AVIATION STATE ENGAGEMENT FORUM	
New South Wales and Queensland	**Submission date: 11 Aug 2022**

TITLE	**Major proposed changes to overland permanent military flying areas (R559, R639)**
SUBMITTED BY	Joint Airspace Control Cell – adf.airspace@defence.gov.au
CONSULTATION SUMMARY	To seek feedback from the aviation industry on the proposed: • Removal of R559A-F • Introduction of replacement Restricted and Danger Area volumes to support F-35A and Hawk 127 flying operations • Minor reduction in lateral size of R639D.
KEY ISSUES	• Acquisition of the F-35A Lightning II fifth-generation air combat capability and the introduction of Western Sydney Airport create a need to amend the existing overland training areas in NSW • Defence needs suitable training airspace for its operations yet civil aviation also requires access to airspace, aerodromes and flight routes • Defence has worked closely with Airservices Australia to develop an amended concept that comes with considerable compromises on both sides • Various ATC sector changes will also be necessary to support the proposal • The changes are desired for implementation in Jun 2023
FEEDBACK TO	FOR ATTENTION: Andrea Armstrong Joint Airspace Control Cell – adf.airspace@defence.gov.au
CLOSE DATE	**29 Aug 2022**
ATTACHMENTS	1. Proposed air route redesigns 2. Indicative activation concepts 3. Indicative transit corridors and military Air to Air Refuelling and Airborne Early Warning and Control (MAAA) volumes

BACKGROUND

On 28 Apr 2022, ADF Airspace released an AVSEF - NSW & Qld - Major proposed changes to overland permanent military flying areas (R559, R639) seeking feedback on the proposed airspace change. Due to a number of changes to the proposed airspace this amended AVSEF is released again for consultation. All amendments to the original AVSEF appear in red.

Defence requires access to suitable training airspace to conduct activities that support national security initiatives on behalf of the Australian Government. To meet this aim Defence is proposing a wholesale redesign of key overland training areas located northwest of Sydney and west of RAAF Base Williamtown as well as a minor modification to a training area located west of RAAF Base Amberley. There are two key reasons for the proposed changes.

First, the acquisition of the F-35A Lightning II fifth-generation air combat capability. This aircraft is operated very differently to the F/A-18A/B Hornet. The aircraft has new tactics and profiles that the current airspace design cannot accommodate. Military aircraft use training areas to conduct high-speed, abrupt flying manoeuvres, supersonic flight (where permitted), aerial refuelling and the employment of electronic measures which could cause interference. For these reasons, military flying requires segregated volumes of airspace to ensure safety of participants and non-participants, as well as provide surety that training outcomes can be met.

Second, an amendment to the current R559A-F airspace volume will be required to enable new volumes of civil controlled airspace and associated flight path design to support the introduction of Western Sydney Airport (WSA). In November 2020, Australia's Aviation Implementation Group (Department of Infrastructure, Transport, Regional Development and Communications, Airservices Australia, Defence and Civil Aviation Safety Authority) formed a Working Group to coordinate the close interrelationship between future WSA airspace requirements, Defence operational requirements and ongoing Airservices Air Traffic Control operations.

DESIGN METHODOLOGY

The proposed changes within this paper are the result of incremental design improvement and assessment. The design is currently at the later stages of the Preliminary Design Phase and subject to change prior to publication.

The airspace changes aim to better support RAAF high-end warfighting training activities, continue to protect the safety of both military and civil aircraft alike, and are also expected to permit design teams to develop a WSA airspace concept through the removal of current military airspace constraints.

In developing this proposal, key elements for the iterative design were to:

- Minimise diversion (track miles) for civilian aircraft
- Be within reasonable proximity to Defence airbases (minimise transit) in order to maximise training in location
- Minimise overflight of regional IFR-capable aerodromes.

Further to the above, Defence recognises the importance of enabling civilian airspace access in accordance with flexible use of airspace principles. The following additional considerations have been incorporated:

- Location away from major civil air-route infrastructure to preserve economical routing between major population centres
- Preservation of multiple standard cruising levels beneath restricted area volumes to enable safe and efficient transit beneath
    - Note: Defence originally desired all volumes to extend down to 5000FT AMSL.
- Minimum lateral dimensions of the proposed volumes required to meet essential training outcomes only, not most optimal designs
- Vertical and lateral divisions throughout the design to enable scalable, limited activation in order to minimise high-level civil RPT diversions and maximise civilian access.

As a result of these concessions, Defence will be required to absorb significant impacts due to the substantial increase in transit to access the proposed new volumes. The increase of 67NM (one-way) F-35 transit in comparison to the current airspace construct will have the following impacts:

- Increase transit time and associated operating costs (e.g. fuel and maintenance)
- Lost on-station training time
- Increased reliance upon airborne refuelling assets to meet extended, specific training evolutions
- Increased missions time and associated crew-duty implications
- Increase complexity in scheduling
- Extension of base services to meet a wider ground support window
- Increased risk associated with managing a time-critical in-flight emergency requiring increased time to return to base or divert to another aerodrome
- Increased CO_2 emissions.

Due to the Hawk 127 having significantly less endurance, an area in closer proximity to Williamtown is still required and has a differing lower limit.

OVERVIEW

The proposal involves:

- Deletion of existing R559A-F volumes
- Creation of a F-35 replacement volume (with subdivisions)
- Creation of a Hawk 127 replacement volume (with subdivisions)

- Deletion of Danger areas D538A, D538B and D600
- Creation of new Danger areas beneath the main volumes to replace D538AB, and a low-level access corridor to replace D600
- Reduction in the southern corner of R639D.

Separate to this proposal, a series of military Air to Air Refuelling and Airborne Early Warning and Control (MAAA) volumes will be designed in conjunction with Airservices and published in the Designated Airspace Handbook. These areas will complement operations, enhance lost efficiency and mitigate residual risk. Finally, transit corridors or flight plannable segments to get to/from the proposed areas will also be incorporated, and activated dynamically as utilised within the current airspace construct. Indicative images of these options are found in the attachments but do not form part of this Airspace Change Proposal.

It is intended that all non-flying and flying (i.e. aviation) tracking tolerances will be wholly contained with the proposed airspace.

PROPOSAL

Below are the details of the proposed airspace to be included in the Designated Airspace Handbook (DAH), with a desired target date of Jun 2023.
Note: The below information is in preliminary design phase, and while the design is mature, it is subject to further change as the design process completes all testing and consultation.

YBBB-YMMM/R559ABCDEF
Areas withdrawn.

