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Pilot Handbook

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Introduction

This is the pilot handbook for MIDRT_AS26 in Sydney, Australia. This handbook provides pilots with all information needed to compete at MIDRT and allows teams to plan accordingly.

Eligibility

Current serving member of their nations regular or reserve armed forces.

A junior ‘Cadet’ Category for those involved in national military aligned youth movements for those under 18 years of age will run in parallel, which will grow over time as more cadets become involved in Drone Sports.

Veterans and Industry will form into an Open Category to race if there is enough space capacity (due to accommodation, feeding and pilot slot limits).

Team Composition

A MIDRT racing team consists of any number of pilots, but ideally 4. Scoring for a team is determined based on the final rankings of the top placed 4 competitors for a given team.

Teams may consist of racers across different service lines or nations. Team composition must be determined prior to competition start. Racers are not allowed to switch teams during the competition.

The top scoring team will be awarded Best Racing Team Award determined the Top 4 pilots of a given team.

The top scoring nation will be awarded Champion Nation Team. This will be determined by the 4 highest serving member placings from each Country/Nation, which includes scores from the tactical competitions.

Detailed Event Schedule

Wednesday 11 March 2026 – All

Time	Activity	Lead
0830	Welcome brief	ADF DRA President
From 0930	Track setup	UAS Events – LTCOL James McRae
1230 - 1330	Lunch break	
From 1300	Test flights / MAAA membership / Scrutineering / Race registration / Pilot registration photos	Tim Crofts

1745	National leads synch	UAS Events
1900	Social event – Get to know you Location – Coogee Diggers Club	UAS Events – MAJ Andrew Tod

Thursday 12 March 2026 – Group 1

Time	Activity	Lead
0700	Safety brief / Pilot brief	Safety – Chris Payne Pilot brief – Tim Crofts
0730 – 1130	Qualifying	Racing – Tim Crofts
1130 – 1215	Lunch break	
1215	Coach depart for RAAFMAC	TBC
1330	Safety brief / Pilot brief	Tactical – Tom Gash
1345 – 1745	Tactical practice	Tactical – Tom Gash
1800	Coach depart for RWB	UAS Events

Thursday 12 March 2026 – Group 2

Time	Activity	Lead
0630	Coach depart for RAAFMAC	TBC
0745	Safety brief / Pilot brief	Tactical – Tom Gash
0800 – 1200	Tactical practice	Tactical – Tom Gash
1200 – 1245	Lunch break	Tactical – Tom Gash
1245	Coach depart for RWB	Tactical – Tom Gash
1400	Safety brief / Pilot brief	Racing – Tim Crofts
1430 – 1830	Qualifying	UAS Events

Friday 13 March 2026 – Group 1

Time	Activity	Lead
0630	Coach depart for RAAFMAC	TBC
0745	Safety brief / Pilot brief	Tactical – Tom Gash
0800 – 1200	Tactical competition	Tactical – Tom Gash
1200 – 1245	Lunch break	Tactical – Tom Gash
1245	Coach depart for RWB	Tactical – Tom Gash
1400	Safety brief / Pilot brief	Racing – Tim Crofts
1430 – 1830	Qualifying	UAS Events

Friday 13 March 2026 – Group 2

Time	Activity	Lead
0700	Safety brief / Pilot brief	Safety – Chris Payne Pilot brief – Tim Crofts
0730 – 1130	Qualifying	Racing – Tim Crofts
1130 – 1215	Lunch break	TBC
1215	Coach depart for RAAFMAC	TBC
1330	Safety brief / Pilot brief	Tactical – Tom Gash
1345 – 1745	Tactical competition	Tactical – Tom Gash
1800	Coach depart for RWB	UAS Events

Saturday 14 March 2026 – All

Time	Activity (Subject to change based on pilot numbers)	Lead
0800	Safety brief / Pilot brief	Safety – CAPT Chris Payne Pilot brief – Tim Crofts
0830 - 1000	Top 16 – D-Main (37 th – 52 nd) eliminations	Racing – Tim Crofts
1000 - 1130	Top 16 – C-Main (25 th – 36 th) eliminations	Racing – Tim Crofts
1130 - 1300	Top 16 – B-Main (13 th – 24 th) eliminations	Racing – Tim Crofts
1300 - 1330	Lunch break	
1330 - 1545	Top 16 – A-Main (1 st – 12 th) eliminations	Racing – Tim Crofts
1545 - 1600	Payload Delivery demo	Tactical – CAPT Tom Gash
1600 - 1630	Presentations	UAS Events
1630 - 1730	Pack Down	
1900	Closing Ceremony	UAS Events – MAJ Andrew Tod

Event Location

Randwick Barracks (RWB)

RWB is the primary event location for accommodation and racing. RWB is located in the suburb of Randwick in Sydney, and used primarily for Army Reserve activities. The base has limited amenities and there is no on-base café or shop, however multiple shopping areas are located within a 5-minute drive.

