



**NSW RURAL FIRE SERVICE**



# **OPERATING GUIDELINES FOR AIR TANKERS OPERATIONS**

**2023**

## Document control

### Release history

| Version | Date       | Author          | Summary of changes                   |
|---------|------------|-----------------|--------------------------------------|
| 0.3     | 01/09/2017 | Ashley Frank    | First Version                        |
| 0.4     | 14/06/2018 | Ashley Frank    | Update Terminology & Procedures      |
| 0.5     | 31/08/2022 | Scott Lonard    | Review and Update due to ATSB Report |
| 0.6     | 08/02/2023 | Bernie O'Rourke | Secondary review                     |
|         |            |                 |                                      |

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### Related documents

| Document name                                        | Version |
|------------------------------------------------------|---------|
| Interagency Aviation Standard Operating Procedures   |         |
| OMP 8.02.04 Large/Very Large Air Tanker Co-ordinator |         |
| OMP Aviation Dispatch/Tasking Rejection              |         |
|                                                      |         |

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## Definitions & Abbreviations

|                  |                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| AAS              | Air Attack Supervisor                                                                                                                     |
| ABM              | Airbase Manager                                                                                                                           |
| Air Tankers      | Large & Very Large Air Tankers                                                                                                            |
| Birddog          | Air Tanker Lead Plane                                                                                                                     |
| CASA             | Civil Aviation Safety Authority                                                                                                           |
| FCTAF            | Fire Common Traffic Advisory Frequency                                                                                                    |
| Firecom          | Incident Fire Communications Centre                                                                                                       |
| Holding Area     | Nominated airspace with in vertical separation usually 1000 – 2000 feet AGL for the LATs to orbit prior to entry into the “working area”. |
| IC               | Incident Controller                                                                                                                       |
| IMT              | Incident Management Team                                                                                                                  |
| Incident AAS     | Air Attack Supervisor established over a specific fire coordinating the tactical aircraft assigned to that fire.                          |
| IAOP             | Interagency Aviation Operating Procedures                                                                                                 |
| IA               | Pilot that is initial attack qualified (Carded by USFS)                                                                                   |
| L100             | Lockheed Martin L100-30                                                                                                                   |
| LAT              | Large or Very Large Air Tanker                                                                                                            |
| LAT AAS          | Air Attack Supervisor responsible for the coordination of LAT operations.                                                                 |
| LAT AAS Aircraft | LAT AAS and the pilot in command “Birddog”                                                                                                |
| LATCO            | Large/Very Large Air Tanker Coordinator                                                                                                   |
| LP               | Lead Plane – Same as Birddog with or without an Air Attack Supervisor                                                                     |
| NOB              | Nominated Operational Base                                                                                                                |
| OMSS             | Operational Mitigation Support Service                                                                                                    |
| RAAF             | Royal Australian Air Force                                                                                                                |
| RFS              | Rural Fire Service - New South Wales                                                                                                      |
| RJ-85            | British Aerospace Avro RJ-85                                                                                                              |
| SADDO            | State Air Desk Duty Officer                                                                                                               |
| SAOM             | State Air Operations Manager                                                                                                              |
| SAD              | State Air Desk                                                                                                                            |
| SOC              | State Operations Controller                                                                                                               |
| TOB              | Temporary Operating Base                                                                                                                  |
| Triage           | Treatment Priority                                                                                                                        |
| VLAT             | Very Large Air Tanker                                                                                                                     |

|                     |                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Vertical Separation | The nominated vertical airspace over the fire where the LATs will operate usually between ground level and 2000 feet above ground level (AGL). |
| Working Area        | Nominated airspace within vertical separation usually between ground level and 1000 feet AGL, where the LAT AAS aircraft and LAT/s operate.    |

## Air Tanker Specifications Guide

### McDonnell Douglas DC10

|                                 |                                          |
|---------------------------------|------------------------------------------|
| Crew                            | 2 pilots, 1 flight engineer              |
| Delivery System                 | 3 tank, underslung, constant flow system |
| Tank capacity                   | 43,900 litre                             |
| Cruise speed (loaded)           | 350 knots / 650 km/h                     |
| Runway length required (loaded) | 2000+m                                   |
| Length                          | 55.5m                                    |
| Wingspan                        | 50.4m                                    |
| Gross weight                    | 190,500 kg                               |
| Fuel consumption                | 9,560 litres/hr Jet-A1                   |

### Lockheed L100 - 30

|                                 |                               |
|---------------------------------|-------------------------------|
| Crew                            | 2 pilots, 1 flight engineer   |
| Delivery System                 | RADS XXL constant flow system |
| Tank capacity                   | 15,450 litre                  |
| Cruise speed (loaded)           | 300 knots / 555 km/h          |
| Runway length required (loaded) | 1950m                         |
| Length                          | 34.4m                         |
| Wingspan                        | 40.4m                         |
| Gross weight                    | 68,000 kg                     |
| Fuel consumption                | 2,500 litres/hr Jet-A1        |

### C130 Q Hercules

|                                 |                               |
|---------------------------------|-------------------------------|
| Crew                            | 2 pilots, 1 flight engineer   |
| Delivery System                 | RADS XXL constant flow system |
| Tank capacity                   | 15,450 litre                  |
| Cruise speed (loaded)           | 300 knots / 555 km/h          |
| Runway length required (loaded) | 1950m                         |
| Length                          | 30.3m                         |
| Wingspan                        | 40.4m                         |
| Gross weight                    | 68,000 kg                     |
| Fuel consumption                | 2,500 litres/hr Jet-A1        |

### **British Aerospace Avro RJ 85**

|                                 |                             |
|---------------------------------|-----------------------------|
| Crew                            | 2 pilots                    |
| Delivery System                 | Conair constant flow system |
| Tank capacity                   | 11,350 litre                |
| Cruise speed (loaded)           | 360 knots / 666 km/h        |
| Runway length required (loaded) | 1950m                       |
| Length                          | 28.6m                       |
| Wingspan                        | 26.3m                       |
| Gross weight                    | 43,998 kg                   |
| Fuel consumption                | 2,950 litres/hr Jet-A1      |

### **Boeing 737-300**

|                                 |                               |
|---------------------------------|-------------------------------|
| Crew                            | 2 pilots                      |
| Delivery System                 | RADS XXL constant flow system |
| Tank capacity                   | 15,000 litre                  |
| Cruise speed (loaded)           | 421 knots / 780 km/h          |
| Runway length required (loaded) | 1600m                         |
| Length                          | 33m                           |
| Wingspan                        | 29m                           |
| Gross weight                    | 56,470kg                      |
| Fuel consumption                | 2,800 litres/hr Jet-A1        |

### **Cessna Citation**

|                        |                                   |
|------------------------|-----------------------------------|
| Crew                   | 1 pilots, 1 Air Attack Supervisor |
| Cruise speed           | 430 knots / 796km/h               |
| Runway length required | 1500 m                            |
| Runway width           | 24 m                              |
| Length                 | 14.9m                             |
| Wingspan               | 13.8m                             |
| Gross weight           | 4,263 kg                          |
| Fuel consumption       | 600 litres/hr Jet-A1              |

## **Gulfstream Aero Commander**

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Crew                            | 1 pilots, 1 Air Attack Supervisor |
| Cruise speed (loaded)           | 285 knots / 525 km/h              |
| Runway length required (loaded) | 1200m                             |
| Length                          | 13.5m                             |
| Wingspan                        | 14.2m                             |
| Gross weight                    | 4,649 kg                          |
| Fuel consumption                | 300 litres/hr Jet-A1              |

## Introduction

Aviation support is recognised as an important aspect of fire fighting operations. The NSW Rural Fire Service (NSW RFS) operates and contracts aircraft to support such operations each bush fire season on behalf of all fire fighting agencies in the State, including the Large Air Tanker (LAT) program.