YBBB/R639D AMBERLEY
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 291542S 1500721E - 282830S 1495324E – 280831S 1510338E then along the counter clockwise arc of a circle radius 120.00NM centre 272157S 1530821E (BN/DME) – 284432S 1512942E – 291523S 1502357E – 291542S 1500721E
VERTICAL LIMITS: 10000 – NOTAM
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 452SQN AMBERLEY

YBBB-YMMM/R560 (North) WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 320236S 1490547E – 321329S 1492125E – 315706S 1495502E – 312442S 1503707E – 310811S 1502326E – 314535S 1494048E – 320236S 1490547E
VERTICAL LIMITS: 8500 – FL240
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R560 (South) WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 321329S 1492125E – 322745S 1494203E – 324315S 1495932E – 320827S 1504205E – 320243S 1505208E – 315350S 1505254E – 314710S 1504945E – 313029S 1504156E – 312442S 1503707E – 315706S 1495502E – 321329S 1492125E – 321329S 1492125E
VERTICAL LIMITS: 8500 – FL240
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570A WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING

LATERAL LIMITS: 304714S 1485813E – 300647S 1500449E – 310811S 1502326E – 314535S 1494048E – 315822S 1491434E – 315126S 1490439E – 304714S 1485813E
VERTICAL LIMITS: 10000 – FL360
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570B WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 310853S 1482149E – 304714S 1485813E – 315126S 1490439E – 315822S 1491434E – 320236S 1490547E – 315818S 1485939E – 310853S 1482149E
VERTICAL LIMITS: 10000 – FL360
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570C WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 304714S 1485813E – 294829S 1485227E – 294722S 1495900E – 300647S 1500449E – 304714S 1485813E
VERTICAL LIMITS: 10000 – FL360
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570D WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 302042S 1474543E – 294837S 1484207E – 294829S 1485227E – 304714S 1485813E – 310853S 1482150E – 302042S 1474543E
VERTICAL LIMITS: 10000 – FL360
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570E WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 304714S 1485813E – 300647S 1500449E – 310811S 1502326E – 314535S 1494048E – 315822S 1491434E – 315126S 1490439E – 304714S 1485813E
VERTICAL LIMITS: FL360 – NOTAM
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570F WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 310853S 1482149E – 304714S 1485813E – 315126S 1490439E – 315822S 1491434E – 320236S 1490547E – 315818S 1485939E – 310853S 1482149E
VERTICAL LIMITS: FL360 – NOTAM
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570G WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING

LATERAL LIMITS: 304714S 1485813E – 294829S 1485227E – 294722S 1495900E – 300647S 1500449E – 304714S 1485813E
VERTICAL LIMITS: FL360 – NOTAM
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/R570H WILLIAMTOWN
CONDITIONAL STATUS: RA2
MILITARY FLYING
LATERAL LIMITS: 302042S 1474543E – 294837S 1484207E – 294829S 1485227E – 304714S 1485813E – 310853S 1482150E – 302042S 1474543E
VERTICAL LIMITS: FL360 – NOTAM
HOURS OF ACTIVITY: NOTAM
CONTROLLING AUTHORITY: FLTCDR 453SQN WILLIAMTOWN

