure safe operation of drip torches

Always remain aware of the position of other crew members prior to commencing backburn tasks
Do not leave drip torches unattended
Do not use drip torches near stored or escaped flammable liquids or gases
Do not use any technique for deepening a backburn that involves the potential placement of personnel in the path of the fire front
Never mix individual fuels in the drip torch to create pre-mix
Store drip torches: • At no greater fuel level than ¾ of the fuel reservoir capacity • With the wand tap in the 'on' position
Store the pre mixed fuel can in the designated carrying cradle on the appliance. Storage cans are to be no more than ¾ full

5. **Explosion.** Explosion of a drip torch requires ignition of the fuel under pressure. The following procedures will minimise the risk of explosion of drip torches.

PROCEDURE	NOTES
During Storage	• Store drip torches at no greater fuel level than ¾ of the fuel reservoir capacity, with the wand in the 'on' position
During Filling	• Use only the recommended fuel mix • Do not fill or open the filler cap near sources of ignition • Use a funnel during filling and avoid spilling fuel • Wipe off excess fuel before use • Ensure the filler cap 'o' ring is in place and it seals correctly before use
During Operational Tasking	• Reject drip torches that leak from the filler cap, tap or wand connection • Do not place the drip torch where it is exposed to fire or in unburnt fuel in the path of a fire. • Ensure drip torch air valve is orientated away from handle as per *Figure 1 – Drip Torch Components*
Note. If a drip torch does become involved with fire warn all others in the vicinity and keep everyone clear (at least 30 meters)	

SOP 10 – DIEBACK HYGIENE

REFERENCE

A. Managing Phytopthora Dieback - Guidelines for Local Government 2000

INTRODUCTION

1. Incident Controllers (IC) have a responsibility to consider the potential for spread of dieback (*phytopthora sp.)* during firefighting operations. IC should seek local knowledge and specialist advice, however all parties should acknowledge that dieback management procedures should not hinder the primary objectives of saving life and property. During less urgent activities (e.g. training, mopping up, prescribed burning) dieback management procedures are to be implemented.

DIEBACK MANAGEMENT PROCEDURES

2. **Fire Suppression.** The following procedures are designed to minimise the spread of dieback by firefighting operations. These procedures are to be applied by IC whenever feasible and practical. The following guidelines will minimise the risk of dieback spread during the fire suppression operations:

- Use hand tools to suppress the fire when this method will succeed. Use machinery only when necessary.
- Use scheme or bore water for fire suppression wherever possible.
- Strictly enforce hygiene routines on plant and appliances moving between sectors and incidents.

3**. Hygiene.** The spread of dieback during firefighting operations is best controlled through strict enforcement of hygiene routines to remove soil and mud from appliances and equipment when they are moved between sectors and incidents. Effective hygiene routines are resource intensive and must be carefully planned. Considerations for the development and implementation of dieback wash points are as follow. Machinery, vehicles and equipment must be clean (free from mud and soil) prior to arrival at incident.

CONSIDERATION	NOTES
Resourcing	Plan to resource clean-down sites before implementing movement restrictions to ensure no backlog of appliance and plant. Pre-planning will minimise any delay to firefighting operations and resistance to the requirement for cleaning.
Preliminary Clean Site - *Dry*	Remove the bulk of soil and mud from the tracks/wheels/undercarriage of appliances and plant using dry methods (i.e. brush, spade, compressed air).
Wash Down - *Wet*	Ensure wash down occurs only in the designated wash down area. Wash down areas should preferably be on hard standing, well drained surfaces that do not run off into bushland.
Runoff Capture	Capture or monitor runoff to minimise potential un-recorded spread of contaminated water and soil.

4. **Firebreaks.** The following guidelines will minimise the risk of dieback spread during the creation of firebreaks:

- Construct and maintain fire breaks during dry soil conditions:
    - Schedule between November-March
    - Do not cut breaks following rain
- Select strategic breaks that are low in the landscape
- Construct firebreaks to shed water and dry quickly
- Do not duplicate existing access

5. **Prescribed Burning.** The following guidelines will minimise the risk of dieback spread during prescribed burning operations:

- Select burn boundaries on well-formed hard surface roads
- Keep machine movements to a minimum
- Avoid grading boundaries unless necessary:
    - Consider alternatives such as slashing, hand raking and herbicide.

6. **Training.** The following guidelines will minimise the risk of dieback spread during training activities:

- Do not plan training adjacent to bushland or horticultural crops in wet soil conditions
- Consider the water source being used as a potential host for dieback spread:
    - Use scheme or bore water wherever possible
    - Return static water supplies to their source
    - Consider dry lay-outs as an alternative
- Educate crews of dieback spread risk and control routines:
    - Include phytophthora dieback management as part of induction process for new crew members.

