PRINCIPLES	
Crew Safety	LACES
PPE	Level 1 + Respiratory protection
Water Supply	Static, reticulated or mobile
Local Conditions	• Meteorological • Fuel Load • Topography
Observe Fire Behaviour	Set initial obj, strategies and tactics
Contain to Control	Review State Strategic Control Priorities
Site Control	Isolate public from risk
Public Exposure	Road Closures and emergency messages
Public Information	Priority Action, update regularly
Site Safe for Departure	Blackout 20/100m
SIZE-UP	
Immediate Threat	Immediate threat to life and property
Weather	Predict direction and rate of spread
Fuel Load	Determine safe tactics
Initial Capability	Enough to contain under expected conditions?
Observed Hazards	Personal - Stags, Flame height Air - Power lines Vehicle Movement - smoke, drains
Communications	VHF comms plan from the outset Control Point
Incident Site Control	Control entry Manage smoke hazard
Additional Resources	Early. Ground and air.

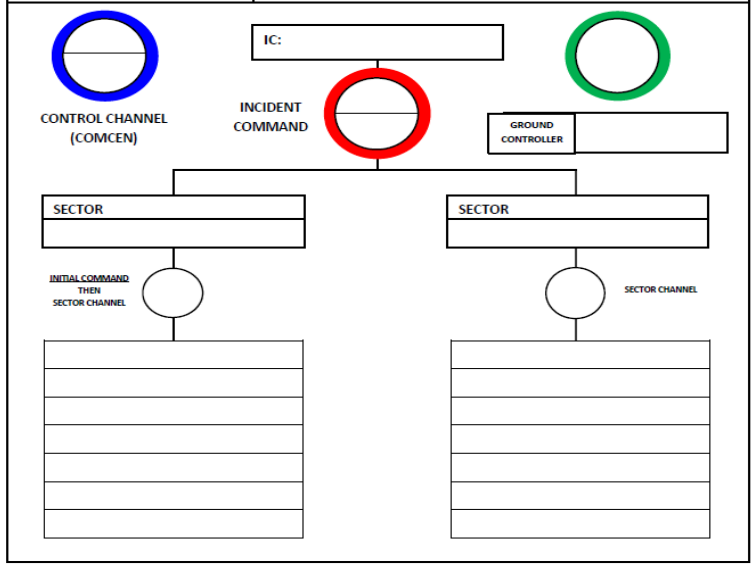
FG3.5	BUSHFIRE	RESPONSE	V1.7

CONTROL POINT:

INCIDENT NAME:

NUMBER:

INCIDENT LOCATION:



PLAN	INTIAL COMD (THEN SECTOR)		COMMAND (DUPLEX VHF)	
	MID	HIGH	MID	HIGH
MNC 1	96-99	354-359	28	247
MNC 2	46-49	-	-	294
MNC 3	96-99	-	-	133
MNC 4	-	354-359	-	153
MNC 5	-	360-365	-	224
MNC 6	-	354-359	-	261
MNE 1	46-49	360-365	34	346
MNE 2	96-99	354-359	37	110
MNE 3	-	360-365	-	112

PLAN	INTIAL COMD (THEN SECTOR)		COMMAND (DUPLEX VHF)	
	MID	HIGH	MID	HIGH
MCC 1	96-99	354-359	29	231
MCC 2	-	360-365	-	173
MCC 3	-	354-359	-	316
MCC 4	-	360-365	-	229
MCC 5	-	354-359	-	138
MCC 6	-	360-365	-	121
MSC 1	96-99	354-359	35	109
MSC 2	-	360-365	-	234
MSC 3	-	354-359	-	168
MSC 4	-	354-359	-	161

PLAN	INTIAL COMD (THEN SECTOR)		COMMAND (DUPLEX VHF)	
	MID	HIGH	MID	HIGH
MCE 1	46-49	360-365	38	142
MCE 2	96-99	354-359	32	260
MCE 3	46-49	-	-	206
MCE 4	96-99	-	-	238
MCE 5	46-49	-	-	141
MCE 6	-	354-359	-	144
MCE 7	-	360-365	-	128
MSE 1	46-49	360-365	40	221
MSE 2	96-99	354-359	44	218
MSE 3	46-49	360-365	36	139
MSE 4	-	354-359	-	170