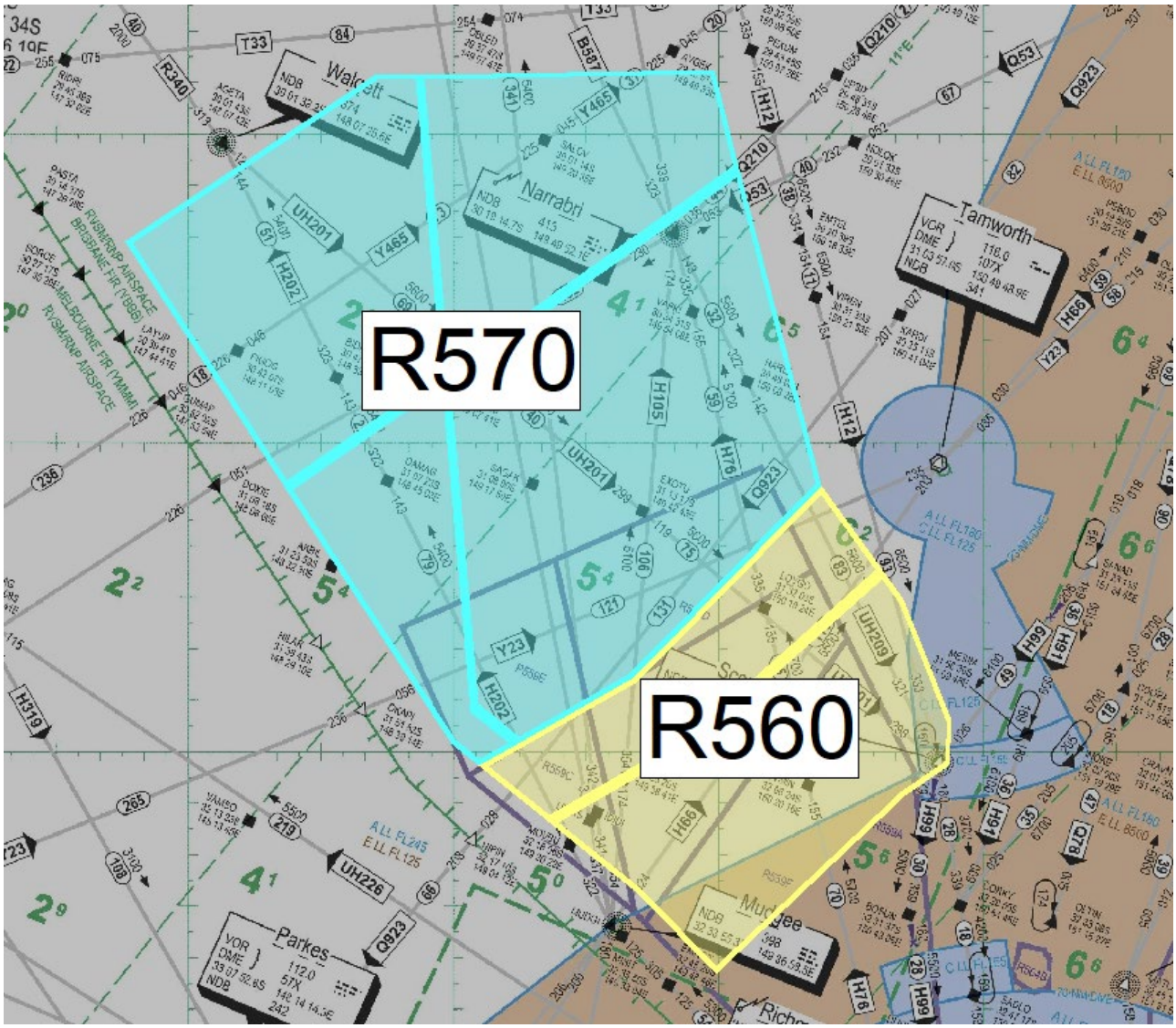

Figure 1: Proposed new R560 (Hawk) and R570 (F-35) Restricted Areas

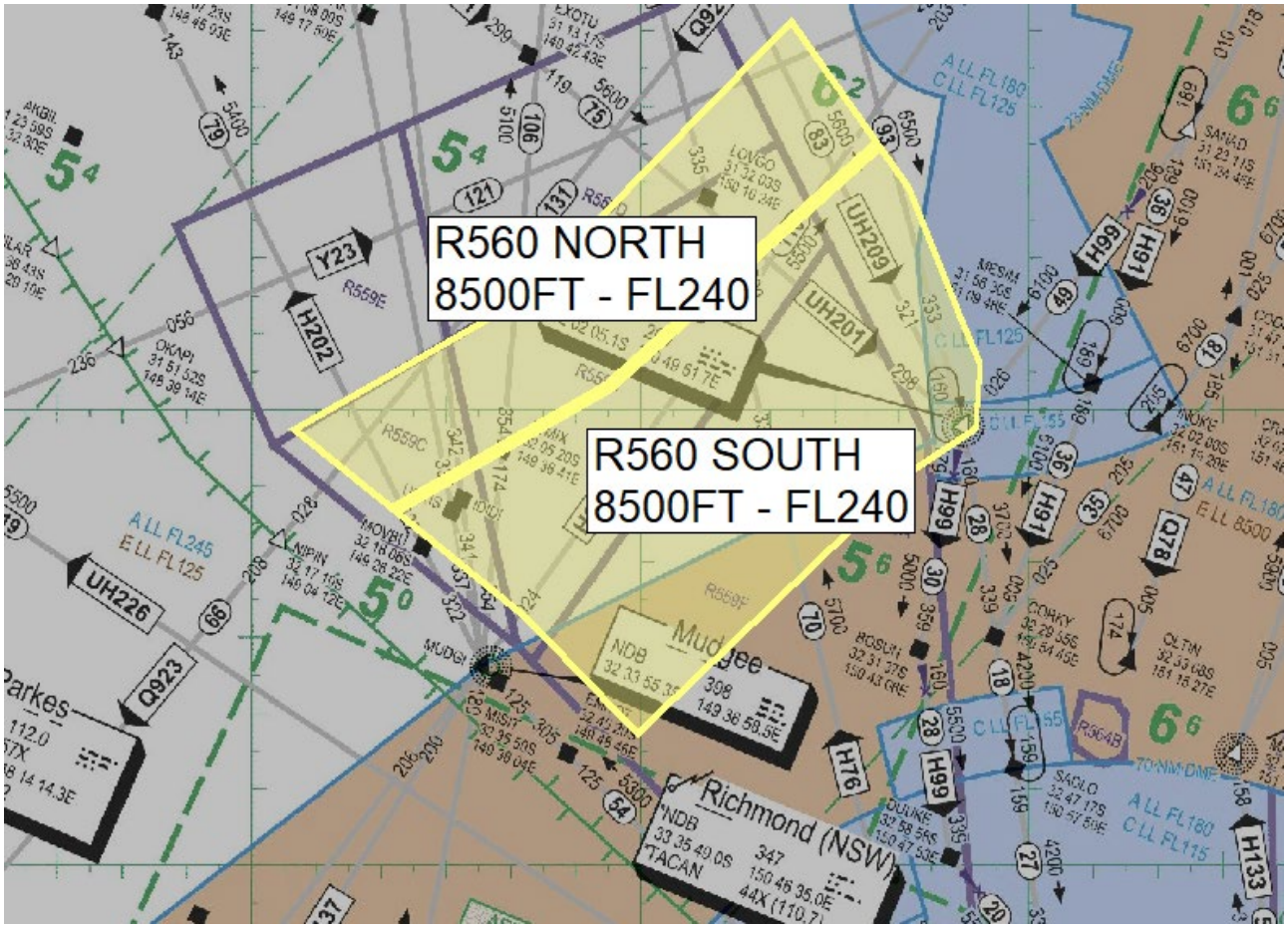

Figure 2: Proposed R560 (Hawk) North and South sectors

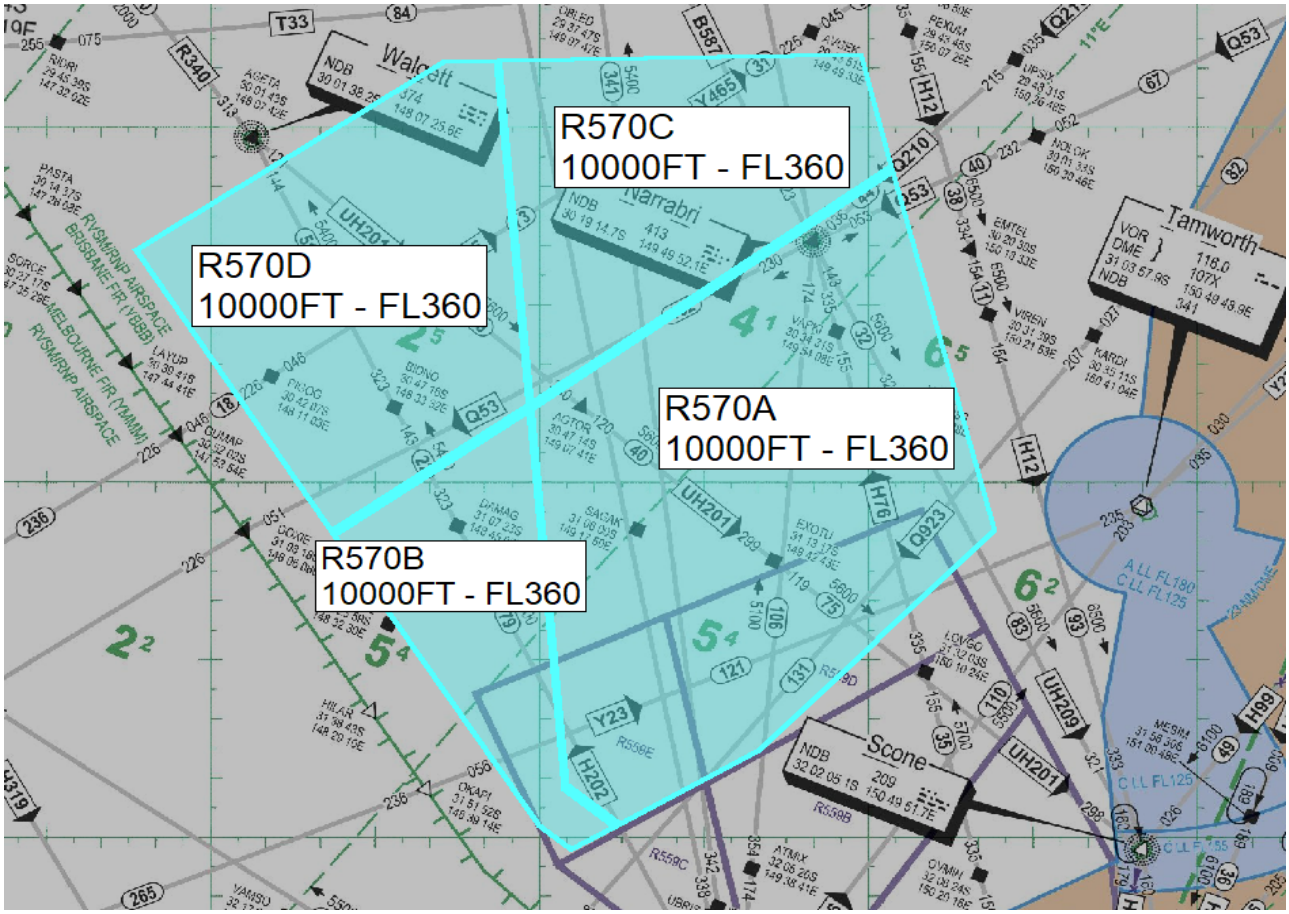

Figure 3: Proposed R570A - D (F-35) sectors

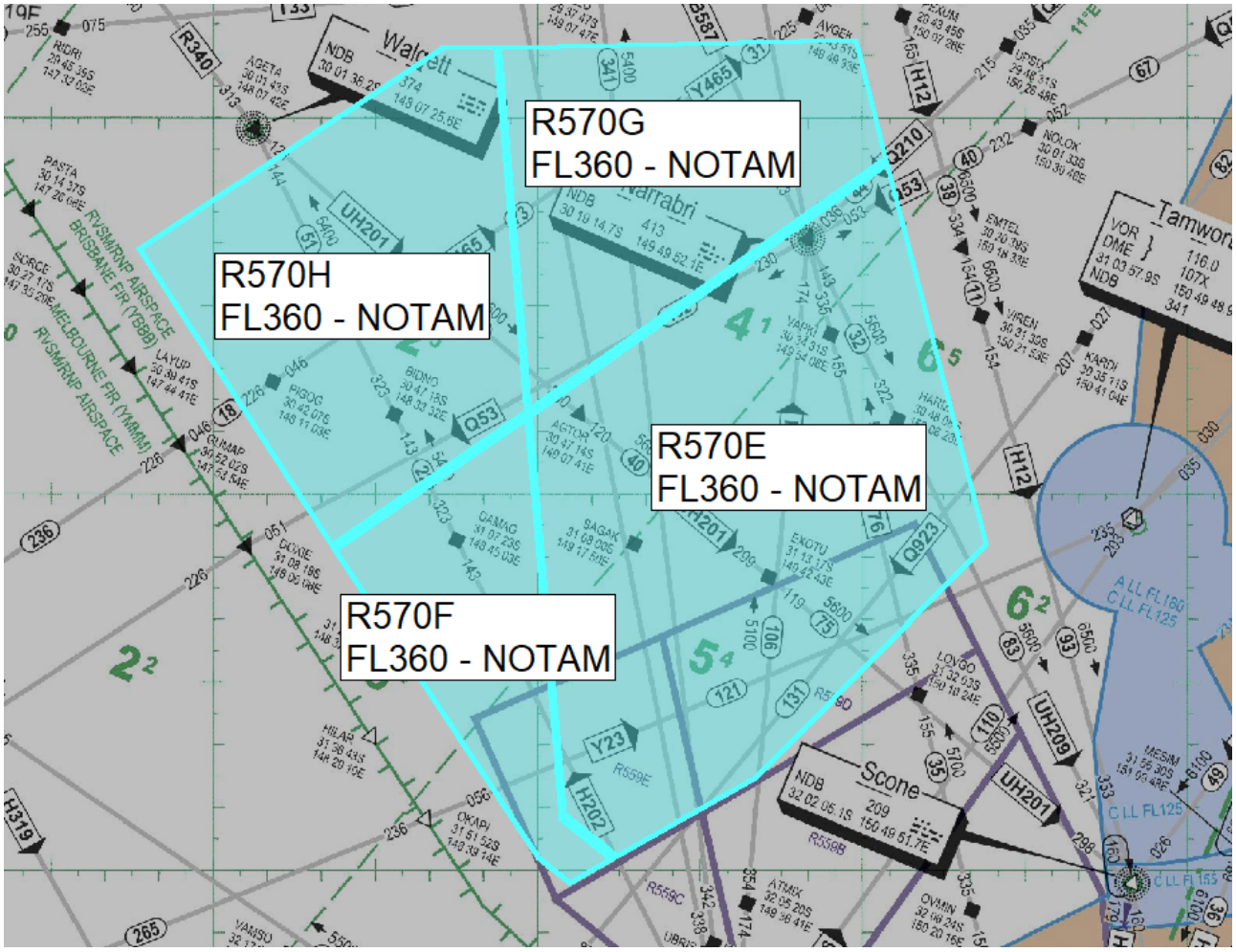

Figure 4: Proposed R570E - H (F-35) sectors

New Danger Areas

YBBB-YMMM/D600 and D538AB WILLIAMTOWN
Areas withdrawn

YBBB-YMMM/D566 (North) WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 320236S 1490547E – 321329S 1492125E – 315706S 1495502E – 312442S 1503707E – 310811S 1502326E – 314535S 1494048E – 320236S 1490547E
VERTICAL LIMITS: SFC – 8500
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/D566 (South) WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 321329S 1492125E – 322745S 1494203E – 324315S 1495932E – 320827S 1504205E – 320243S 1505208E – 315350S 1505254E – 314710S 1504945E – 313029S 1504156E – 312442S 1503707E – 315706S 1495502E – 321329S 1492125E – 321329S 1492125E
VERTICAL LIMITS: SFC – 8500
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/D576A WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 304714S 1485813E – 300647S 1500449E – 310811S 1502326E – 314535S 1494048E – 315822S 1491434E – 315126S 1490439E – 304714S 1485813E

VERTICAL LIMITS: SFC – 10000
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/D576B WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 310853S 1482149E – 304714S 1485813E – 315126S 1490439E – 315822S 1491434E – 320236S 1490547E – 315818S 1485939E – 310853S 1482149E
VERTICAL LIMITS: SFC – 10000
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/D576C WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 304714S 1485813E – 294829S 1485227E – 294722S 1495900E – 300647S 1500449E – 304714S 1485813E
VERTICAL LIMITS: SFC – 10000
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

YBBB-YMMM/D576D WILLIAMTOWN
MILITARY FLYING
LATERAL LIMITS: 302042S 1474543E – 294837S 1484207E – 294829S 1485227E – 304714S 1485813E – 310853S 1482150E – 302042S 1474543E
VERTICAL LIMITS: SFC – 10000
HOURS OF ACTIVITY: NOTAM
CONTACT: FLTCDR 453SQN WILLIAMTOWN