Address (Main gate): 373a Avoca St, Kingsford NSW 2032

what3words: fortunate/certified/memory

Event Map - RWB

A map of RWB is located in Annex A. Racing will be on the oval at E-14.

Link for RWB

<https://www.defence.gov.au/about/locations-property/base-induction/randwick-barracks>

Royal Australian Air Force Model Aircraft Club (RAAFMAC)

RAAFMAC is a model aircraft club adjacent to RAAF Base Richmond in North West Sydney. RAAFMAC is the location for the tactical activities. A coach service will provide transport between RWB and RAAFMAC.

Address: Percival Street, Clarendon NSW 2756

Event Map - RAAFMAC

The flying areas will be marked and briefed at the event.

Link for RAAFMAC

<https://maps.app.goo.gl/2naNjGAu4kWgzYWa8>

Accommodation, Base Access and Parking

Pilot Teams will be staying at RWB for the duration of the event. UAS Event staff will manage transit accommodation bookings for the event.

Pilot Teams base access, travel and car-parking information will be in a separate administrative instruction provided by UAS events.

Race Track

Track Layout

The release of the track layout will be available on the approved pilot group chat closer to the event.

Tracks on Velocidrone

The release of the Velocidrone track details will be available on the approved pilot group chat.

Track Fly Through

Links for the track fly through video will also be available via the pilots group chat.

Drone Specifications and Limits

Class: 5-inch quadcopter, maximum frame size 330mm between motor posts

Lithium Polymer Battery Voltage: Max 4.20 V per cell, 4.35 V per cell if Li-HV

Weight: Max 1 kg

Propeller Size: Max 5.1 inch (No metal, carbon fibre or fibreglass props)

Video Link Frequency: 5.8 GHz

VTX Power setting: Max 25 mW

RF Link Frequency: 2.4 GHz and 915 MHz (915 AU mode on Crossfire)

RF Link Power Setting: 100 mW

All equipment for the tactical activities will be supplied. This includes drones, controllers, radios (walkie-talkies), screens, and goggles. Both Mode 1 and Mode 2 controllers will be available. Any teams requiring Mode 3 or Mode 4 controllers are to contact Thomas Gash to ensure they are available.

Prohibited Systems

The Australian Defence Force (ADF) has a blanket ban on all DJI-branded equipment. Do not use DJI equipment at any ADF base, training area, activity or event. This includes, but is not limited to, all drones, FPV components, cameras, gimbals, microphones. This is non-negotiable.

Race Format – MIDRT

Qualifying

Top 2 consecutive laps.

Qualifying rounds will have a set duration of 120 seconds (2 minutes). Pilots fly as many laps as possible within this duration, when the timer expires an air horn sound will play where pilots must finish the current lap they are on and then proceed to the landing zone and disarm.

Pilots are ranked on their best 2 consecutive (back-to-back) laps, recorded in any of their qualifying rounds. The qualifying rankings will determine the seeding order for elimination heads.

VTX Channels

A mix of Raceband and Fatshark channels will be used:

- Raceband 1, 2, 7 and 8, and 8

- Fatshark 2 and 4.

Brackets

The finals will be a letter bracket 16 pilot double elimination format with top 4 bump ups between brackets. Starting with positions 37th - 52nd on the qualifying leaderboard, a double elimination finals format plays through. The top 4 pilots in any of the lower brackets continue into the following elimination bracket and continue on with a higher seeded roster of 12 new pilots until we reach the A main bracket. Only pilots who qualify in positions 52nd or higher will participate in the elimination brackets.

The structure of the mains is as follows:

- A main will consist of pilots ranked 1 - 12 + the top 4 of the B main,
- B main will consist of pilots ranked 13 - 24 + the top 4 finalists of C main (final race determines seeding),
- C main will consist of pilots ranked 25 - 36 + the top 4 finalists of D main (final race determines seeding), and
- D main will consist of pilots ranked 37 – 52.

First and second placeholders will continue through to a winner's bracket and continue racing against winners from other heats Third and fourth placings will move down to a redemption bracket. Pilots in the redemption bracket must continue to place 1st and 2nd in order to continue in the competition. A 3rd or 4th placing in the redemption brackets will eliminate those pilots from the competition.

Finals

Triple Final, Chase the Ace. First to take two places wins, other 2nd, 3rd and 4th determined by placings.