## Nominated Operating Base location

The Nominated Operating Base (NOM) established with suppressant loading equipment and fuel to support LAT / VLAT is detailed below:

| Potential operating bases New South Wales |          |     |        |        |           |              |            |
|-------------------------------------------|----------|-----|--------|--------|-----------|--------------|------------|
| Location                                  | Runway/s |     | Length |        | Elevation | Co-ordinates |            |
|                                           | Align.   | PCN | Feet   | Metres | Feet      | Latitude     | Longitude  |
| <b>Richmond</b><br>YSRI                   | 10-28    | 47  | 7001   | 2134   | 67        | 33 36.0 S    | 150 46.8 E |

## Temporary Operating Base location(s)

Temporary Operating Bases (TOB) may be established with suppressant, loading equipment and fuel to support LAT operations are detailed below:

| Potential operating bases    |          |     |        |        |           |              |            |
|------------------------------|----------|-----|--------|--------|-----------|--------------|------------|
| Location                     | Runway/s |     | Length |        | Elevation | Co-ordinates |            |
|                              | Align.   | PCN | Feet   | Metres | Feet      | Latitude     | Longitude  |
| <b>Dubbo</b><br>YSDU         | 05-23    | 14  | 5603   | 1708   | 935       | 32 13.0 S    | 148 34.5 E |
| <b>Tamworth</b><br>YSTW      | 12-30    | 19  | 7218   | 2027   | 1334      | 31 05.0 S    | 148 17.6 E |
| <b>Albury</b><br>YMAY        | 07-25    | 29  | 6233   | 1900   | 539       | 36 04.1 S    | 146 57.5 E |
| <b>Canberra</b><br>YSCB      | 17-35    | 62  | 8802   | 2683   | 886       | 35 18.4 S    | 149 11.7 E |
| <b>Nowra</b><br>YSNW         | 03-21    | 43  | 6702   | 2046   | 400       | 34 56.9 S    | 150 32.2 E |
| <b>Coffs Harbour</b><br>YCFS | 03-21    | 25  | 6824   | 2080   | 18        | 30 19.2 S    | 153 07.0 E |
| <b>Mildura</b><br>YMIA       | 09-27    | 40  | 6004   | 1830   | 167       | 34 13.8 S    | 142 05.1 E |
| <b>Williamtown</b><br>YWLM   | 12-30    | 45  | 9114   | 2778   | 31        | 32 47.7 S    | 151 50.1 E |

## Visitor Management Plan

### ➤ General

Access to Air Tanker Bases is restricted. Provisions have been made to allow Agency personnel, Government representatives and other persons with a requirement to access the Air Tankers whilst positioned at Tanker Bases.

Visits by groups shall be conducted under strict guidelines and conditions. Visits by individuals can be managed on a case by case basis.

All group visit requests must be arranged via Agency/Organisation contact person prior to submission to the SADDO.

### ➤ Access & Security

All individuals will be subject to security and sign in procedures at all Defence Bases.

Visitors are permitted to the site on the condition that an escort is present at all times and that they follow all directions given by the Air Base Manager (ABM). At no stage are individuals to leave the group.

No footage (video or still photography) is permitted to be taken on Defence bases by Agency personnel.

### ➤ Provisions

As the Air Tankers are fully operational aircraft on standby for emergency operational purposes, cancellation of an organised visit at short notice may occur. The State Air Desk Duty Officer (or LAT Co-ordinator if activated) will endeavour to provide as much notice as possible should aircraft be unavailable.

## Safety & Emergency Planning

The ABM is responsible for the safe and efficient operation of the base. The ABM will be assisted by the SADDO (or LAT Co-ordinator if activated) as required, according to the level and location of the airbase.

An Emergency Action Plan must be developed for all airbases and must be consistent with the Airport Emergency Plan if applicable. Further information can be obtained in the Interagency Aviation Standard Operating Procedures.

At all times Airport Safety and Emergency Plans are to be adhered to whilst operating at each respective base.

## Incident & Accident Reporting

### ➤ Notification

Any member of an agency involved in or becoming aware of an accident or incident must notify the IC (when related to an incident) or ABM.

The Incident Controller / ABM will inform the SADDO at the earliest opportunity and any accident or near miss will be managed in accordance with the Interagency Aviation SOPs.

The flight crew, the owner and the operator, are responsible for ensuring reporting of an accident, serious incident to Australian Transport Safety Bureau (ATSB). Agency personnel will report via the SADDO or tasking agency for reporting of an accident, serious accident or incident to ATSB. The accident/serious incident hotline is 1800 011 034.

A written report on the accident or serious incident will be submitted in accordance with agency requirements. Agency personnel are to forward the report to the IC and/or tasking agency who will inform the SADD0.

The minimum information required in the report includes:

- Aircraft make, model and registration
- Name of the owner and operator
- Full name of Pilot in Command (PIC)
- Date and time of accident/incident
- Last point of departure. Point of intended landing and nature of the flight
- Location of accident / serious incident
- Number of persons on board and number of persons injured
- Other information that could lead to nature and cause of the accident being determined
- Description of any damage to the aircraft
- Description of the terrain at the accident/incident site
- Description of the weather at the accident/incident site

## Flight Crew Duty Limitations & Last Light

### ➤ Responsibilities

- a) **The operator and the pilot** of the contracted aircraft are responsible for the maintenance of flight and duty times and must ensure that they are within the legal limitations appropriate to the operator while operating for the agencies.
- b) **Pilots and operators** must advise if they cannot comply with their legal limitations while complying with the agencies flight and duty time limitations.
- c) **LAT AAS and LAT ABM** must ensure any missions planned for the aircraft / aircrew comply with the limitations set out in the Interagency Aviation Standard Operating Procedures.
- d) **Birdog / LAT bombing operation** should cease 30 minutes prior to Civil Twilight. Return flight is permissible within IFR meteorological conditions provided the Aircraft and Pilot comply with CASA IFR Regulations.

### ➤ Limitations

The flight and duty time limits established by the agencies are:

- a) An operator may not roster and a pilot may not be on duty for more than 12 hours in any consecutive 24 hours.
- b) Duty time is calculated for the time the pilot arrives at the aircraft and ceases when they return to their accommodation.

This does not absolve operators or pilots from compliance with their flight and duty time regime limitations.

## Preparedness & Readiness

### ➤ Readiness

The following readiness and response arrangements apply to:

- Air Tanker flight crews;

- LAT AAS and Birddog pilot;
- LAT ABM;
- Mixing and loading personnel (ground support).

These personnel shall be normally available at RAAF Base Richmond (or TOB when operational) during the following period as follows:

- Between 0900 and 1700 hours AEST or as requested by the SADD0, SOC or SDOO.
- During remaining daylight hours, personnel shall remain reasonably available for dispatch (this means generally about 30 min) and must remain contactable at all times.
- All aircraft can be requested to be on fifteen minutes' availability if higher levels of preparedness are required. This will be advised by the SADOO in consultation with the SOC.
- ABM is to coordinate the daily briefing and consider any pre loading requirements as approved by the SOC.

## Aircraft Refuelling

Refuelling is the responsibility of the pilot in command (PIC) of each aircraft and is coordinated through Airport refuelling standard procedures.

Refuelling may be expedited by the relevant PIC, advising the ABM by radio / phone inbound that refuelling is required.

## Tasking & Mission Management

### ➤ Resource request

An Aircraft Request form (IMP 8.04.01.01) is required for the dispatch of an Air Tanker and / or Birddog. The Incident Controller (IC) has the ability to request a Birddog reconnaissance flight, which may generate the dispatch of the LAT AAS only to make an aerial assessment on mission strategies / effectiveness.

Incident Controllers, Air Operations Managers (AOM) and Air Attack Supervisors (AAS) may be required to engage in a conference call with the SAOM, SOC or SDOO when pre planned line building or multiple sorties are requested to confirm strategies and tactics.