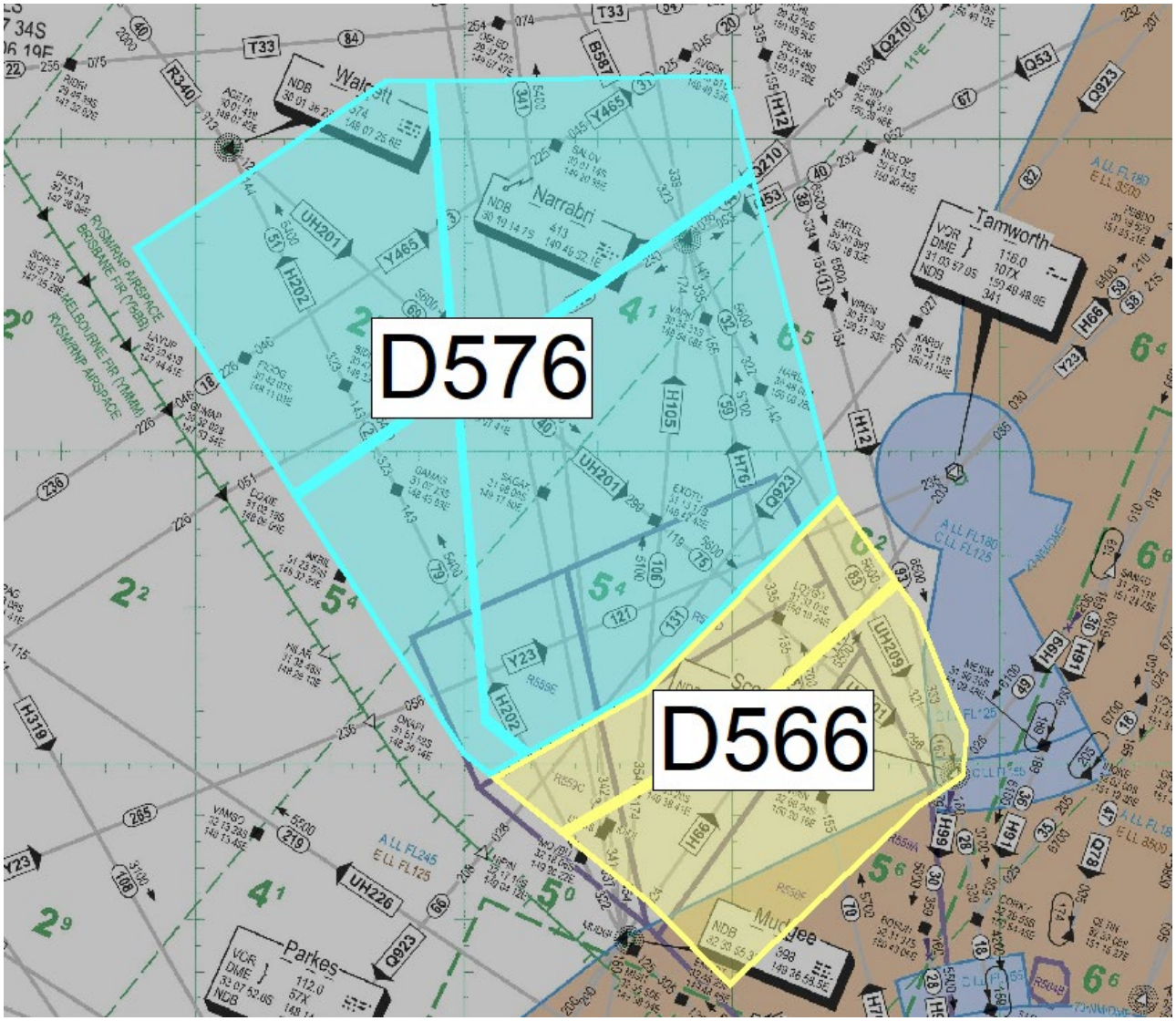

Figure 5: Proposed new D566 (Hawk) and D576 (F-35) Danger Areas

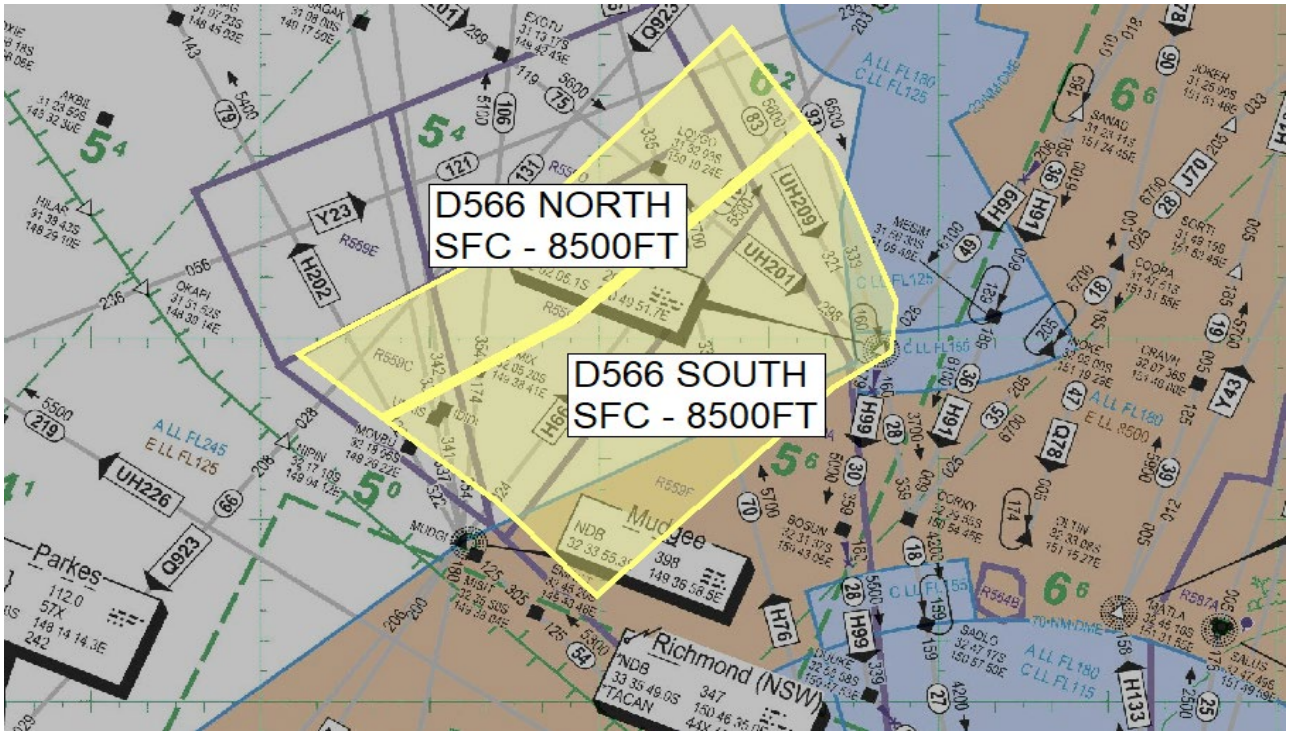

Figure 6: Proposed D566 (Hawk) North and South Sectors

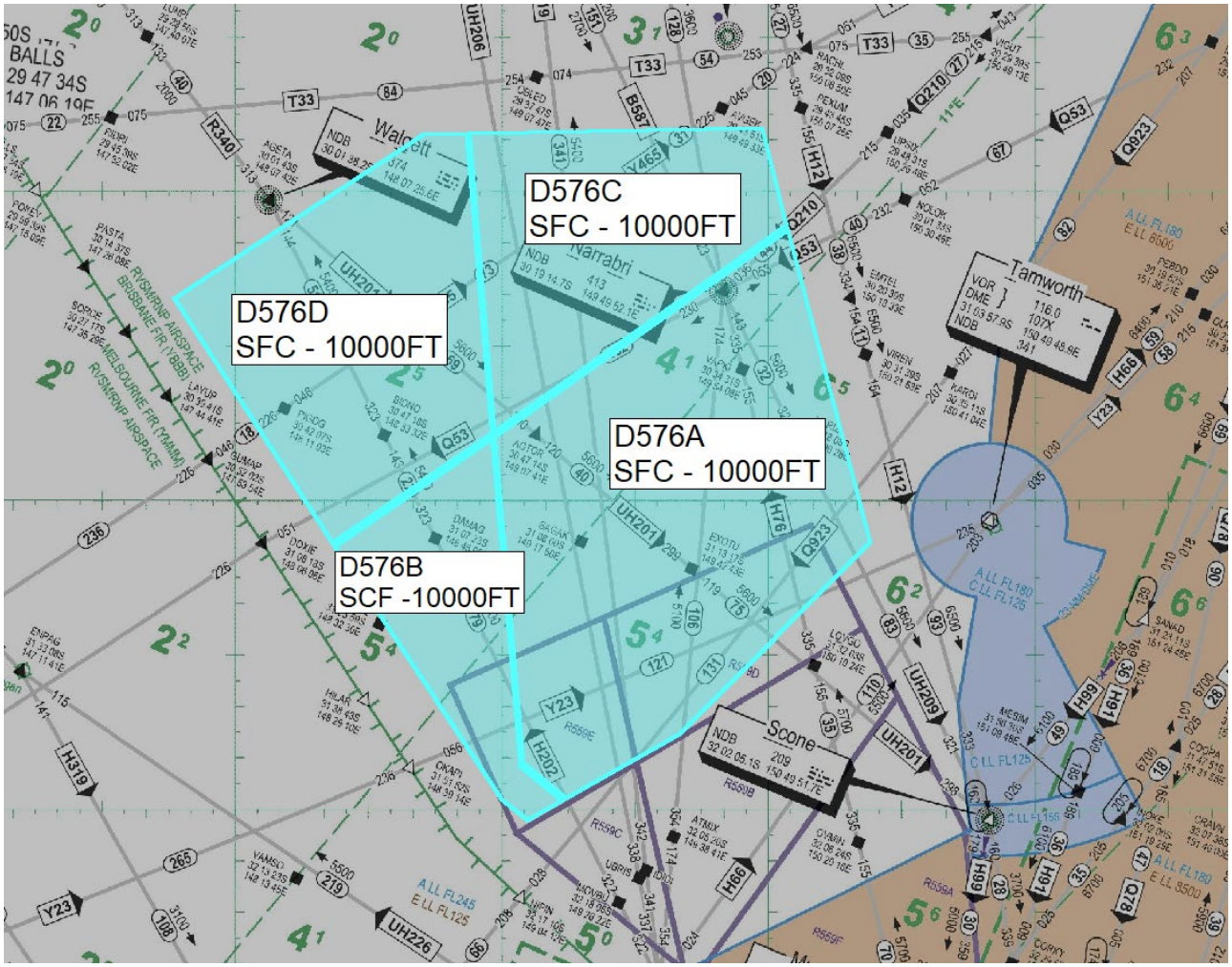

Figure 7: Proposed D576 (F-35) sectors

CONCURRENT USE OF AREAS

It is proposed that the F-35 and Hawk 127 replacement volumes can be activated together at times, if required.

The new areas have been designed to accommodate WLM-based operations occurring within the new volumes and AMB flying operations within R639. The proposed modification to the SW corner of R639D will allow sufficient spacing for two diversion routes enabling opposite direction traffic flow at all levels.

RATE OF EFFORT

Rate of effort will be similar to how R559 is used today. Namely, the F-35 and Hawk volumes will be activated 0900-1700 local (or 1300-2200 for night flying), Mon-Fri for 26 weeks per year. The areas will not be activated on weekends, public holidays or over the reduced activity period from mid-Dec to early-Jan.

Defence will conduct a maximum of three ‘waves’ of flying but typically will consist of two waves. When not in use between waves, the airspace will be released to civilian Air Traffic Control to allow civil transits.

Defence requires up to 34 000 FT usable (civilian lowest usable FL360) for air-to-surface training missions and will only request FL600 for air-to-air missions.

Defence high energy aircraft will be operating at speeds in excess of 250KT in the Danger areas.

IMPACTS

It is recognised that some routes will benefit via removed constraints, most notably around the Sydney basin.

However, other routes will be negatively affected when the proposed restricted areas are active.