Seeding Pattern

ROUND 1 RACE 1		1.1
<i>Seed</i>	<i>Pilot</i>	<i>Result</i>
4		
7		
11		
13		
ROUND 1 RACE 2		1.2
<i>Seed</i>	<i>Pilot</i>	<i>Result</i>
3		
6		
10		
14		
ROUND 1 RACE 3		1.3
<i>Seed</i>	<i>Pilot</i>	<i>Result</i>
2		
5		
9		
15		
ROUND 1 RACE 4		1.4
<i>Seed</i>	<i>Pilot</i>	<i>Result</i>
1		
8		
12		
16		

Tactical Activity 1 – 10” FPV Payload Delivery

Outline

The first tactical activity is a payload delivery from a 10” FPV drone. Competitors will be required to fly out a set distance to a cone, turn around and deploy a payload into a target area on the way back. Scoring involves the time from take-off to impact, accuracy of the delivery, and payload activation status. The exact scoring weighting will be briefed closer to the event.

Payload

The payload is a custom training aid developed by an Australian Army member with a number of safety interlocks. There are four interlocks used during the competition and all four must be disengaged for the payload status indicator to display a successful activation. The interlock states and overall payload state indicator are visible on the side of the payload and can provide immediate feedback on successful or unsuccessful payload activation.

The payload contains a chalk marker in the nose to mark the point of impact.

Interlock 1 – A pin that is pulled on launch. The pin is attached to the launch pad.

Interlock 2 – A 10-second timer that initiates once the pin is pulled. This mimics a minimum time-to-arm.

Interlock 3 – Arming signal from the FC to the payload, activated by a switch. The FC and payload are connected by a magnetic quick disconnect that facilitates the arming signal from the FC.

Interlock 4 – Accelerometer that requires sufficient impact to activate the payload. This will require competitors to drop it from a sufficient height to register the impact. The height will be briefed to competitors at the event.

Target

The target will be a 5 m diameter bullseye that will be marked with paint and a flag in the middle. The distance between the point of impact and the flag will be used to score accuracy.

Participation

All military, cadet, and veteran teams can participate in the payload delivery activity. Industry teams will not be competing. Each team will select one person to be the pilot and one person to act as the launch crew. Each team will get a practice run on Thursday and a recorded run on Friday.

Competitors will have the opportunity to conduct repairs on their race equipment while waiting for their turn at the tactical serials. Test flying of race equipment at the tactical site is not permitted due to the strict Air Traffic Control approvals.

Tactical Activity 2 – Aerial Jousting

Outline

The second tactical activity is the jousting of a fixed-wing platform with a 7” FPV drone. A fixed-wing platform will be flown between 200 ft AGL and 1500 ft AGL (Pending ceiling increase approval). Competitors will be required to detect the fixed-wing platform and radio the location to the other members of the team. The pilot will then need to joust the fixed-wing and destabilise it using the pole on the front of the 7” FPV drone. Scoring will be based on the time to-intercept from the first radio call, with points deducted if the 7” FPV drone is destroyed (falls out of the sky). The exact scoring weighting will be briefed closer to the event.

Fixed-Wing Platform

The fixed-wing platform will fly a preprogrammed mission. The mission will involve constant changes in altitude, heading, and speed. All teams will get the same mission to provide a consistent experience. The mission used on the practice day will be different to the mission on the competition day. The fixed-wing will have a wingspan between 1 m and 2 m. It will be painted in a manner that makes it harder to see. An experienced fixed-wing pilot will be ready to take manual control under visual line of sight in the event of an emergency.

Participation

All military, cadet, and veteran teams can participate in the payload delivery activity. Industry teams will not be competing. All four team members will be required for the activity.

Competitors will have the opportunity to conduct repairs on their race equipment while waiting for their turn at the tactical serials. Test flying of race equipment at the tactical site is not permitted due to the strict Air Traffic Control approvals.

Pilot – This person does the flying. This person is in a tent and cannot see outside.

Navigator – This person sits next to the pilot with a screen and a radio. They assist the pilot with locating the fixed-wing platform and use the radio to talk to the spotter. This person is in a tent and cannot see outside.

Launch crew – This person places the drone outside for launch and provides help to the Navigator and Pilot. An Australian staff member can fill the role if teams only have three members.

Spotter – This person is located with the fixed-wing pilot. They have a pair of binoculars and a radio. This person talks to the Navigator to relay the position, altitude and heading of the fixed-wing drone.

Awards and Prizes

Tactical

Payload Delivery prize

Aerial Jousting prize

Racing

Best Military Team

Best Open Pilots (1st to 4th)

Best Youth Team

Best Open (includes Military, Youth, Veteran and Industry) Team

Key Contacts and Further info

Key contacts are located on the front page of this handbook, with amendments made in future handbook updates.



Randwick Barracks Map