### ➤ Approval

The SOC or SDOO approves the dispatch of a Birddog or LAT subject to:

1. The IMT strategy identifying use of Air Tankers which has been prepared in consultation with the SOC / SDOO;
2. The mission can be effectively executed including maintaining fire fighter and civilian safety in forest and interface environments and;
3. The suppressant/retardant type stated is recommended by the IC and approved by the SOC / SDOO.
4. Any safety issues considered by the SOC / SDOO and addressed by the SADD0 / Large Air Tanker Co-ordinator (LATCO).
5. The SOC / SDOO will approve the parameters of the dispatch. This may be on a load / mission basis or to achieve a set of established objectives or based on competing requests (incident triage).

### ➤ Considerations

An IC, SOC/SDOO and SADD0 need to consider the following when making a request for Birddog reconnaissance / Air Tanker dispatch:

- Mission objective in accordance with Incident Strategy;
- Threats (Life/property, assets and/or forests);
- Terrain and fuel types (Forest/grassland/urban interface);
- Prevailing and/or forecast weather and flying conditions, including turbulence & visibility;
- Effectiveness of alternate capacity aircraft and/or ground units;
- Elapsed time for aircraft to arrive 'on site';
- Time of day (last light); and
- Suppressant / Retardant quantity required.

## Dispatch

### ➤ Mission Tasking

The Air Tanker Dispatch Notification is sent to the LAT ABM (and the LAT AAS if airborne). Dispatch details will include all incident information known, inclusive of no less than:

- Latitude & Longitude (preferably in Degrees, Decimal Minutes)
- Geographic Location (as referred to on a map or chart)
- Incident AAS contact details
- Communications Plan (ICC channel and FCTAF as a minimum)
- Aircraft currently assigned or operating on the incident ground
- Actual and forecast weather conditions
- Fire activity and threats
- Load Product
- Any other information which may enhance safety

### ➤ Large Air Tanker Coordinator

A Large Air Tanker Co-ordinator (LATCO) will be established and be present on the SAD:

- on days of actual or forecast heightened fire activity (Extreme FBI and above);
- when two or more LAT / VLAT are tasked and operating; and
- as directed by the SOC.

The primary role of the LATCO is to co-ordinate requests and taskings of the LAT/VLAT aircraft which is further described in OMP 8.02.04.

### ➤ Initial Attack Qualifications

Unlike other firefighting aircraft, a LAT pilot who is initial attack qualified (carded) by the United States Forest Service (USFS) may be utilised during fire fighting operations in New South Wales.

ARENA is used by Australian jurisdictions to record and maintain operator details, including aircraft details and pilot records. Records pertaining to Initial Attack qualifications held by LAT pilots are to be uploaded by pilots/operators into ARENA and an audit conducted annually by the NSW RFS.

### ➤ Aircrew Briefing

The LAT ABM will conduct a pre mission briefing with the LAT AAS and required aircrew. The LAT ABM will provide required mission details.

## ➤ Aerial Supervision Requirements

The table below outlines the hierarchy of aerial supervision requirements as part of LAT/VLAT operations:

| Hierarchy | Situation                                                                | Bird Dog with Air Attack Supervisor |
|-----------|--------------------------------------------------------------------------|-------------------------------------|
| 1         | Actual/forecast adverse flying conditions, poor visibility or turbulence | Required                            |
| 2         | Requested by LAT pilot                                                   | Required                            |
| 3         | LAT pilot - not Initial Attack rated (not carded)                        | Required                            |
| 4         | VLAT tasking                                                             | Required                            |
| 5         | LAT pilot - Initial Attack rated (carded)                                | Subject to Assessment               |

It is standard practice that a Bird Dog with an Air Attack Supervisor will be tasked prior to/or simultaneously with a LAT, the following circumstances may warrant a LAT(s) to be tasked without at Bird Dog or AAS:

- A Bird Dog and Air Attack Supervisor is unavailable;
- the Bird Dog is re-directed or replaced with an alternate platform; and
- there is an actual or imminent risk to life and property.

Prior to any Initial Attack dispatch/tasking, the SADD (or LATCO if established) is to confirm the LAT pilot in command holds a current Initial Attack qualification recorded in ARENA.

Aerial supervision is not mandated for LAT pilots who hold initial attack qualifications noting any Initial Attack dispatch/tasking is to:

- be assessed by the SADD (or LATCO if established) in conjunction with the LAT pilot; and
- approved by the SOC / SDOO.

The following factors should be considered when assessing an Initial Attack dispatch/tasking:  
This assessment is to consider several factors including (but not limited to):

- prevailing and/or forecast weather and flying conditions, including turbulence & visibility;
- mission objective;
- threats (life/property, assets and/or forests including time to impact);
- terrain and fuel types (forest/grassland/urban interface);
- time of day (last light);
- number of dispatch/tasks rejections for the incident(s);
- aircraft type & capability; and
- provide guidance review period duration.

An Aviation Operational Assessment is to be completed using the approved template. The completed template and assessment is outcome to be recorded by the State Air Desk Duty Officer in Incident Control Online (ICON).

In the event a Bird Dog accompanying a LAT rejects a dispatch/tasking, the dispatch/tasking will be subject to an assessment in accordance with OMP Aviation Dispatch/Tasking Rejection.

## ➤ **Dispatch/Task Rejection**

It is recognised that aerial fire fighting operations are high-risk activities and it is not possible to have specific procedures for all situations. Aviation tasking decisions are to be made using an appropriate risk based commensurate to community risk.

When an individual contends that an aviation dispatch/tasking is unsuitable, they have an obligation to report this, identifying any issues and concerns, and if any safe alternatives exist to complete the dispatch/tasking.

An aviation dispatch/tasking rejection may occur where an individual or agency has determined they cannot safely undertake the activity.

The aviation dispatch/tasking rejection must be based on a risk assessment of approach and the inability of the individual or agency to control or mitigate such risks.

Individuals or operators may reject an aviation dispatch/tasking when:

- there is a violation of regulated safe aviation practices;
- weather and environmental conditions make the activity unsafe;
- there is insufficient information to safely plan or undertake the activity; or
- they lack the necessary qualifications or experience.

There is an obligation on individuals to ensure any concerns or decision to reject a dispatch/tasking are notified as soon as possible.

Equally, there is an obligation on an Incident Management Team and/or State Air Desk to ensure all aircraft and operators assigned to a particular incident are advised of any dispatch/tasking rejection as soon as possible.

OMP Aviation Dispatch/Tasking Rejection provides further information and should be read in conjunction with the Guideline.

## ➤ **Loading Procedure / Approval**

### *Initial Dispatch*

- The ABM is to seek instructions on the type of product to be loaded from the SADDO (or LATCO if activated).
- The SOC / SDOO will have final approval on the product to be loaded based on the strategies and tactics of the IC.
- The SOC / SDOO may also request that an aircraft is pre-loaded with product based on fire weather conditions.

### *Return Reload*

- The AAS is to report to the IC / Incident AAS on drop effectiveness against IC strategy.
- The ABM is to ensure that reload / return missions are approved by the SAD / SDOO.
- The SOC / SDOO will have final approval on the product to be loaded based on the strategies and tactics of the IC.

## ➤ **Departure altimeter setting**

The Air Tanker will establish and maintain the altimeter setting from their initial point of dispatch.

The altimeter setting is to be maintained for the duration of the mission or until such time contact is made with the Incident AAS and the operational local altimeter setting is applied.

## En-route

### ➤ Mission Instructions

Standard reporting and actions will be consistent with the Interagency Aviation Standing Operating Procedures.

### ➤ Departure

On departure a mandatory airborne commencement call is required to establish flight following in addition to any Aerodrome or Air Services Australia (ASA) requirements.

### ➤ En-route Sequence

Once airborne and en-route, Air Tankers will proceed to the fire via the most direct route subject to flight planning requirements determined by air traffic control (ATC) and airspace provisions.

When the Air Tanker is established in cruise flight a review of the estimated time of arrival (ETA) will be provided to the Incident AAS and as necessary to the ABM.

## Airspace Management

### ➤ Confirmation

When the Birddog aircraft departs the controlled airspace or mandatory frequency area, the Birddog aircraft (or Air Tanker if single resource) will establish communications with the Incident AAS or Incident engaged Aircraft and monitor the allocated Fire CTAF.