Brisbane/Gold Coast to Melbourne/Adelaide via Q923 is expected to be the most affected route, followed by Brisbane to Adelaide via Q53.

While conducting flight within Danger Areas, Defence high-intensity fast jet aircraft will avoid CTAF areas or registered aerodromes by at least 5NM.

Four civilian flying training Danger Areas (ie D531AB, D523AB) are established in the vicinity of Gunnedah and Tamworth. Defence will avoid these areas either laterally or by flying 1000 feet above these areas for high-intensity fast jet flying.

As is the case today, military aircraft conducting a benign mission profile may still plan and conduct other flights below these altitudes within the civilian flying training area, after full consideration of any risks due to civil operations occurring within these areas. These flights could be undertaken by any military aircraft platform (including foreign military) at any altitude.

CONCLUSION

Defence continues to work collaboratively with agencies including the Civil Aviation Safety Authority and Airservices to develop a compromise position that generates the least impost for all concerned, including industry and general aviation, yet one that provides suitable airspace to conduct military activities.

It should be noted that these areas are currently in their preliminary design phase while simulations and stakeholder engagement take place.

To assist in development of an appropriately consulted, well considered solution, Defence seeks feedback from stakeholders on this proposal. All feedback will be provided to CASA's Office of Airspace Regulation to assist in their assessment and decision making regarding this airspace change proposal.