FIREBOMBING	PRIMARY: CH 644	SECONDARY: CH 621	AIR INTEL: CH 369
COMCEN	PH: 9395 9209	FAX: 9395 9229	SCC: 9395 9202

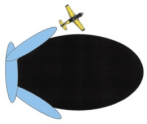
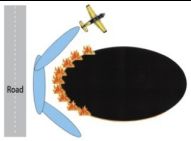
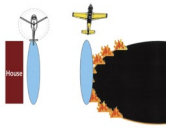
FG3.5	BUSHFIRE	INITIAL COMMS	V1.7

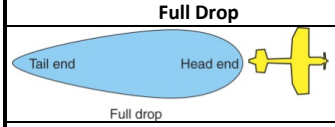
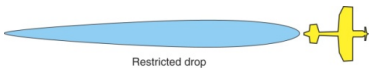
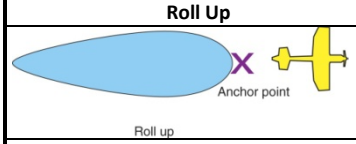
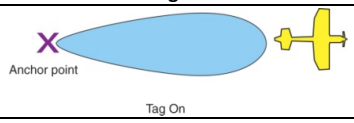
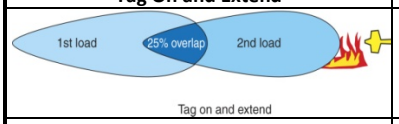
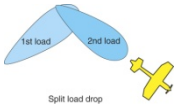
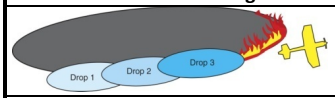
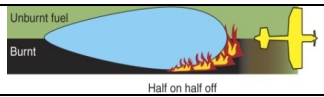
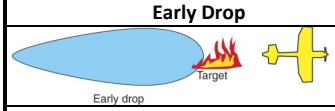
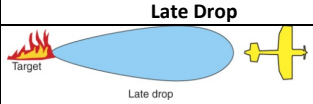
SAFETY	
Safety Procedures	Brief ground crews prior of pending ops Clear drop zone at 1 minute in-bound call Confirm drop zone is clear Ground crews re-enter on Ground Controller (GC) confirmation GC maintain contact with AAS throughout
Ground Crew Safety Brief	If you are caught in the drop zone: Move away from the fire line Don't run or panic Watch out for 'widow makers' Place hand tools well clear Ensure your helmet is on and secured Watch your footing Wash thoroughly with cold water if you are hit
Hazards	Stags. Power lines. Winds. Smoke/low visibility. Terrain. Other aircraft

OPERATING CHANNELS	
Suppression	Metro – 644/621/368 Regional – refer to Fire Bomber Operational Channel
Air Intelligence	VHF 369

CALLSIGNS	
'[Incident] Ground Control'	***'Bomber [Number]'***
'Air Attack [Number]'	***'Helitak [Number]'***
'Air Intel'	

STANDARD CALLS	
5 minute inbound	Acknowledge. Confirm strategies hazards and use of foam
1 minute inbound	Acknowledge and clear drop zone

Direct Attack	Indirect Attack	Combined Attack
		

Full Drop	Restricted Drop
	
Roll Up	**Tag On**
	
Tag On and Extend	**Spilt Load Drop**
	
Line Building	**Half On-Half Off**
	
Early Drop	**Late Drop**
	
Gap	
	

CONTROL	
Anchor point	Reference point to start or end a drop
Drift	Lateral movement of a drop due to crosswind
Dummy Run	Simulated run by AAS to indicate run to pilot
Lead-In	Water Bomber to follow the AAS
Drop Length	Distance of single drop on the ground
Head End	Most forward end of the load on the ground
Tail End	The aft end of the load on the ground
Load Width	Width covered by a load on the ground
Recce	A low pass to assess target area

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	Drop half the load covering the reference, half outside
Split Load	Part load released, part load retained
Hold	Hold the load and await further advice
Reload and Stay	Return to base and cease bombing operations
Reload and Wait	Return to base and await further instructions
Reload and Return	Return to base, reload and return to the fire