The LAT AAS is required to maintain communications with the Air Tankers on the bombing frequency.

**When an Incident AAS is not established at an Incident, the LAT AAS will assume the Incident AAS roles and responsibilities.**

### ➤ En-route Contact Incident AAS

Prior to a 10 nautical mile inbound call, the inbound Birddog aircraft should be in contact with the working Incident AAS and will request the following information:

|                                                 |                                               |
|-------------------------------------------------|-----------------------------------------------|
| 1. Altimeter setting in use                     | 5. Confirm communications plan                |
| 2. Vertical profile for airspace and separation | 6. Confirm tactical resources on the incident |
| 3. Incident elevation                           | 7. Information relating to known hazards      |
| 4. Incident Name                                | 8. Specific mission objectives                |

### ➤ 10 nautical mile inbound reporting Birddog aircraft

At 10 nautical miles the Birddog aircraft will make an advisory call providing information on location and altitude, including time and distance for arrival on scene of the Birddog and the Air Tanker(s).

### ➤ 5 nautical mile inbound reporting Birddog aircraft

The Birddog will contact the Incident-AAS in the fire area to confirm the location and the intentions including the approval to enter the operational area with the Air Tanker(s).

At this point the Birddog aircraft will establish and confirm the vertical separation profile for the working incident aircraft, refer to Figure 1.

The Birddog aircraft will also request an altitude to enter the vertical separation profile to commence an assessment and determine pre entry requirements for the Air Tanker(s).

### ➤ **Vertical Separation**

The Birddog aircraft will assign the altimeter setting, entry altitude into the “holding area” of the vertical separation profile or “stack” at 500 foot intervals and advise the Air Tanker of the position in the “stack”.

Example: Bomber 132 2200 feet AMSL and Number 1 in the “stack”.

A second inbound call is given by the Air Tanker at 5 nautical mile inbound to the fire, confirmation advice will be given by the LAT AAS aircraft if the “holding area” is available for entry or, if required, give other instructions.

Once the incoming Air Tanker has entered the “holding area” of the “stack”, the Air Tanker aircrew must inform and receive acknowledgement from the Birddog.

### ➤ **Transition within the stack**

With the confirmation that Air Tanker #1 is departing the “working area” the other Air Tankers in the profile will simultaneously descend 500 feet to their new lower position within the “holding area” while maintaining separation from other aircraft.

Air Tanker #2 will descend to the base of the “holding area” at the designated altitude and prepare for entry into the “working area”.

The Air Tanker aircrew will broadcast the manoeuvre with the call sign number and a confirmation of the altitude to which it is descending too, which is to be acknowledged by the Birddog aircraft.

### ➤ **Sustained Operations**

A returning Air Tanker will call at 10 and 5 nautical mile from the fire and will not enter the “stack” or the “holding area” until instructions have been received from the Birddog.

When approved to proceed the returning Air Tanker will enter the “holding area” at an assigned altitude.

No incoming Air Tanker will enter or descend into the “stack” until the Air Tanker they are following has been identified visually.

After an Air Tanker has dropped and exited the drop zone, below the ceiling of the “working area”, the outgoing Air Tanker aircrew will contact the Birddog aircraft to confirm departure.

### ➤ **Loss of visual contact**

The two aircraft occupying the “working area” within 1000 feet above the ground must maintain visual separation. If visual contact is lost, each aircraft must fly the flight path previously determined and agreed until visual contact is regained.

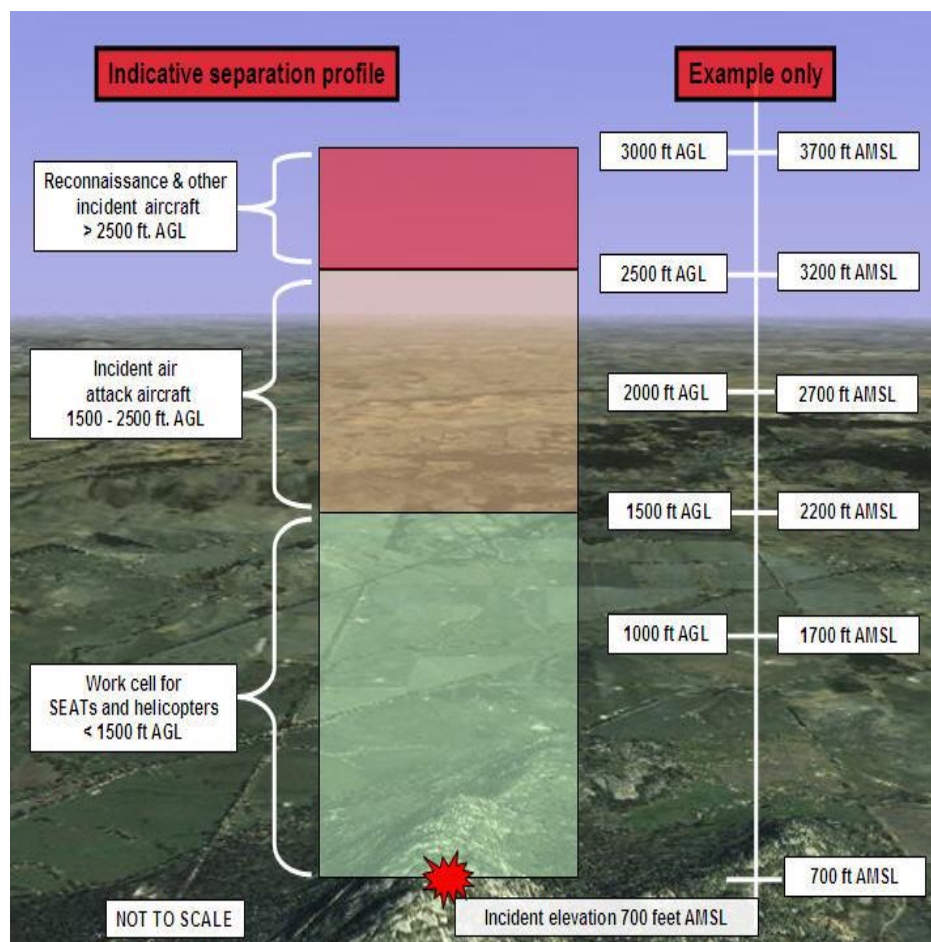


Image Google Earth 2000. Figure 1 Indicative vertical separation profile standard agency firebombing operations.

## ➤ Incident AAS

The Incident AAS is to ensure all Incident Aircraft are advised of the proposed Air Tanker mission and agreed airspace and communication arrangements are established.

Prior to the Birddog arriving over the fire, the Incident AAS will identify and assign an altitude following discussion with the Birddog.

The Incident AAS aircraft will orbit at this level and operate as a communication link between the ground crews and Birddog while maintaining a strategic overview and coverage of the operation.

This will allow the Birddog aircraft focus on mission objectives and coordinating the Air Tanker(s).

The Incident AAS aircraft must also be prepared to assist with airspace management.

## ➤ LAT AAS

Upon arriving over the fire, the Birddog aircraft will enter the stack at the pre-arranged level.

When the Air Tanker(s) have reported they are inbound and monitoring the bombing frequency the Birddog will confirm the altimeter setting in use over the drop zone.

When the hand-over from the Incident AAS is complete, the incoming Air Tanker(s) will report to the Birddog.

The coordination of the Air Tanker(s) vertical separation, known as the “stack”, will be coordinated by the Birddog.

Prior to the commencement of the bombing mission, the Incident AAS is to contact the incident ground crew to confirm the fire strategy, objectives and relocation of any ground resources within the drop zone.

## Tasking

Prior to commencing the bombing mission, the Incident AAS is to reconfirm the mission objective with Incident Fire Communications Centre (Firecom).

### ➤ Drop zone assessment

The Air Tanker aircrew will advise the Birddog aircraft when they are entering overhead the circuit to await further instructions.