The proposal includes a vertical subdivision to maximise flexible use of airspace opportunities, but this means the number of restricted areas doubles. Alternatively, if Industry prefers, the upper level can be set by NOTAM as numerous other operating areas are today. Defence usage would not change and airspace would only be activated to the necessary altitude.

With the potential complexity of Williamtown Restricted Areas, specific feedback if the areas should be split vertically at FL 360, vice restricted area upper limit by NOTAM, would be particularly welcome.

Attachments

1. Proposed air route redesigns

- Airservices Australia is actively working with the Department of Defence in the design of the new training areas as well as design of air routes that best satisfy the needs of stakeholders in the aspects of efficiency, safety, community, and environment.

- The design of the air routes will ensure lateral separation with the proposed restricted areas. In some cases, routes between major city pairs will be permanently adjusted to separate with the new restricted areas, however where the restricted areas diversions pose a bigger track-mile penalty to civil aircraft, two routes will be implemented to permit more direct tracking when the new restricted areas are not active.

- Airservices Australia is undergoing a design review process for the proposed changes to air routes. The air routes under review are designed to safely allow transit around restricted areas when active and maximise use of airspace when restricted areas are not active.

Summary of Proposed Air Route Changes

- Route Changes are currently in Preliminary design, detail added for initial phase of consultation framework.

- The proposed airspace design will aim to minimise operational, and environmental impact on Industry – flying time, fuel burn and emissions.

Airservices Australia and Dept of Defence will engage with all impacted and interested airline and aviation Industry stakeholders through a variety of mechanisms (including a future AVSEF submission) to ensure that all views are considered in designing the airspace

2. Indicative airspace concepts

- To support the new location of the JSF and Hawk restricted areas, new air routes are being developed to safely support traffic around these restricted areas.

- These air routes are in development stage and may differ from final design.

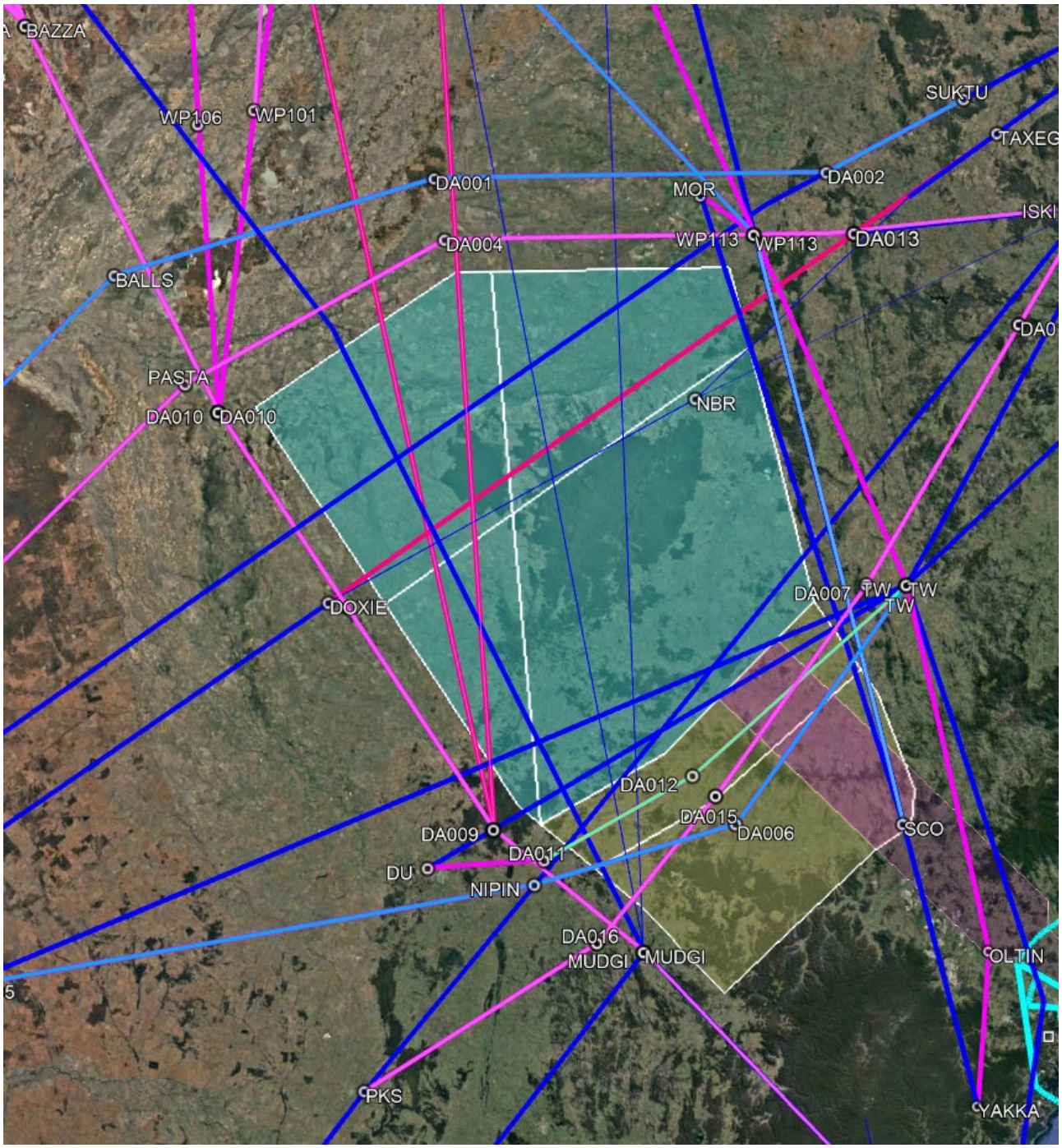

Figure 8: Indicative air-route structure

3. Indicative transit corridors and military Air to Air Refuelling and Airborne Early Warning and Control (MAAA) volumes

To support the new location of the JSF and Hawk restricted areas, new military corridors have been developed to provide access for military aircraft operating from Williamtown.

The corridors are made of four parts to facilitate connection with Williamtown restricted steps and the Hawk and/or JSF area, facilitate climb in the corridors and separation with civil aircraft arriving into the Sydney basin.