SOP 11 – BUSH FIRE SMOKE EXPOSURE

INTRODUCTION

1. The purpose of this procedure is to provide an effective management tool for fire fighters to determine the most appropriate method of managing bush fire smoke exposure, and assist fire fighters in deciding what level of respiratory protection to wear in hazardous environments.

2. **Hazards.** The particulates and gaseous toxins contained in bushfire smoke have the potential to cause irritation to the eyes and upper respiratory tract, acute and chronic health effects. Compromised visibility can lead to trips and falls and crews potentially becoming disorientated and at risk of burnover/bushfire entrapment.

Common respiratory hazards present at bushfires are thermally generated particles (particulate matter) and gaseous toxins released during the ignition of vegetation. Additionally, bush fire fighting along the rural urban interface (RUI) has the potential to involve a complex mixture of unknown fuels and therefore atmospheric hazards.

3. **Minimum Requirements.** The minimum PPC requirement for Grass/Scrub/Bushfire as per *SOP 18 – Personal Protective Equipment for all Bushfire Brigade Fire Fighters at Fire-Ground*, includes eye and respiratory protection. Breathing Apparatus may be worn when a higher level of protection is required.

During the initial appreciation of the incident the Incident Controller (IC) will take into consideration the level of protection required. The IC will brief crews and resource the incident accordingly. All emergency responders have a responsibility for their own safety and if discomfort is experienced the level of protection should be upgraded or alternatively, a decision made to withdraw or employ an alternative strategy until the smoke level subsides.

PROCEDURES

4. **Immediate Actions.** The best mitigation against all smoke hazards is to avoid working in heavy smoke laden areas; however if the risk is unavoidable, Brigade Members have access to three (3) types of respiratory protection.

PPE	USE	DURATION	PROTECTION
Half-Face Respirator & A1 P2 Filter	Low to Heavy (bushfire) smoke	Extended periods (general operational use)	• Organic gases; • Particulate matter.
Full Faced Respirator & A2 P3 Filter	Low to heavy (bushfire) smoke	Extended periods (general operational use)	• Organic gases; • Particulate matter; • Added face/eye protection.
Breathing Apparatus	Very Heavy smoke laden environments	Cylinder working duration	Atmospheres that are: • Toxic; • Heat affected; • Deficient in Oxygen.
Note. Due to the adverse effect on fatigue levels, BA should only be used in extreme cases for essential or critical tasks such as asset protection.			

Of the three available levels of respiratory equipment, Self-Contained Breathing Apparatus (SCBA) is the only means of full protection from Carbon Monoxide (CO).

Carbon Monoxide is the air contaminant of greatest concern. The exposure standard over an 8 hour period is 30ppm (time weighted average) however inconsistent fire behavior and changing weather conditions make it difficult to monitor. Incident Controllers and Crew leaders have a responsibility to monitor the comfort and protection of fire fighters working in smoke conditions and rotate crew to minimise exposure and fatigue levels.

Air monitoring may be employed during bushfire operations using the atmospheric monitoring equipment supplied by DFES or by request to Department of Environment Regulation (DER). This information will assist personnel in making sound decisions on the level of respiratory protection required, and support the provision of safety advice to members of the public.

5. **Secondary Actions.** As conditions change, the level of respiratory protection may be upgraded or downgraded accordingly. Safety is a critical incident factor and bush fire smoke exposure and its compounding hazards may require a review of incident tactics, strategies and resourcing.

6. **Subsequent Actions.** Firefighters are most at risk of smoke exposure when:

- Carrying out a direct attack.
- Conducting an initial attack.
- Holding a line when conducting burn out operations.

Exposure increases when on the flanks or downwind of the fire during high winds and high ambient temperatures or when air inversion conditions exist. Incident Controllers and/or crew leaders should:

- Use a flank attack rather than a head attack wherever possible.
- If a head attack is to be carried out in heavy smoke conditions, ensure that the fire is low intensity and flame height is no higher than 1.5 to 2 meters.
- Develop the strategy well ahead of the fire to minimise smoke exposure.
- Utilise the LACES principles (Lookouts, Awareness, Communication, Escape Routes, Safety Zone).
- Smoke may stay low during periods when there is an air inversion. Where practical, rotate staff regularly to minimize smoke exposure times.
- Conduct a SMEAC-S briefing including smoke management issues before moving onto a sector.

7. **Additional Information for Respirator Wearers.**

All respirator wearers must meet Australian Standard 1715:2009 – 'Use and Maintenance of Respiratory Protective Devices' to ensure no safety breaches occur in relation to facial hair growth and achieving the required facial seal.

Research indicates that non-flaming smouldering combustion releases more toxic products than flaming combustion and high levels of CO may be present without visible smoke. Firefighters must wear respiratory protection during all stages of the incident, including mop-up.