The Birddog aircraft will acknowledge the presence and provide the Air Tanker with a more detailed description of the proposed run and drop zone.

Initial information provided will include:

|                                                            |                  |
|------------------------------------------------------------|------------------|
| Target elevation                                           | Drop objective   |
| Direction of approach for the circuit (left or right-hand) | Direction of run |
| Correction for wind drift                                  | Coverage Level   |
| Hazards                                                    | Exit             |

The Birddog aircraft will identify reference point(s) and a nominated anchor point to assist the Air Tanker aircrew in determining the appropriate flight line and drop zone and will describe any hazards on the final approach.

The Birddog aircraft will describe the exit and any hazards on exit.

The Birddog will confirm with the Incident AAS or ground personnel that the drop zone is clear.

During the commencement of the final circuit leg, the Air Tanker will confirm the drop type selected and that the drop system is armed. The Birddog aircraft will acknowledge this transmission and correct the drop type if required. The Birddog aircraft will not commence fire-bombing operations until it has been confirmed that ground crews are clear of the drop zone.

### ➤ Techniques

Following confirmation that the Air Tanker is in position to observe the run, the Birddog aircraft will use one of the following techniques to identify the drop zone:

- Standard procedure as per AAS training “describe the drop”.
- The Show-Me – this is the preferred method for firebombing operations.
- The Called-Drop – this method is used when the Air Tanker aircrew understands the run but cannot clearly identify the drop zone.

### ➤ Show-Me

The Show-Me - refer to Figure 2, is a simulated bombing run made by the relevant Birddog to demonstrate the run and identify the target to the Air Tanker – it is not a lead in run.

It is used for the first fire-bombing aircraft on a specific run or when an incoming fire bomber has not had the opportunity to observe the previous drop. Subsequent run and drop descriptions may be given verbally rather than demonstrated.

Prior to the Show-Me process it is preferable for the Air Tanker to approach the target using a left-hand circuit. It is acknowledged that sometimes terrain and other limitations may restrict the operations to right-hand circuits.

The Birddog will confirm that the Air Tanker is in position to observe the intended Show-Me run and will commence the run description by announcing the position of the Birddog aircraft in the circuit.

When the Air Tanker or Incident AAS aircraft is on the final leg and approaching the drop zone the AAS aircraft will identify and confirm the drop zone elevation and activate the siren as a warning of an imminent drop if available.

## ➤ Circuit Procedure & Terminology

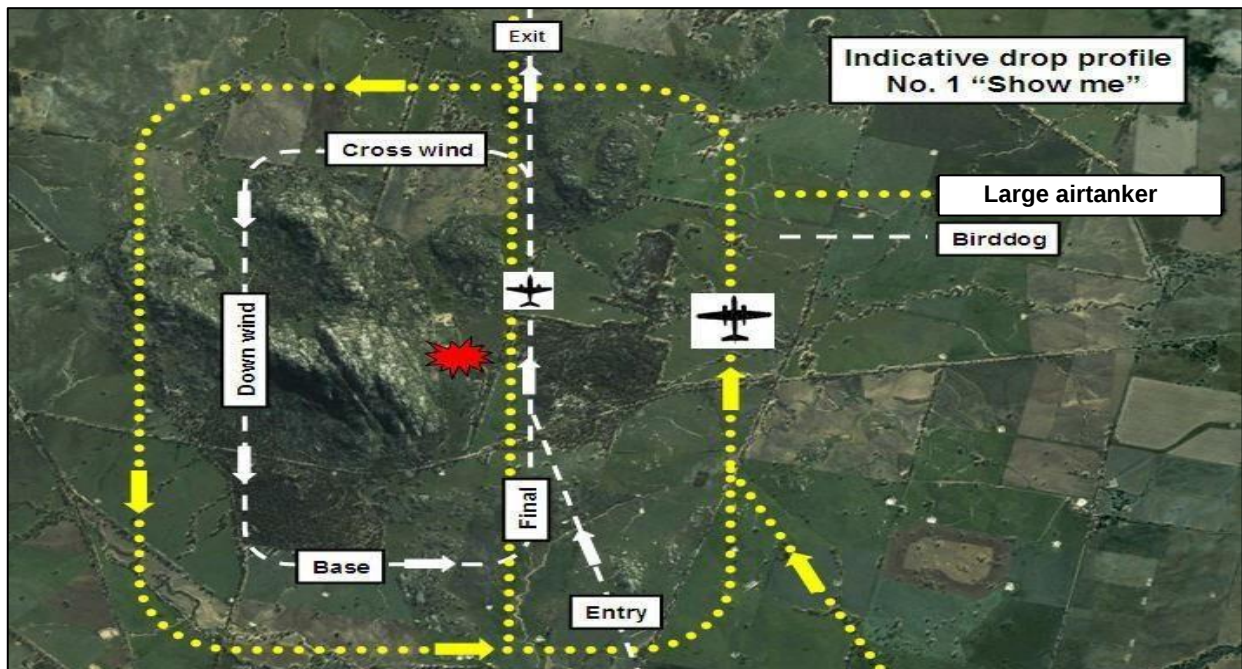


Image Google Earth 2000. Figure 2 **Standard circuit terminology used for flight operations.**

## ➤ Called Drop

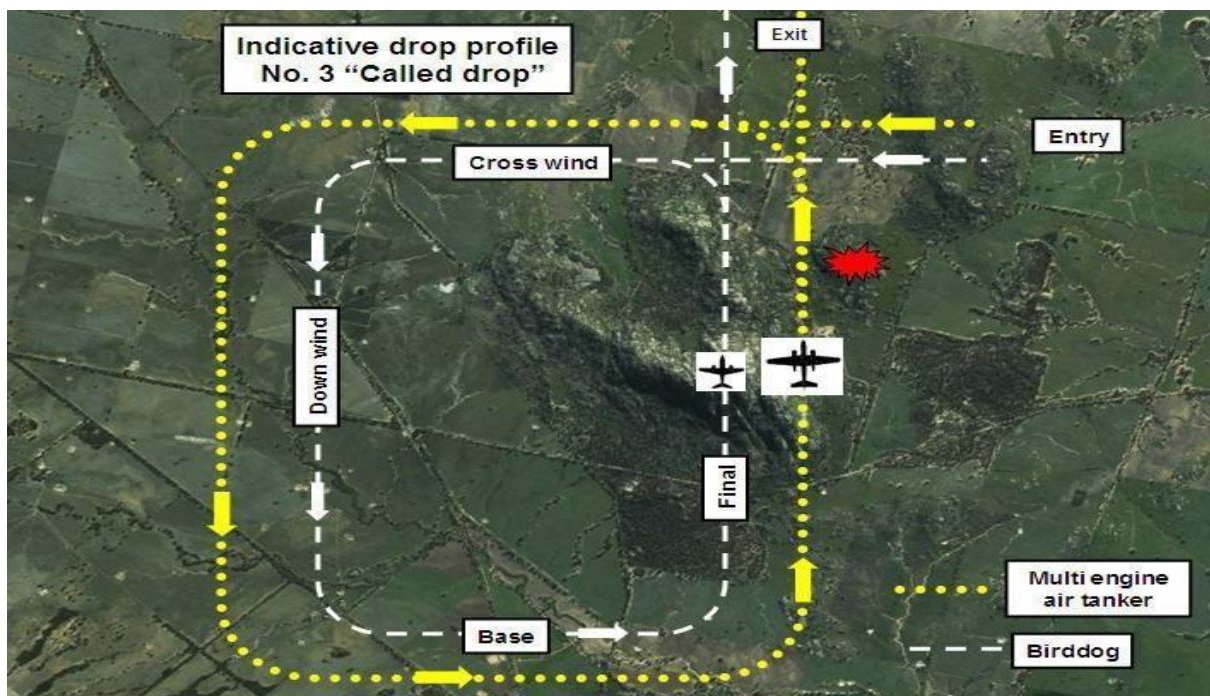
A Called-Drop - refer to Figure 3, is used when the Air Tanker can verify the flight line but cannot clearly identify the drop zone.