FEEDBACK	
Bullseye	Indication of a drop placed exactly where required.
Early	Drop was (or is planned to be) short of the anchor point
Late	Drop was (or is planned to be) beyond the anchor point
Gap	A weak or missed area in a retardant line

FG3.5	BUSHFIRE	GROUND CONTROL 3	V1.7

DRIP TORCH OPERATIONS		
Prepare Drip Torch	Check: • Tap function • Filler cap secure • Filler cap seals ('O' ring) Pre-mixed fuel only	
Authorised Pre-Mix	**DIESEL**	**PETROL**
	Three Parts (75%)	One Part (25%)
Safety of Others		
Complete Task	Move to task area ***Ignition Sequence*** • Loosen air vent screw • Wand tap ON • Tilt wand to ground • Drip fuel from the nozzle to wick (gauze) • Ignite pilot flame at wick • Regulate flow using wand tap Drip burning fuel onto vegetation	
Extinguish and Store Drip Torch	Stand torch upright and extinguish ***Storage*** • Ensure pilot light extinguished • Ensure drip torch is stored upright • Wand tap remains ON to prevent pressure build up in the reservoir • ***Close*** air vent screw	

FG3.5	BUSHFIRE	DRIP TORCH	V1.7

APPLICATION RATES

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		✓

A CLASS ALL HOURS BULK FOAM SUPPLIES

Metro	Mercury Firesafety Foam Watch	Through ComCen
	GOSNELLS BFB WANNEROO BFB	Through ComCen
Country	Regional Offices: NORTHAM BUNBURY GERALDTON ALBANY	Through ComCen /RDC/ROC

2 pallets of A Class foam at each location. 2 pallets = 64 x 20L drums.

FOAMWATCH DELIVERY OPTIONS

Palletised 640-1000 L options:	• 32/20 litre drums • 5/200 litre drums • 1/1000 litre bulky bin

CRITERIA

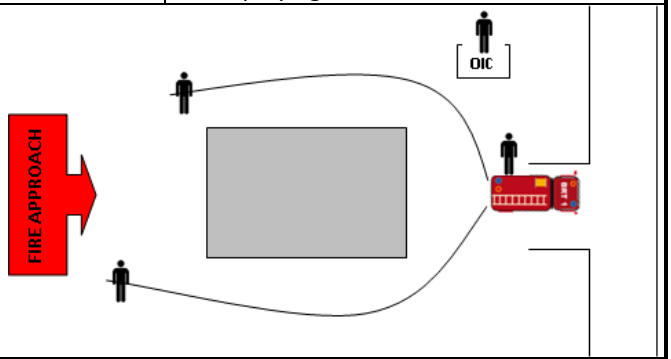
Construction	Assess for flammability
Defendable Space	No vertical fuels for 20m
Vehicular Access	Appliances access
Water Supplies	Static water supplies
Firefighting Resources	Determine the number of structures able to be safely defended Min crew per structure: (1) OIC, (2) Crew, (1) Pump/Comms

ASSESSMENT

ASSESSMENT	SYMBOL	DEFINITION
Un-defendable		• Firefighters will not defend this structure. • Unlikely to survive a bushfire even if defended.
Possibly Defendable		• Firefighters will defend this structure where it has defendable space and access. • The building construction materials appear sound. • There is a sufficient water supply available. • There are enough firefighting resources to undertake defensive actions.

LEVEL OF INVOLVEMENT		SURVIVABILITY RATING - PRIORITY
No Fire Involvement		**SAVEABLE –** (Priority depends upon threat)
External Roof Involvement (Surface-based. Has not entered the roof space)		**SAVEABLE –** PRIORITY 1
Full Roof Involvement (Fire has entered the roof space)		**MARGINAL –** PRIORITY 2
Internal Involvement		**LOST –** PRIORITY 3
Fully Involved		**LOST –** PRIORITY 3
FG3.5	**BUSHFIRE**	**STREET ASSESSMENT**	**V1.7**