8. **Bushfire Smoke Exposure Management.** The following illustrations are to be used as a guide only to assist in defining smoke conditions and exposure levels.
(Field Guide to Smoke Exposure Management, Bushfire CRC, 2009)

Low Exposure	Light smoke and haze with minimal exposure to heavier smoke. Visibility greater than 15m. Carbon Monoxide = 0 – 15 ppm.
Respiratory Protection:	**Full face respirator or half face with eye protection.**

Moderate Exposure	Light to moderate smoke exposure with brief exposure to heavy smoke. Visibility between 8-15m. Carbon Monoxide = 15 – 30 ppm.
Respiratory Protection:	**Full face respirator or half face with eye protection.**

High Exposure	Continuous heavy to very heavy smoke. Visibility less than 5m. Carbon Monoxide = > 30 ppm.
Respiratory Protection:	**Full face respirator or half face with eye protection.** **Consider BA and limiting working durations to 30– 60 min.**
	

***Only breathing apparatus (B.A) will protect personnel from carbon monoxide. An alternative to B.A is to keep time spent in dense smoke kept to a minimum.*

Smoke color scale shown above is only a guide for fire fighters for their estimation of hazard in the field. Rapidly changing smoke densities will require continuous assessment in the field.

SOP 12 – GROUND CONTROL OF AERIAL SUPPRESSION PLATFORMS

INTRODUCTION

1. **General.** The Ground Controller is an equivalent command function to a Sector Commander within AIIMS. The IC is to appoint a Ground Controller whenever allocated aerial suppression assets in support of bushfire suppression activities. Aerial suppression platforms include the following:

- Fixed Wing Suppression Platforms (Fire Bombers)
- Rotary Wing Suppression Platforms (Helitaks)
- Air Attack Supervisors (AAS)
- Air Intelligence

This SOP outlines the terminology and procedures members are to use when appointed as Ground Controllers.

2. **Principles/Planning Factors** The following principles/planning factors apply to all incidents where aerial suppression assets are utilised.

PRINCIPLE	DESCRIPTION
Strategies	Understand the IC's objectives and strategies. Task allocated aerial suppression platforms to implement strategies to achieve the objective.
Ground Crew Safety	In-brief crews as to the intended aerial suppression tasking. Provide warning of approaching aircraft so that crews are clear of the fire line.
Air Crew Safety	Reconnoiter the anticipated work area and approaches. Note hazards to aircraft and communicate details to air crew.
Communications	Establish and maintain sound communications between the IC/IMT-GC and GC-Aerial Asset.

PROCEDURES

3. **Suppression Response Criteria** It is incumbent upon the IC to carefully determine if airborne resources are justified ***before*** forwarding a request. Aerial suppression assets should only be requested if one or more of the following criteria exist.

CRITERIA		DESCRIPTION
1	**Crews**	Fire crews are in imminent danger
2	**Public Safety**	Public safety is at risk
3	**Assets**	Assets are at imminent risk
4	**Fire Behaviour**	There are known high fuel loads and there is a likelihood of an excessive rate of spread, or extreme fire behaviour

4. **Roles and Responsibilities of Ground Controller** The roles and responsibilities of a Ground Controller include the following:

ROLE/RESPONSIBILITY	DESCRIPTION
Maintain Tasking/IMT Strategies	• Receive briefing from IC/IMT of strategies for aerial suppression effort • Consult with AAS to implement/modify aerial suppression strategies • Consulting with IMT and AAS to suspend operations if conditions compromise safety or are ineffective.
Control Suppression Task	• Brief aerial suppression asset through AAS on IMT strategy and task • Select targets in consultation with IMT and AAS • Inform AAS or pilots drop zone clear • Provide feedback to AAS/pilots on drop accuracy and effectiveness.
	Be prepared to conduct tactical aircraft operations over the fire area until the arrival of AAS
Establish and Maintain Communications	• 5 minute and 1 minute • GC to AAS (Aerial Suppression asset) • GC to IMT/IC • GC to Fire line/Sector Commanders (SC)
Maintain Safety of Task	• Identify ground risks to air operations - antenna/power lines/itinerant aircraft • Ensure ground crews are prepared for drops • Brief and liaise with SC • Confirm drop zone is clear • Ensure safety standards are maintained
Maintain Records	Maintaining a log of activities

5. **Minimum Resourcing of Ground Controller** IC is to appoint a Ground Controller to direct aerial suppression effort. Ground Controllers are to be provided with the following resources.

REQUIREMENT	RESOURCE	PURPOSE
Communications	Air to Ground Communications • VHF radio	GC-Aerial Asset
	Ground to Ground Communications • VHF/UHF if remote from IMT location	GC-IC/IMT
Record	Ground Controllers Log	Record of tasking against strategies/objectives
Guidance	• OPS-AIR-REQ-FBOM – Request for Fire Bombing • SOP 12 (Annex A)	Terminology and tasking

6. **Requesting Aerial Suppression Support.**

Request
Where one or more of the suppression response criteria have been met, IC is to request aerial suppression support through the DFES Regional Office.