To safely conduct this manoeuvre, the relevant Birddog aircraft pilot must give full consideration to the climb capabilities and to wake turbulence produced by the fire-bombing aircraft.

Prior to the "join up" process the Birddog will confirm and establish with the Air Tanker the direction the Birddog aircraft and Air Tanker aircraft will turn after exiting the drop zone. The Birddog will identify any hazards and will describe the exit route to be flown by the Air Tanker.

On the final leg of the circuit the Birddog will confirm the flight line and will transmit "Ready – Now". The Air Tanker will release the load on the command "Now".

The Birddog will immediately turn in the direction briefed prior to the drop. The Air Tanker will release the load and exit as briefed. The Birddog will return overhead to assess the drop and confirm the next instructions for the Air Tanker.



ImageGoogle Earth 2000. Figure 3 Indicative drop profile "Called-Drop" technique.

## ➤ Pre-entry Considerations

The Birddog is to establish flight paths to avoid creating hazards to other aircraft at the fire and drop zone along with persons or property on the ground with consideration to potential wake turbulence created by the Air Tanker.

Prior to entry into the working area the Incident AAS or LAT AAS will clear other tactical aircraft into or away from the "working area" as required to conduct Air Tanker bombing operations.

If there is a restriction on vertical separation in the "stack" when SEATs, helitaks and the Air Tankers are on site there may be a requirement to place them in geographically separated circuits.

Additionally, the SEATs and Helitaks may be utilised on other sectors of the fire until the completion of the drops from the Air Tankers. If geographic separation is not possible, consideration should be given to place the SEATs and Helitaks in an orbit with reduced vertical separation within the "stack" for the Air Tanker.

## ➤ Communications

|                                                       |                                    |
|-------------------------------------------------------|------------------------------------|
| Air Tanker Bombing Frequency                          | 130.550                            |
| Primary Flight Tracking - Air Tankers / Lead Planes   | Tanker Base TG 01 / Trac Plus      |
| Secondary Flight Tracking – Air Tankers / Lead Planes | State Operations TG 57 / Trac Plus |

## Flight Safety Considerations

### ➤ Hazards

Terrain may limit fire bombing run directions and the availability of exits.

The influence and dominance of prevailing winds will impact on flight operations, especially under mountain flying conditions.

Prevailing winds will limit the ability of Air Tankers to manoeuvre in mountainous terrain, including the accuracy of drops.

The potential of turbulence associated with the wildfire conditions including downdrafts will require extra vigilance.

Extra vigilance is to be maintained in conditions where low visibility- smoke, cloud, diminishing daylight, valley shadowing and sun glare may be present.

Consideration is to be given to local weather conditions that may be encountered.

The presence of obstructions – powerlines, cables, tall trees, stags, towers or proximity to built up areas may restrict the potential for low level work.

## Drop Selection

### ➤ Coverage Level Guide

The below table is a guide to assist in determining coverage levels:

| Coverage Level | Vegetation Type           | LAT<br>Approx length (M) | VLAT<br>Approx length (M) |
|----------------|---------------------------|--------------------------|---------------------------|
| 1              | Light Grass               | 1000                     | 3000                      |
| 2              | Dense Grass / Light Shrub | 800                      | 2000                      |
| 3              | Dense Scrub / Small Trees | 600                      | 1500                      |
| 4              | Light Canopy              | 500                      | 1250                      |
| 6              | Medium Canopy             | 400                      | 1000                      |
| 8              | Dense Canopy              | 300                      | 750                       |
| 9 – 12         | Heavily Dense Canopy      | 200                      | 500                       |

### ➤ Urban Interface Drops

Fire bombing drops within the urban interface can be conducted subject to the following provisions:

The height of the delivery system attached to the aircraft shall not be lower than **150 feet above** the highest near horizontal surface (IE roof of a house).

The coverage level pre-selected will be determined by the LAT AAS. Dropping of suppressant directly on structures should be avoided. In the event of occurrence, the LAT AAS will notify the SAD and provide a written report accordingly.

Amendments to the height and speed of the drop and the coverage level will be determined by the prevailing winds, the aerial suppressant used and the density of the development within the drop area.

## Drop Assessments

### ➤ Review

The Birddog aircraft where possible, will position above the drop zone as the Air Tanker drops providing the LAT AAS with an unobstructed view, a right-hand turn should be undertaken to allow the LAT AAS to view the drop and resultant footprint.

### ➤ Completion of the drop

The Birddog aircraft will observe the Air Tanker after the drop to ensure that it clears the drop area and then advise the Air Tanker if there were any issues.

Issues may include the load not being released, the doors not closing, an incorrect drop type or retardant trailing from the tank.

### ➤ Drop Assessment

As soon as possible after the drop, the Birddog aircraft will provide the Air Tanker aircrew with an assessment of the accuracy of the drop.

Accuracy, effectiveness, coverage and load placement will be recorded on the Air Attack Supervisor Mission Report and should be referred too during the post-mission debrief session and attached to ICON accordingly.

### ➤ Drop Height

The Birddog aircraft will assess the Air Tanker for drop height to ensure a height of approximately 150 feet above the canopy or bare ground is attained.

Low drop heights should be avoided to minimise the risk during low level flight operations and ground crews in the vicinity of the drop.

### ➤ Drop Speed

The Birddog aircraft will assess the Air Tanker for drop airspeed ensuring that excessive speed is avoided minimising inadequate fuel coverage on the ground and similarly low drop speeds should be avoided to prevent excessive concentrations on the ground and less-effective line length.

Requesting slower drop speeds may compromise safety and manoeuvrability of the Air Tanker.

## Offload & Jettison Management

### ➤ Planned jettison airborne

Provision has been made in the event that a mission is cancelled after the Air Tanker is airborne with suppressant on board and the Air Tanker requests to reduce the load prior to landing.

A site has been identified which allows the Air Tanker to safely discharge the load that it may be carrying. The planned jettison is subject to provisions and the jettison zone used will be dictated by the product carried.

The key requirements, subject to wind speed and direction of the jettison plan are to:

1. Drop at a height greater than 1000 feet above ground level (AGL); and
2. Regulate the flow of the drop by selecting a coverage level  $\leq 2$ .

## ➤ **Water**

All loads of water, reclaimed and recycled may be discharged over the drop zone adjacent to Richmond RAAF – known as “Rickabys”. This will need to be approved through the Richmond ABM.

## ➤ **Retardant and other suppressants**

All loads of retardant and other suppressants can be dropped in the jettison zone marked.