PRINCIPLES	
Appliance Positioning	• Reverse into the lee side of structure • Engine running, beacons on • Cabin closed up
Mutually Supporting Defensive Posture	• Two lines split each side of the structure • Orientated to mutually support
Suppression of Approach Fuels	• Assess defendable space and local fire behaviour • Position sufficiently forward of the structure to be able to deny the approach of the fire.
Protected Withdrawal Route	• For personnel and appliance
Mop-Up & Move On	• Prioritise mop-up actions after the fire front has passed before rapidly deploying to the next at risk structure



FG3.5	BUSHFIRE	STRUCTURAL DEFENCE	V1.7

REQUEST FOR FIRE BOMBING OPS-AIR-REQ-FBOM

ACTIVATION INFORMATION:

Location:
Incident Controller:
Ground Controller (GC) Call Sign:
Fire Bomber Radio Channel:

Activation Criteria: Public safety at risk ☐ Fire Crews in Imminent Danger ☐
Assets at imminent risk ☐ Known high fuel loads and likelihood of excessive ROS and/or extreme fire danger ☐

ONCE REQUESTED IT IS IMPORTANT TO MONITOR THE FIRE-BOMBER / HELITAK CHANNEL

OPERATIONAL PROCEDURES:

FIVE MINUTE IN-BOUND CALL: The pilot, AAS or HS will make contact with the GC 5 mins from the fire-ground.

1. Ground Controller to Acknowledge and Give Details of:
Strategies of the Operation:
Fire Sector involved in Fire-Bombing:
Hazard to Aircraft:
Use of Foam: Yes ☐ No ☐

ONE MINUTE IN-BOUND CALL: The pilot, AAS or HS will make contact with the GC 1 min from the fire-ground.

2. Ground Controller Acknowledges and Gives Details of the Required Drop. Nominate:

FIXED WING OPERATIONS:
Anchor Point:
Type of Drop:
Size of Load:
Action of Drop:

HELITAK OPERATIONS:
Once the Helitak Supervisor (HS) has been given the tasking
at the 5 min call they will coordinate the Helitak operation
by tasking all Helitak's assigned to the fire- ground.

ENSURE CREWS ARE CLEAR OF THE DROP ZONE

3.Advise Pilot "Drop Zone Is Clear"

4. After Drop Inform Pilot of:

Accuracy: (either)		**Task:** (either)	
Early:	☐	Reload & Return	☐
Bullseye:	☐	Reload & Wait	☐
Late:	☐	Reload & Stay	☐
Drift:	☐		

- Continue tasking pilots until Air Attack Supervisor (AAS) assumes responsibility.
- Maintain contact with AAS or HS to provide SITREP on safety, accuracy, hazards and any change in fireground strategies that have been initiated by either Incident Controller or IMT.
- Monitor and maintain contact and liaise with AAS/HS until operation is complete.

Task Understood	• Obtain brief • Confirm understanding • Ask questions
PPE	• All crew wearing correct PPE
Communications	• Obtain communications plan • Establish and maintain regular contact
Recall Signal	• Brief all crews on agreed emergency warning signal – Three short horn blasts? – Siren?
Protective Water Supply	• Maintain min 25% reserve of water for crew and vehicle protection.
Anchor point	• Identify and brief a common anchor point to meet in emergencies
Escape Routes	• Plan, brief and mark on briefing map
Safe Work Practices	• Avoid driving into dense smoke • Avoid parking in areas at risk of becoming involved in the fire • Remain aware of the location of the fire at all times • Observe local conditions and fire behaviour – act locally but report up

Notify of Emergency	• Transmit 'EMERGENCY EMERGENCY EMERGENCY' Message • Activate AVL (if available) Activate beacons/sirens • Notify SC/IMT of location and situation • Request aerial suppression support
Cease Operations	• Close down branches. Remove lines at pump • All crew return to appliance • Maintain personal protection lines
Prepare Appliance	• Park on burnt/cleared area – rear to fire • Pump running • Protective sprays ready • Personal lines charged. Test flow • Close doors, windows, air vents, turn air con to recirculate. • Deploy radiant heat shields (where Fitted) • Engine running on fast idle
Prepare Crew	• Conduct a head count • Mount the appliance • Take cover in cabin • Crouch below window level (if possible) • Dress in full PPE. ***Do not hose down crew*** • Don in cab air (if available) • Deploy burn over blankets • Drink water • ***STAY INSIDE THE VEHICLE***
Protect Crew	On imminent fire contact • Activate Deluge system *or,* • Protective spray envelope entire cabin area-Incorporate pump area if possible • Wait for fire front to pass Immediately after the fire front: • Account for crew. Check appliance for damage.