Automatic Response
On report of fire in the identified high risk areas Aerial Suppression Aircraft will be automatically deployed and will require the appointment of a GC.

7. **Communicating with Aerial Suppression Platforms.** Once appointed, Ground Controllers are to establish and maintain communications with both the aerial suppression platforms, irrespective of the presence of AAS and the IMT/IC. The primary VHF communications channel and sequence of communications by aerial suppression platforms on task are detailed at **Annex A**.

8. **Tasking Aerial Suppression Platforms.** Aerial suppression task tactics and terminology for use by Ground Controllers are described at **Annex B**.

Annexes

A Ground Controller – Ready Reckoner B
Tasking and Terminology

SOP 12	GROUND CONTROLLER – READY RECKONER	ANNEX A

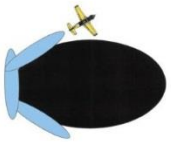
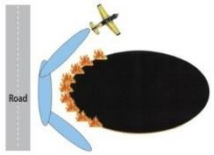
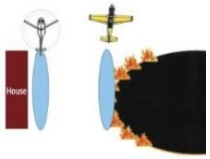
Safety

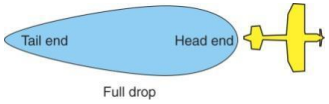
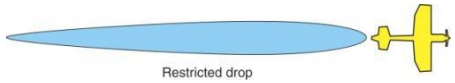
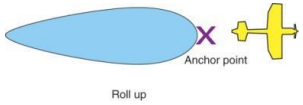
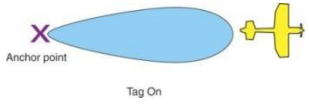
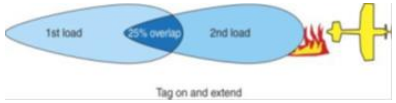
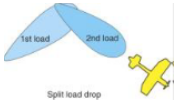
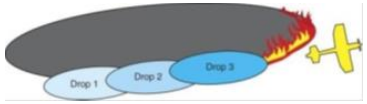
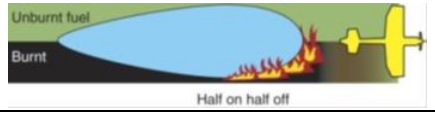
General Safety Procedures	• Brief ground crews prior to commencement of firebombing operation • Clear drop zone upon receiving 1 minute in-bound call • GC/pilot/AAS to confirm drop zone is clear • Ground crews may re-enter the drop zone on GC confirmation • The GC is to maintain contact with the AAS throughout continuous firebombing operations
Standard Brief to Ground Crews	If you are caught in the drop zone make sure that you: • Move away from the fire line • Don't run or panic • Watch out for falling branches and debris • Place hand tools well clear • Ensure your hard hat is on and secured • Watch your footing • Wash thoroughly with cold water if you are hit by foam
Hazards to Aerial Platforms	• Towers/Power lines • Stags/Tall trees • Turbulence/changing winds • Other aircraft flying over the incident ground • Low visibility areas • Erratic/Extreme fire behaviour • Terrain – especially steeply rising ground

Communications

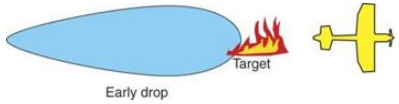
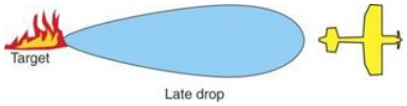
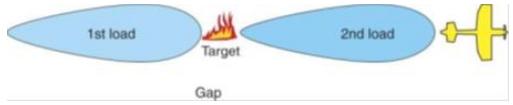
Operating Channels	**TASK**	**COMMAND CHANNEL**	
	Suppression	Metro -VHF 644/621/368 Regional – refer Fire Bomber Operational Channels	
	Air Intelligence	VHF 369	
Call signs	**APPOINTMENT**	**CALLSIGN**	**EXAMPLE**
	Ground Controller	*'[Incident] Ground Control'*	Neerabup Ground Control
	Fire Bomber	*'Bomber [Number]'*	Bomber 601/602/603/604 etc.
	AAS	*'Air Attack [Number]'*	Metro: Air Attack One/five
			South West: Air Attack Two/Three
	Helitak	*'Helitak [Number]'*	Helitak 671, 672 etc.
	Air Reconnaissance	*'Air Intel*	
Standard Calls	**5 minute inbound call**	Acknowledge. Confirm strategies, hazards and use of foam	
	1 minute inbound call	Acknowledge task FW/RW and confirm drop zone clear	