## ➤ **Emergency jettison on take-off**

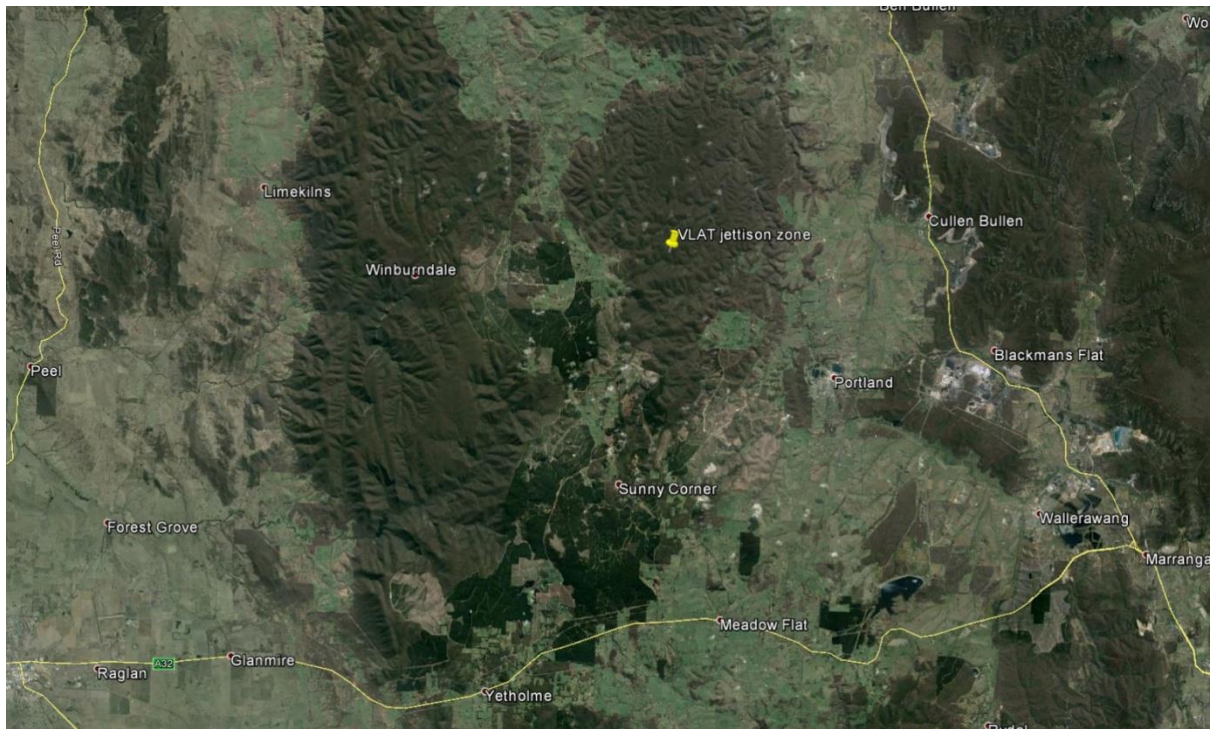
Discharge timing and location of the discharge will be at the discretion of the PIC.

In the event of an aborted take-off, if possible the aircraft should return to the ramp.

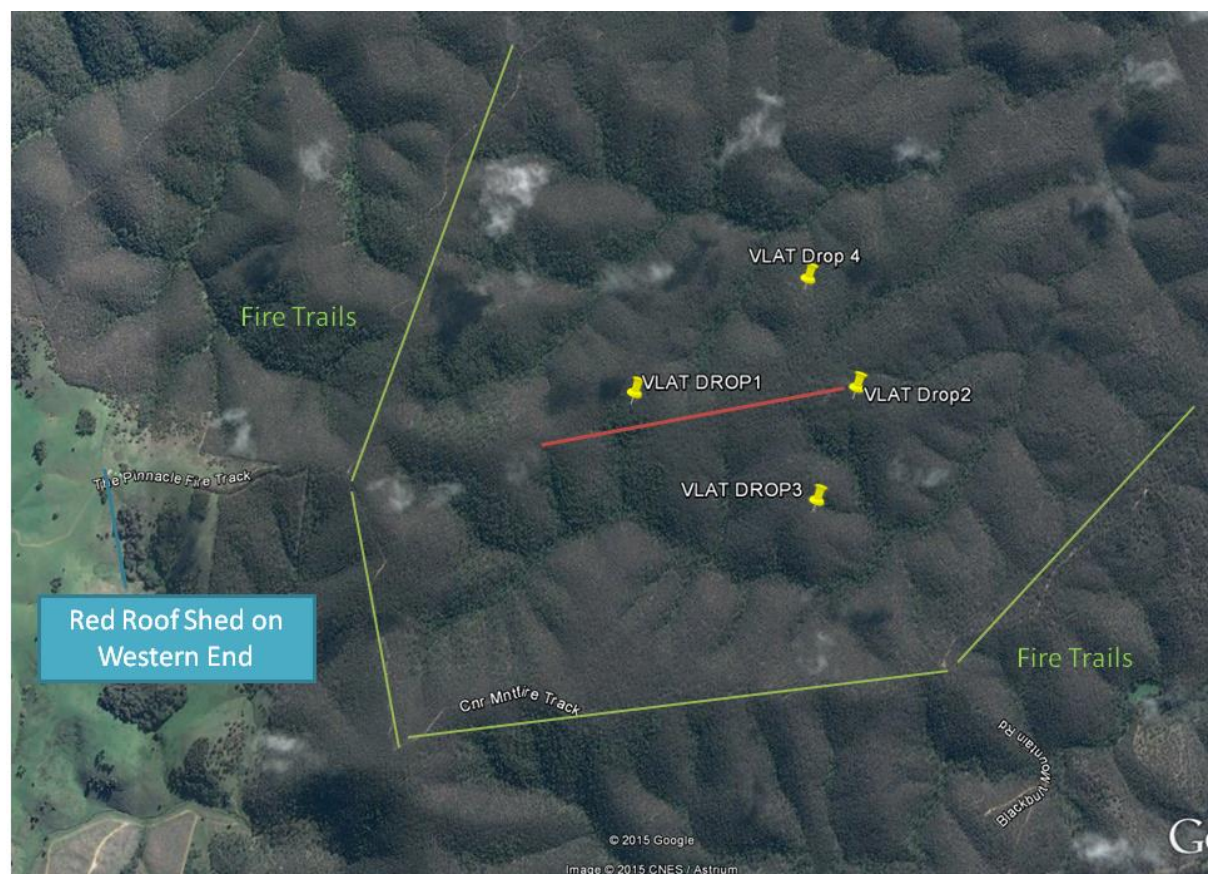
## ➤ **Location**

The location of the jettison sites are detailed below which includes the latitude and longitude of the site.

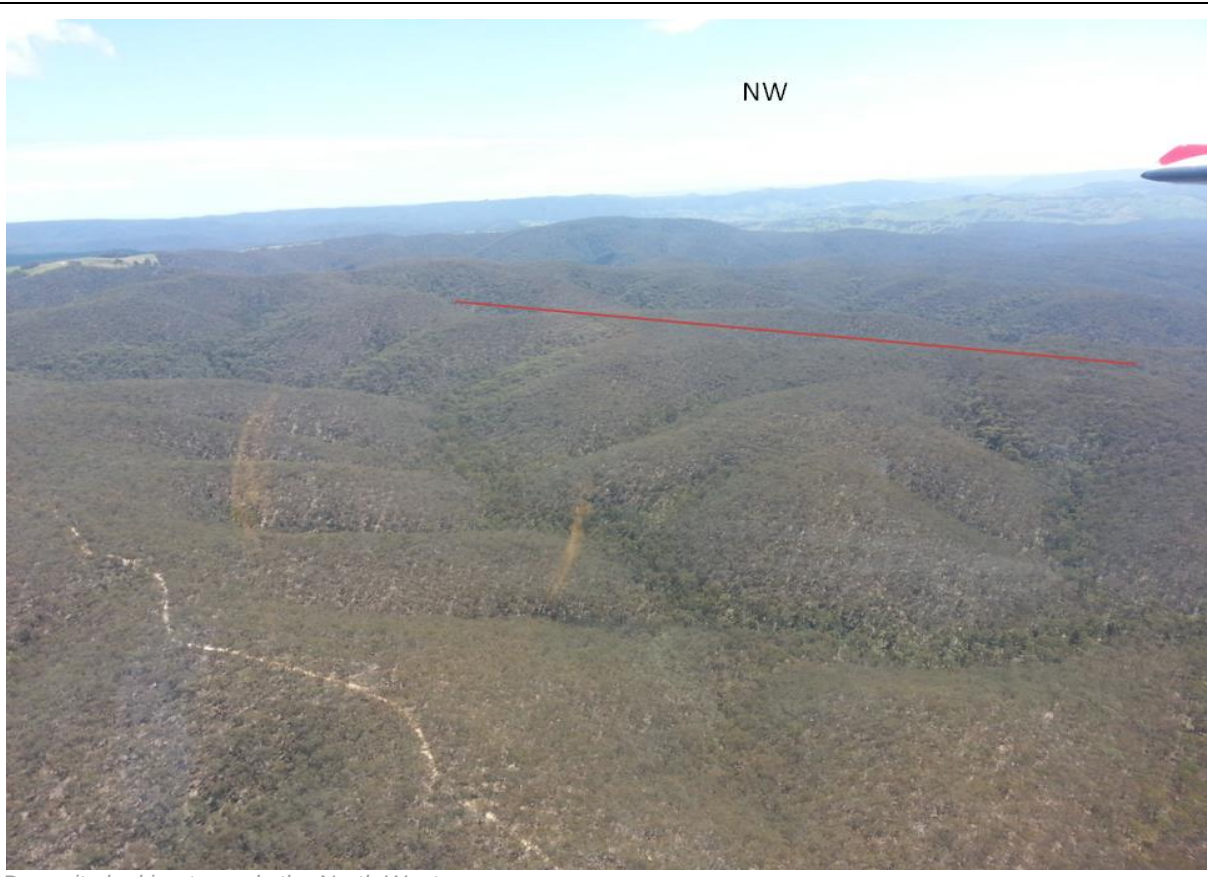
|                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Sunny Corner State Forest<br>47nm at 280° from Richmond RAAF                                                                                                                                                                                                                                                                                                         |                                                                                 |
| East West or West East drop<br>33 17.924 149 54.943<br>33.17.909 149.55.587                                                                                                                                                                                                                                                                                          | North South or South North drop<br>33 18.182 149 55.467<br>33 17 642 149 55.449 |
| Forestry Corporation NSW                                                                                                                                                                                                                                                                                                                                             | State Duty Officer - 02 9873 5140 (24 hrs)                                      |
| NSW Police Force (Lithgow Police Station)                                                                                                                                                                                                                                                                                                                            | 02 63 528 399                                                                   |
| Natural forest area directly West of Cullen Bullen (5.5nm) or North West of Mt Piper Power station (6.7nm)<br><br>Drop area is along the ridge lines over kilometre long. Area is clear of power lines or towers. fire trails on the east, south and west of the drop area<br><br>Shed with red roof can be used as a visual marker for drops East West or West East |                                                                                 |