REMOVAL CRITERIA	
Danger to life	
Danger to life/property	• Spotting leading to fire spread • Risk to assets within tree fall zone
IDENTIFICATION	
Mark Tree as a Hazard	
Isolate the Hazard	• Cordon-off area, tracks, roads at risk
Report	• Inform the SC – SC inform Ops Officer • SC to request tree feller support • Record all saves and trees felled
Identify Location	• Mark nearest point on track • Map reference/GPS plot
Alert	• SC alert all personnel of hazard • SC in-brief relief crews of hazard
MARKING *(Colours can be mixed to advise desired action)*	
RED/PINK	Tree is suspect
BLUE	Tree should be extinguished
YELLOW	Tree should be felled
MOBILISATION	
Request Tree Felling Teams through ComCen	
Decisions to fell trees can only be made by qualified advanced tree fellers from P&W, DFES, USAR or other environmental officers who are trained to 'sound' trees.	

COLOUR	PURPOSE
WHITE	Identifying a Sector Boundary
BLUE	Identifying where Mop-up
RED	Identifying Hazards (dead-end tracks, unstable surfaces, dangerous trees etc)
GREEN	Identifying Points of Interest (track in and out point identification, gates)
ORANGE	Identifying Water Points

FG 3.5	BUSHFIRE	GLOW STICK MATRIX	V1.7

COLOUR	PURPOSE
WHITE	Identifying a Sector Boundary
BLUE	Identifying where Mop-up required
RED / WHITE (HAZARD TAPE)	Identifying Hazards (dead-end tracks, unstable surfaces, dangerous trees etc)
GREEN	Identifying Points of Interest (track in and out point identification, gates)
ORANGE	Identifying Water Points
YELLOW	Identifying a tree to be felled
RED / WHITE / PLUS YELLOW	Identifying a hazardous tree to be felled
RED / WHITE / PLUS BLUE	Identifying a hazardous tree to mop-up
	DFES Demarcation Tape/ No entry unless authorised by IC
	DFES Warning Tape

FG 3.5	BUSHFIRE	TAPE MATRIX	V1.7

UXO CATEGORY	FIRE CONTROL	LT HT	FEL DZ	Air
Other	No constraints to fire operations.	**Yes**	**Yes**	**Yes**
Slight	Access for back burn and mop up is only on well-travelled tracks and identified on the site specific pre-plan. Rubber tyred tankers up to and including 4.4 can be used. FEL/DZ can be used to create a break removing surface fuels only.	**Yes**	**Yes**	**Yes**
Substantial Developed Land	Rubber tyred tankers up to and including 4.4. *1 Rubber tyre FEL can be used to remove light surface fuels on well established tracks.	**Yes**	**No *1**	**Yes**
Substantial Vacant Land	No access by land based firefighting resources. *1. Aerial Suppression may occur if IC in conjunction with Air Ops determines justified in accordance with SOP 3.11.1 – Aerial Suppression Response.	**No**	**No**	**No *1**

Operating Standards	
Ground Support	• Must support plant with ground crew/appliances
Safety	• Operate from appliances • No closer than 50m • No closer than 2½ times the height of trees being pushed • Maintain radio comms with plant op
PPE	• Provide bushfire PPE
Communications	• Provide sector level comms

Construction Planning Rates

FOREST TYPE	RATE OF PRODUCTION (m/hr)				
	D8/D7E	D6	WL	D4	GRADER
N Jarrah	1000	1000	1000	1000	-
S Jarrah	700	700	700	500	
Dense Karri	400	250	250		
Grasslands	1000	1000	2000	1000	2-6000
Spinifex	1000	1000	2000	1000	2-6000
Coastal Heath	1000	1000	2000	1000	2-6000
Mallee	1000	1000	2000	1000	2-6000
Banksia	1000	1000	2000	1000	2-6000