Tasking

Direct Attack	Indirect Attack	Combined Attack
		

Full Drop	Restricted Drop
	
Roll Up	**Tag On**
	
Tag On and Extend	
	
Line Building	**Half On-Half Off**
	

Feedback

Early Drop	Late Drop
	
Gap	
	

Terminology

Control

Anchor point	A reference point to start or end a drop
Drift	The expected or experienced lateral movement of a drop due to crosswinds
Dummy Run	A simulated bombing run made on a target by the AAS to indicate the target and run to the bomber pilot
Lead-In	The fire Bomber is to follow the AAS on the final run
Drop Length	Distance covered on the ground by a single drop
Head End of Load	The most forward end of the load on the ground
Load Width	Width covered on the ground by a load
Recce	A low pass to assess target area by AAS or fire bomber
Tail End	The aft end of the load on the ground

Tasking

Tag-On	Connect the tail end of the load to a given point
Roll Up	Connect the head end of the load to a given point
Parallel Drop	Place load beside and touching a specific reference
Half On – Half Off	Parallel drop with half the load covering the reference and half outside
Split Load	Part of the load is released, then the bombing door is closed, retaining part of the load.
Hold	An instruction to hold the load and await further advice
Reload and Stay	An instruction to the bomber pilot to return to base and cease further firebombing operations
Reload and Wait	An instruction to the bomber pilot to return to base and wait for further instructions
Reload and Return	An instruction to the bomber pilot to return to base, reload and return to the fire

Drop Assessment

Bulls eye	Indication of a drop placed exactly where required
Early	The drop was (or is planned to be) short of the designated point
Late	The drop was (or is planned to be) beyond the designated point
Gap	A weak or missed area in a retardant line

SOP 13 – BRIGADE INTERNAL CALL OUT PROCEDURE

The Shire of Gnowangerup Volunteer Bush Fire Brigades are encouraged to devise and arrange their own internal call out procedure in order to mobilise Brigade resources. These internal procedures may utilise:

- Mobile telephones;
- Selcall radio paging facilities;
- VHF or UHF radio facilities;
- The local telephone system; and
- Pages where available.

Brigades should compile, continually revise and update call out lists for all their members. These call out lists should include details of member names, their addresses and contact details (both working and after hours contacts are preferable).

While travelling to and from a fire (on public roads), the Shire of Gnowangerup bush fire appliances should only carry personnel who are safely seated in the cab or on specially designated seating fitted with seat belts.

STANDARD CREW OF APPLIANCES

Light tanker	2 persons, or meet licensing requirements and be within Gross Vehicle Mass (GVM)
2.4, 3.4 & 4.4	as per seating and be within GVM

The drivers and passengers of the fire fighting vehicles are legally exempted from the requirements to wear seat belts "***when engaged in fire fighting activity***".

Travelling to and from a fire, drivers and passengers in the Shire of Gnowangerup fire appliances, must wear available seat belts.

SOP 15 – DRIVING GUIDELINES FOR THE SHIRE OF GNOWANGERUP BUSHFIRE BRIGADES

A. Driving Conditions for Bushfire Brigade Personnel

1. All drivers must hold a current and appropriate class of driving license necessary for the appliance being driven.

2. Drivers holding "P" Plates may drive appliances as part of Driver Training. However, they are not to drive to or at emergency/incidents.

3. Driver is not to operate a fire appliance for longer than a 12 hours shift

4. All Road Traffic Codes are to be complied with.

B. General

1. Bushfire Fighters must at all times, drive with due care and attention and continue to show consideration to other road users

2. It is essential that the privileges granted by law are not abused

3. Crew Care and Safety must be of paramount importance at all times when driving fire appliances

4. Warning Lights to be in operation at all times when brigade personnel are working off the appliance as other vehicle movement may prove a hazard.

5. Smoke hazard signs to be installed on roads where Bush Fire Brigades are operating.

6. In order to improve visibility of fire appliances to each other during fires, it is recommended that emergency lights and headlights be used.

1. The Shire of Gnowangerup Bushfire Brigade personnel must **NOT** respond to an incident or participate in any Bushfire operation if alcohol has been consumed in quantities that may reduce the judgement and capacity of the individual to act and undertake responsible action.

2. Alcohol must **NOT** be consumed by personnel whilst undertaking any task or function associated with incident response, suppression or recovery phases.

3. Alcohol must **NOT** be consumed by personnel whilst engaged in training activities associated with operational tasks.

4. When driving, personnel must comply with Road Traffic Regulations.

SOP 17 – BUSHFIRE RADIOS

It is the aim of the Shire of Gnowangerup to provide each strategically placed Fire Control Officer with one (1) two-way radio. Installation costs of a primary two-way radio will be borne by the Shire of Gnowangerup.

All two- way radios remain the property of DFES.