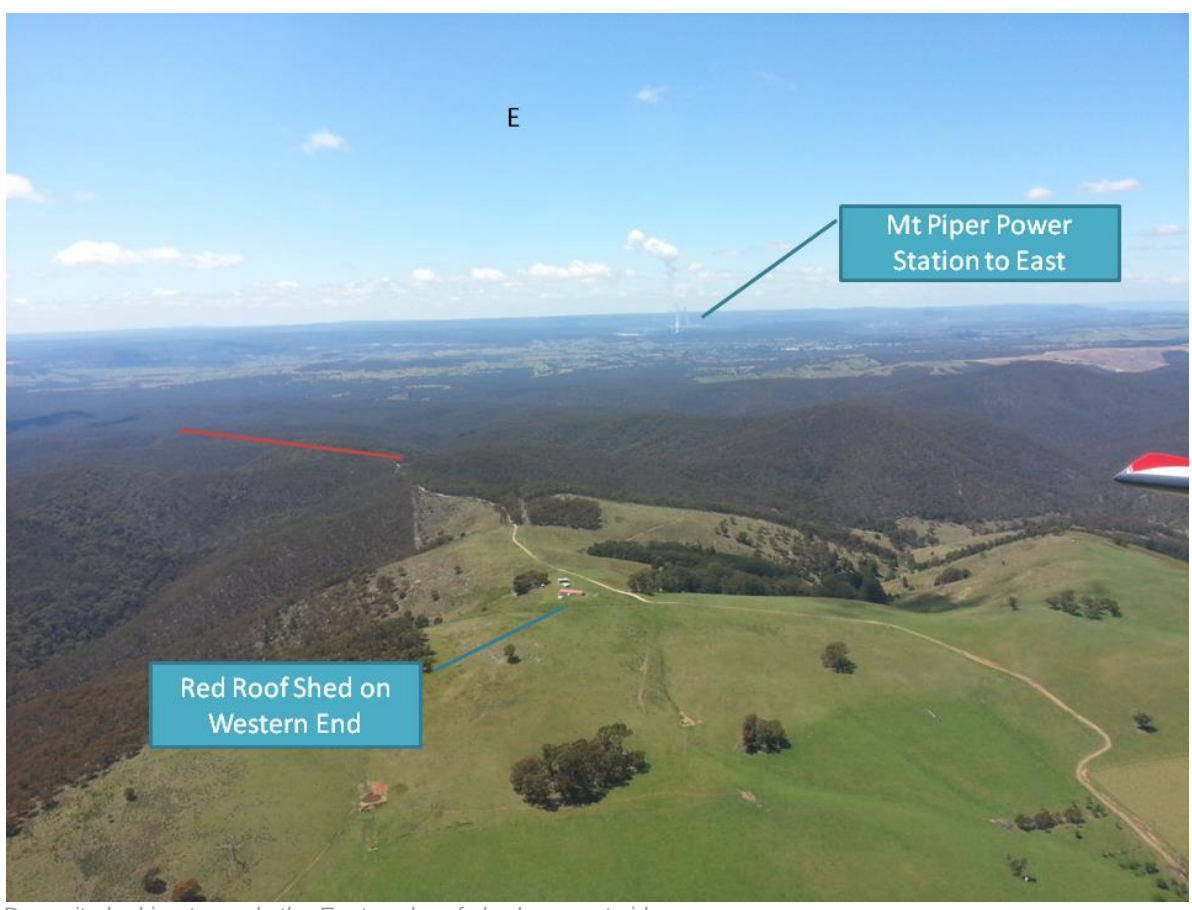
Overview



Detailed overview with features marked



Drop site looking towards the North West



Drop site looking towards the East, red roof shed on west side



*Drop site looking towards the south*



*Drop site looking towards the East*

## Aircraft Maintenance

Routine maintenance shall be scheduled to avoid compromising the Air Tankers ability to respond to fires.

Any aircraft unserviceability must be reported to the ABM immediately. The ABM will advise the SADDO / SAOM of the issue with an estimated time of unavailability.

The SADDO / SAOM will advise the SOC / SDOO.

Daily aircraft inspections will be performed at a time that will not compromise Air Tanker ability to respond to fires.

7 day system check flights are scheduled every Tuesday at 1100 hours which will be conducted by the PIC in consultation with the ABM.

## Logistical Support

Area Mitigation crews will be engaged to supply mixing and loading requirements for the Air Tankers at RAAF Base Richmond and Temporary Operating Bases.

A minimum of 120,000 litres of water and 100,000 mixed retardant will be stored and readily available at all times whilst the base is operational.

A minimum of 2 Gel Concentrate IBC's (2000lts) will be stored and readily available at all times whilst the base is operational.

70 bags of MVP retardant are also stored on site at RAAF Base Richmond with additional supplies available at NSW RFS OMSS Glendenning.

The SADDO will provide advice on product readiness levels and operational support.

## Contact Numbers

| NSW RURAL FIRE SERVICE                   |                            |                         |
|------------------------------------------|----------------------------|-------------------------|
| NSW RFS State Operations                 | Duty Officer               | 1300 677 737 (24 hours) |
| NSW RFS State Air Desk                   | Duty Officer               | 1300 677 723 (24 hours) |
| NSW RFS Logistics                        | Duty Officer               | 02 8741 5350 (24 hours) |
|                                          |                            |                         |
| RAAF BASE RICHMOND                       |                            |                         |
| Air Base Command Post Office             | 22 Squadron                | 02 45872888             |
| Air Base A/Hrs Command Post              |                            | 0409 650341             |
| Tower (Emergency)<br>Air Traffic Control | 453 Squadron               | 02 45872666             |
| Air Force Police (Emergency)             | 1 Security Forces Squadron | 02 45872555             |
| Fire (Emergency)                         | 22 Squadron                | 02 45872333             |
| Medical (Emergency)                      | Richmond Health Centre     | 02 45872444             |
|                                          |                            |                         |
| DISPATCH                                 |                            |                         |
| ABM Richmond                             | Primary Dispatch Number    | 0409 772476             |
| ABM Dubbo                                | Primary Dispatch Number    | 0457 577 707            |
|                                          |                            |                         |