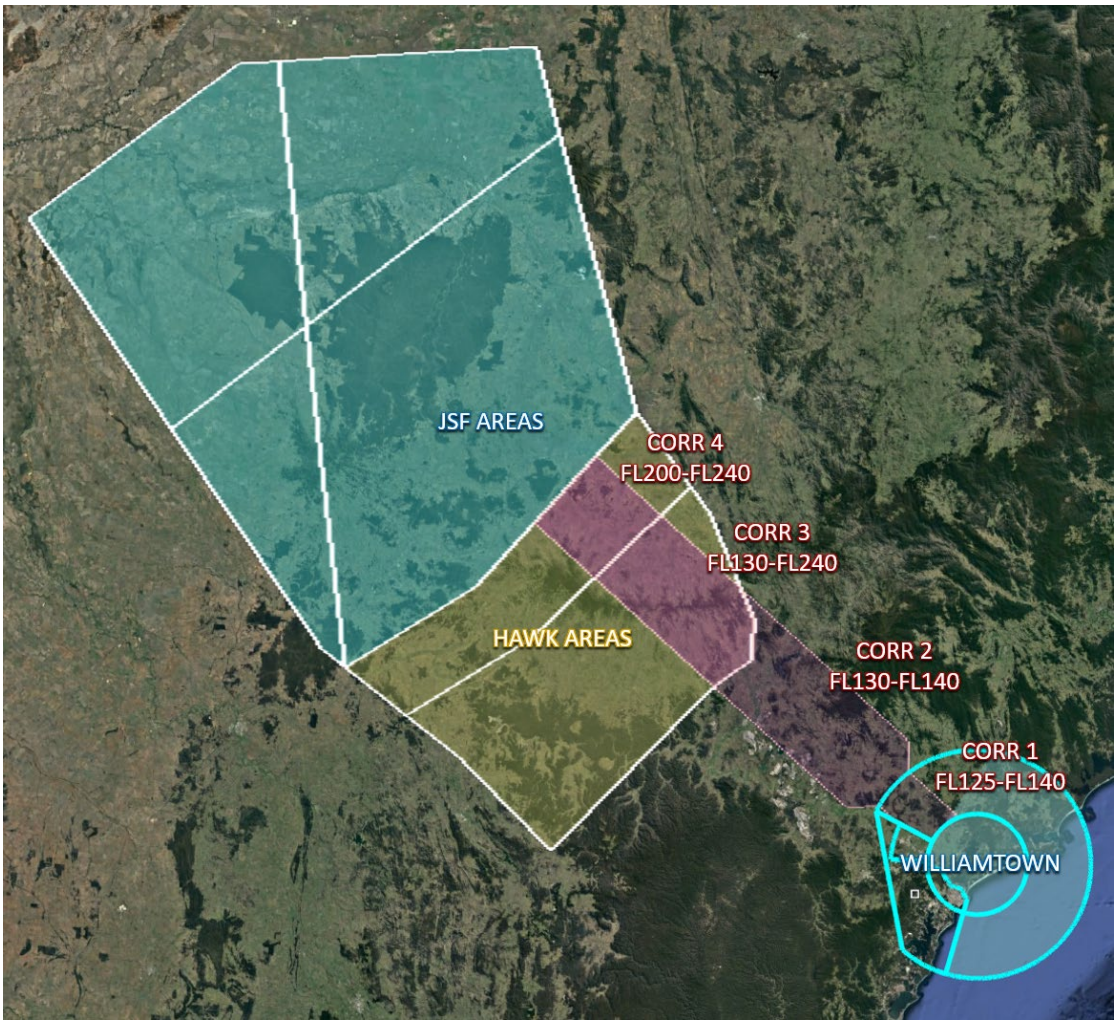

Figure 9: Military corridors from Williamtown

To support military operations/activities in the new JSF area, a number of areas have been identified in consultation with Airservices Australia around the perimeter of the restricted areas. These areas are expected to only occupy 1-2 flight levels.

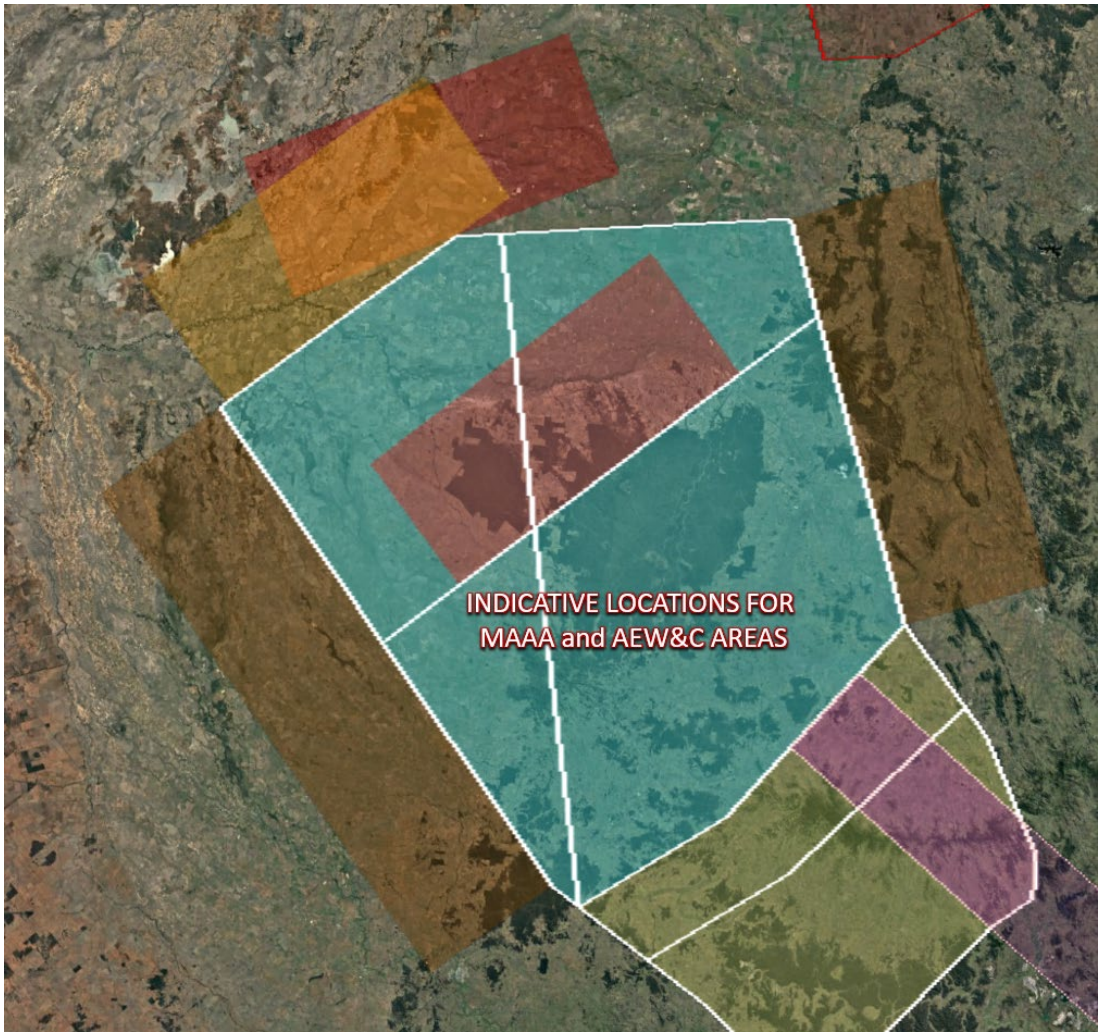

Figure 10: Location of planned MAAA and AEW&C Areas