The Shire of Gnowangerup presently uses VHF radio communications to provide communications for its Bushfire Brigades. A repeater site, situated on Nalyerlup Hill Gnowangerup, supports the radio network. The Gnowangerup Bushfire Brigade operates on channel VHF 200.

Because the Shire of Gnowangerup's Bushfire radio network is an emergency facility, it should only be used by Bushfire Brigades for:

- Official Bushfire Brigade operations, training and administrative purposes;

OR

- Any other genuine emergency purpose.

The Shire of Gnowangerup has distributed to all Fire Control Officers and relevant authorities the "*VHF Operating Instructions – Gnowangerup Shire – Channel 39 – Communications Booklet"* for contact details or other Fire Control Officers, Local Government, CALM, DFES, other authorities and neighbouring Shires.

SOP 18 – PERSONAL PROTECTIVE EQUIPMENT FOR ALL BUSHFIRE BRIGADE FIREFIGHTERS AT FIRE-GROUND

STANDARD DRESS FOR ALL FIREFIGHTING PERSONNEL WILL BE:

Personnel on the fire-ground should be dressed in accordance with the minimum dress standard as specified below or equivalent. Personnel turning up to fires without the minimum requirements must be advised to dress properly or be asked to leave the fire-ground, or alternatively assigned a non-firefighting task.

MINIMUM STANDARD FOR BUSHFIRE FIGHTING:

- Approved Proban Coveralls (one or two piece)
- Fireman's Safety Boots;
- Gloves and Goggles

EQUIVALENT STANDARD FOR FIREFIGHTERS

The equivalent standard for Firefighters is cotton/woollen long trousers, long sleeve shirt and safety boots.

Depending on individual Brigade requirements, protective clothing may be kept in the Brigade's fire station, with appliances or held by members as part of their individual firefighting kit. Protective clothing must be worn on any operational duty.

All Brigade personnel are responsible for the availability, condition, care and cleanliness of their own kit.

Only correctly attired personnel will be allowed to crew Brigade appliances.

ORDERING PROTECTIVE CLOTHING

Brigade Captains/Secretaries will forward protective clothing requirements after each annual Brigade meeting to the Shire of Gnowangerup before *31 August each year*. These orders will be included in the Shire of Gnowangerup submission to the Emergency Services Levy Operating Grant Application.

INTRODUCTION

All fire incidents, no matter how large or small are more efficiently and effectively handled when they are well managed. In reality, this means that during all fire incidents which occur, someone must assume control and devote their time and energy into managing the situation.

The Shire of Gnowangerup operates within the guidelines of Australian Inter-Service Incident Management System (AIIMS) to manage all fire incidents. Volunteer Bushfire Brigade officers are encouraged to undertake training, provided by DFES, in AIIMS, for effective management of emergency situations.

INITIAL ICS & FCP

Upon arrival at a fire incident, the Officer in Charge of the first arriving crew will assume responsibility as Incident Controller, until relieved by an officer from the responsible agency for the fire or the Chief Fire Control Officer. The relieving officer may be a PAW officer or a DFES officer.

Amongst the initial tasks arranged by the Incident Controller, will be:

1. The establishment of a Forward Control Point (FCP)

2. The gathering of fire ground information, fire behaviour, fuel types, prevailing weather conditions, weather forecasts, topography and local knowledge.

Understandably, the size of the fire and amount of resources involved will dictate the size of the ICS management function, which is entirely flexible. The ICS may be no more than a Fire Control Officer with a map on the bonnet of his vehicle. For large scale fires (e.g. Nightwell) involving several agencies, the ICS may involve a multi-agency team operating from another FCP.

Where the size of the fire incident so dictates, Brigades should request assistance:

Department of Fire & Emergency Services, Albany

TEL: 9545 5000

FIRE INCIDENT REPORTS

The Shire of Gnowangerup's Bushfire Brigade Fire Control Officers are to complete a Fire Incident Report form ***every time*** they are mobilised in response to any fire or incident or false alarm.

Once completed the report is to be submitted to the Shire of Gnowangerup. The report should be completed **as soon as possible** after a fire (preferably within 24 hours). However, the report should be submitted within seven days of the fire incident.

INTRODUCTION

1. Live electricity at structural fires is a deadly risk to firefighters. ***Where electrical hazards are encountered, the regional power supply company or Western Power is to be mobilised through the COMCEN in the first instance in order to assess and isolate the risk***. This SOP details the procedures to be followed to minimise the risk of live electricity to firefighters.