CONSIDERATIONS	
Resourcing	• Resource clean-down sites ***before*** implementing movement restrictions
Preliminary Clean Site - *Dry*	• Remove bulk of soil and mud from the tracks/wheels/undercarriage of appliances • Dry methods – Brush – Spade – Compressed air
Wash Down - *Wet*	• Wash down only in the designated wash down area • Wash down area: – Hard standing – Well drained surfaces
Runoff Capture	• Capture or monitor runoff
Record Site	

PRINCIPLES	
Minimum Capability	• Command – With independent mobility • Attack – To suit purpose/tasking Water Supply – A minimum of (1) mobile water tanker
Objective	• A clear objective/aim for the task.
Task to Capability	• Do not task beyond the capacity of the individual parts
Information	• Mapping • Street Triage details where available • All known predictions of fire behaviour for each anticipated work location
Boundaries	• Define Area of Responsibility (AoR) with clearly defined and mutually understood boundaries
Communications	• Clear communications plans • SITREP schedule
Logistics	• Remain logistically supported by the tasking IMT • Water Supplies – Stage mobile water tankers in support
Exit Strategy	• Provide clear parameters as to when the task would be deemed untenable and the withdrawal of crews is expected

DUTIES	
Command	During all phases of the task: • The deployment convoy • The task • The re-deployment convoy (or withdrawal)
Planning	Assess situation. Plan task
Tasking	Task crews in accordance with plan. Brief: • Latest known fire behaviour and predictions • Aim of task • Task • Water point/reticulation details • Communications plan • Criteria for abandoning task • Withdrawal route and rendezvous
Report	Maintain the required SITREP schedule
Safety	• Only task crews on feasible tasks that achieve, or contribute to achieving, the objective • Maintain communications throughout the TF • Direct withdrawal if deemed necessary • Continually update crews on fire behaviour/wind changes

DUTIES	
Command	During all phases of the task • Assist TF leader to coordinate crews to achieve overall TF objective. • Task and deploy allocated resources • Monitor progress • Direct withdrawal if required
Plan	• Assess the feasibility of allocated tasks (fire behaviour info quickly dates) • LACES elements
Tasking	Brief each crew member: • Expected fire behaviour/approach direction • Their task, the purpose of their task • Water point and conservation plan • Withdrawal plan, rendezvous point and planned signals to withdraw • Communications plan
Comms	Maintain communications • Crews – Update regularly • TF – SITREP regularly
Safety	• Plan and brief all crew members (as a group) on the actions to be taken if required to abandon the task • Monitor and manage welfare/fatigue • Maintain regular personal contact • Plan the criteria to abandon the task

Operational Considerations	
P	**Position and property Threatened** Assess the situation Exposures/assets at risk/critical infrastructure
A	**Area** Size of fire
F	**Fuel density and Type** Estimate rate of spread
T	**Time to Control** Establish IMT Decide on objectives, strategies and tactics Consider delegating key functions
A	**Assistance Required** Traffic Management Road closures Additional resources
C	**Communications and Control Point** Radio frequencies/Communications plan Location of control point Consider media
S	**Surface Wind Strength and Direction** Send SITREP Safety is first priority

DOCUMENT HISTORY

VERSION	DATE	DESCRIPTION of CHANGE
1.0	Dec 13	Insert Version control, update formatting.
1.1	Dec 13	Altered Emergency Message
1.2	Aug 14	• Close doors, windows, air vents turn air conditioner to recirculate and drop curtains (if available)
1.3	Aug 14	• Protective spray envelope entire cabin area-Incorporate pump area if possible • Take cover in cabin
1.4	Dec 17	• Incorporate AVL, deluge system and incab air in burn over field guide • Updated initial comms plan • Updated Burnover procedure • Updated Principles response FG • Updated UXO field guide interpretations for fire control • Relocated street assessment and structural defence FG • Removal of IAP form 1
1.5	Mar 18	• Update UXO FG to reflect changes in SOP • Formating
1.6	Jun 18	• Inserted fuel can opening technique • Inserted fuel can identification • Removed these and placed in FG 3.2 Incident Control
1.7	Aug 18	• Inserted Glow stick matrix • Inserted Flagging tape matrix
1.8	Sept 19	• Updated Structural Triage FG to reflect changes in SOP