2. Isolation Method: The isolation method is as follows:

Isolation Method	• Operate all switches at arm's length with the back of the hand • Turn the head away to avoid possible flash injuries

3. Structural Isolation Procedure:

CIRCUMSTANCE	PROCEDURE
Isolation of mains electricity	• Electricity should always be disconnected: ○ When the situation is unknown ○ At any time that water is to be applied within a structure ○ At any time firefighters are at risk from electrical shock ○ On adjacent buildings if fire impingement is reasonably expected • OIC are responsible for checking that the power to a structure is switched off at the main board and that the fuses have been removed prior to commencing direct attack on fires. When disconnecting the power supply ***Follow the Isolation Method*** • In large buildings or building complexes the COMCEN is to be consulted to ascertain from the power supply company or building management agency if additional electrical distribution boards are located in adjacent buildings
Residual active power after isolation at main board	When power is isolated at the main board or meter, the overhead wire from the street distribution pole to the meter board is still live and can pass through the roof space to the meter. • If safety of firefighters is in doubt, have the electricity isolated by the regional power supply company. • Do not work park appliances or position equipment beneath overhead street connection power lines • Keep this area clear of equipment • Be wary if this area is involved with fire as the wire may separate from the structure and drop to the ground **Note:** Only the regional power supply company can isolate main power supply cables that pass through the roof space of front units to rear units such as in older type duplexes/units
Isolation of Solar Electrical Systems	The presence of solar electrical systems is required to be indicated through signage within the main electrical board, but may also be identified by observing panels on the roof or local knowledge. Despite mains power and solar array isolation, solar panels continue to produce electricity until denied solar energy. The following procedure to isolate solar electrical systems must be thorough to ensure FF safety. • Locate and isolate both AC and DC isolating mechanisms. Isolate in correct order: 1. Mains Power 2. AC 3. DC • Cover solar panels with salvage sheet/non-light penetrating material • Complete "Warning Do Not Operate" tag **Note**: Solar components involved in fire are to be extinguished with CO_2 extinguisher as for any other electrical device.

4. Open Electrical Source Procedures:

CIRCUMSTANCE	PROCEDURE
When an electrical hazard is found	• Inform OIC and all crew members immediately • **Cease the use of water as a suppressant until the safety of continuing is determined** • Demarcate and isolate the danger area as soon as possible • Maintain a minimum safety distance of 10 metres (from emergency service personnel and equipment) from wires that have made contact with the ground • Observe and monitor residual water flows • Maintain a minimum safety distance of 30 metres from members of the public
Location of a broken wire	• Locate both ends in order to: o Determine the size of the danger area, and o Ensure the energy source is not being transferred through another conductor e.g. steel fence, vehicle body etc.
Wires that have made contact with the ground	• On arrival at an incident, treat all wires in contact with the ground as though they are energised • Keep well clear of wires that are in contact with the ground – maintain a minimum safety distance (10 metres for low voltage wires) • Call for isolation of power by the regional power supply company through the COMCEN • Locate wire ends to ensure source is not being transferred through another conductor e.g. Steel fence, vehicle body etc.

5. Reconnection Procedures:

CIRCUMSTANCE	PROCEDURE
Retaining Power in a Structure	Electricity may remain connected, or be re-connected at the OIC's discretion under the following circumstances: • When conducting search and rescue • To provide lighting, run fire pumps, exhaust systems or lifts when water is not required or in use **Note:** Reconnection is only to be undertaken in consultation with a licensed electrician. Extreme caution must be taken and all personnel must be made aware of the presence of live electrical wiring.

6. Electrical Hazard Rescue Procedure:

CIRCUMSTANCE	PROCEDURE
Persons in contact with electrical wires	When removing a person in contact with high or low voltage electrical wiring • Request the assistance of the Power Authority • Disconnect the power source in all cases • Use isolation procedures and AC Hot Stick to confirm isolation • Do not attempt to aid the victim until the electrical current has been switched off
Vehicle accidents and electrical hazards	Where a vehicle has collided with a Power Pole or is in contact with electrical wires • Request the assistance of the Power Authority • Apply safety procedures to minimise hazard of pole falling if possible • Maintain a minimum safety distance of 10m at all times. Clearly mark danger area • If wire is under vehicle and driver is unhurt, instruct them to drive slowly clear of the wire into a safe area • Occupants remaining in the vehicle must be advised to remain still and avoid touching any metal on the vehicle • Rescue can only been effected once power supply has been isolated.

SOP 22- RESPONSE TO WILD FIRES AT RUBBISH TIPS

It cannot be stressed too strongly that to act without specialist advice is dangerous and that it is essential that safe Operating Procedures are adhered to on responding to all tip fire situations

NOTIFICATION

All fires occurring within rubbish tip sites in the Shire of Gnowangerup, not including garden refuse areas or bush areas, are to be reported to the Chief Bushfire Control Officer and the Shire of Gnowangerup.

TYPES OF FIRE

1. A fire within a rubbish site boundary, but clear of dump area i.e. bush, grass, garden waste or windblown papers.

Response

Brigade response will be as for a rural type fire or as indicated in their Brigade response plan.

2. Fire at or near dump area, where known or unidentified dangerous substances are suspected. The Shire of Gnowangerup is to be notified

Response

a) Brigade response will be as for a rural type fire or as indicated in their Brigade response plan.

b) Brigade members to remain clear of danger zone and remain up-wind of incident. Attend to adjacent bush fires ***if it is safe to do so***.

Note:

If the tip site involved includes a pit/trench area, Brigade members are to remain above ground level at all times

SOP 23 – CLOSURE OF ROADS TO ASSIST FIRE CONTROL

Where a road closure would directly or indirectly assist the Shire of Gnowangerup Bushfire Brigade's efforts to extinguish or control a fire, the road may be closed by a Bushfire Control Officer pursuant to Section 39(1) of the Bush Fires Act 1954. The same road closure action may also be taken by a Brigade Captain or the most senior member of the Bushfire Brigade under Section 44 of the Act.

Note: Roads may be closed, but **traffic *may not be diverted*** by any member of the Brigade.

Where available, warning signs should be placed on the side of the road to advise approaching motorists of the hazard ahead of them.

INSURANCE CLAIMS

Any loss or damage of appliances, equipment and apparatus EITHER of the Bushfire Brigade or privately owned that is used under the direction of the Bushfire Control Officer, or an officer or a member of the Bushfire Brigade, is covered by insurance.

The Brigade member assuming the Fire Control Officer or Incident Controller role at a fire incident will:

- Provide the claimant with contact details of the Fire Advisory Coordinator at the Shire of Gnowangerup

- Validate information provided (if needed).

The claimant will then submit the completed Claim Form to the Gnowangerup Fire Brigade Administration Officer within 73 hours (3 days)

In the event of loss/damage to equipment/appliance please ensure a **detailed written report** accompanies the claim form.

All claim forms are to be given to:

Gnowangerup Fire Brigade Administration Officer
Shire of Gnowangerup
28 Yougenup Road
Gnowangerup WA 6335

All claims are subject to approval by the Insurance Company.

OPERATING LEVEL MAINTENANCE

The Shire of Gnowangerup's Bushfire Brigades are responsible for the Operating Level Maintenance of Shire owned fire appliances. Appliances are to be serviced twice yearly (bi-annually). One service prior to the fire season and one at the end of fire season. In this context, Operating Maintenance includes:

- Checking vehicle tyre pressures;
- Checking radiator fluid levels for the vehicle engine and pump motor (where fitted);
- Checking lubricant levels on the vehicle and pump engines;
- Checking brake and clutch master cylinder fluid levels;
- Checking windscreen washer fluid;
- Checking the operation of all vehicle lights, emergency lights and sirens;
- Checking the operation of the WAERN Bushfire Radio including external speaker (where fitted);
- Checking battery electrolyte levels;
- Cleaning of vehicles;
- Checking the presence of all appliance stowage and its serviceability;
- Checking the operation of fire pumps, valves, sprays, nozzles and hose reels; and
- Reporting any defective or unserviceable appliance items to the Shire of Gnowangerup.

All major servicing and maintenance of the Shire owned Bushfire Brigade appliances will be arranged through the Shire's maintenance workshop at the Shire's depot. To that end, each year Brigades will be required to present the appliances to the workshop for a bi-annual inspection. During this inspection, assessments will be made on any future remedial maintenance for the fire appliances.

Brigades experiencing difficulties or breakdowns with Shire owned fire appliances should report these to the Gnowangerup Fire Advisory Coordinator at the Shire of Gnowangerup, who will arrange remedial action through the Shire's workshop. This is particularly important where new appliances are involved as there may be warranty ramifications.

REFERENCES USED:

The following Standard Operating Procedures (SOP's) have been developed by DFES and have been adopted by the Shire of Gnowangerup as part of their Standard Operating Procedures for Bushfire Brigades

SOP No	DFES ADOPTED SOP No		TITLE	PAGE NO
3	SOP	3.5.1	BUSHFIRE RESPONSE	4
4	SOP	3.2.7	RED FLAG WARNINGS	8
5	SOP	3.2.9	SAFE USE OF FUEL CANS	10
6	SOP	3.5.5	USE OF A CLASS FOAM INCIDENTS	14
7	SOP	3.5.10	CREW SAFETY AT BUSHFIRES	17
8	SOP	3.5.11	ENTRAPMENT AT BUSHFIRE	20
9	SOP	3.5.4	SAFE USE OF A DRIP TORCHES	22
10	SOP	3.5.14	DIEBACK HYGIENE	37
11	SOP	3.5.15	BUSH FIRE SMOKE EXPOSURE	39
12	SOP	3.5.3	GROUND CONTROL OF AERIAL SUPPRESSION PLATFORMS	43
21	SOP	3.4.1	STRUCTURAL FIRE RESPONSE	56
22	SOP	3.4.8	ELECTRICAL HAZARDS	61