
Proposed amendment to Auckland CTR

– airspace user consultation

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Introduction

Control zones are intended to be as small as practicable to protect the flight paths of IFR flights arriving at and departing from an aerodrome. Civil aviation rule 71.55(c) requires that the lateral limits contain those portions of airspace, not within a control area, where an IFR flight will operate under instrument meteorological conditions; extend at least 5 NM from the centre of the aerodrome from which an instrument approach may be made; and to consider the category of IFR aircraft using the aerodrome.

One of the first areas reviewed under 2014-2016 Airspace Review plan was the Auckland region airspace. One of the aims of the review is to assess if existing controlled airspace remains fit-for-purpose. Changes to instrument flight paths and procedures may mean that areas of controlled airspace are no longer required to protect the amended flight paths.

Due to time constraints, a thorough review of the Auckland and Whenuapai control zones was unable to be completed in time to include any changes with the 2014 visual navigation chart update.

Airways have now completed the review of the Auckland control zone (CTR) and submitted a petition to reduce the control zone – primarily to the south.

Proposed amendment

Airways' has applied the following containment criteria when re-designing the Auckland CTR:

- VOR splay for ILS and VOR approaches (i.e. the Instrument Sector)
- 2 NM buffer from the nominal path of RNAV and RNP procedures
- 2 NM buffer from the nominal missed approach tracks
- 300 ft per NM descent and climb profile from runway end/elevation except a steeper profile applied where specified for the instrument flight procedure (IFP) on the AIPNZ chart.

Refer to Figure 1 on the next page. The blue line depicts the proposed boundary changes and the white line shows the existing boundary.

VFR navigation consideration

No special allowance has been added for VFR navigational errors.

Refer to Design Note 6 on page 4 and Note 9 on page 5 for considerations regarding VFR navigation along the CTR eastern and western boundaries.

Wake turbulence consideration

Refer to Design Note 6 on page 4 and Note 9 ... for considerations regarding wake turbulence for VFR flights just outside the CTR eastern and western boundaries.

Proposed AA CTR/C – Design Notes

1. *The proposed CTR provides for airspace containment of all the existing AA IFPs.*

2. *IFR Circling:*

The proposed CTR provides for containment of IFR Cat C circling to the south of NZAA and Cat B circling to the north. (Note: Cat C circling requires 4.20 NM radius from RWY THR and Cat B circling requires 2.66 NM radius from RWY THR.)

3. *VFR circuiting:*

The northern CTR boundary is at least 3.4 NM away from the extended centreline and the southern boundary is at least 4.2 NM away from the extended centreline. This is sufficient room for VFR circuiting at NZAA.

4. *Auckland Runway Capacity Enhancement:*

The width of the northern CTR boundary is also determined by draft runway capacity enhancing ATC procedures that will permit “track divergence” separation being applied between arriving flights that fail to land and a preceding departing aircraft that is much closer than current separations used.

5. *Northern boundary:*

The northern boundary is the same as the existing CTR northern boundary except for the small reduction in CTR to the north-west near Laingholm.

The predominant driver for this boundary is the airspace needed by Auckland Control (AA TMA) when radar vectoring IFR flights to the north-west and north-east. The current CTR boundary is already very tight for vectoring and any reduction would severely restrict or preclude vectoring to the north, thus affecting Auckland airport runway capacity.

The reduction near Laingholm is in response to feedback received from VFR operators who want to be able to transit around the CTR following slightly seaward of the coast. The proposed CTR boundary is around 0.3 NM seaward of the coast.

6. *Eastern boundary:*

The eastern boundary is 7.4 NM from the RWY 23L threshold. This is around 1 NM west of the existing eastern boundary.

This boundary is slightly further 'out' than the airspace policy of 300 ft per NM – under that policy the boundary could be at 6.6 NM from the RWY 23L threshold (6.6 NM x 300 ft = 1980 ft + 23 ft a/d elevation = 2003 ft)

The eastern boundary is determined by the 2 NM buffers from the RNAV (RNP) X RWY 23L and the RNAV (RNP) U RWY 23L approaches.

Regarding the LOC/DME RWY 23L approach, IFR waypoint ORESO is 8 NM final and is 0.43 NM outside the proposed CTR boundary. The LOC/DME RWY 23L specifies not below 2000 ft at ORESO. Should an aircraft flying the LOC/DME approach descend below 2000 ft immediately after crossing ORESO then it would not be correctly contained by controlled airspace until it crossed into the CTR at 7.4 NM final. The published advisory altitude for this approach is 2620 ft at 8 IMG DME (ORES0) and 2290 ft at 7 NM IMG DME (i.e. well inside controlled airspace) but if the aircraft flew the approach as low as possible (duck and dive), then it may not be correctly contained. Should operators and/or CAA require containment for 'duck and dive' then the CTR boundary needs to be moved out to ORESO.

VFR navigation consideration: Navigation accuracy would be needed by VFR flights as this boundary is close underneath the approaches and departures. In recent years there have been a number of airspace infringements of the current CTR eastern boundary. Operators and CAA should consider whether the eastern boundary of the proposed CTR should be further east somewhat to allow for possible airspace infringement caused by VFR navigation errors (e.g. having the boundary through ORESO – or even leaving it in its current location).

Wake turbulence consideration: The proposal involves the eastern boundary being brought in to 7.4 NM from RWY 21L THR. This would allow VFR flights that are transiting close around the eastern boundary to be closer underneath the IFR aircraft on approach or departure – potentially, a VFR flight just outside the CTR could pass less than 1000 ft underneath a heavy aircraft on approach. At the CTR boundary (7.4 NM);

- at a 300 ft per NM profile the IFR aircraft would be 2243 ft – VFR aircraft could be 743 ft below*
- at the 3rd advisory altitude the IFR aircraft would be 2422 ft – VFR aircraft could be 922 ft below*

Consideration should be given by VFR operators and CAA to the potential increased risk of VFR flights encountering wake turbulence due to the reduced size of the CTR.

7. *'Ardmore' boundary:*

The proposed CTR boundary follows the existing boundary to the south-east near Ardmore except for short portions at the ends.

This boundary cannot be moved in due to the 2 NM buffers from the REKIS2Q SID, the BROOK1Q SID and the RNAV (RNP) Y RWY 23L approach.

The south-eastern CTR boundary has contracted slightly to permit the deconfliction of revised IFPs from and to Ardmore airport near Karaka VRP, which are being developed separately.

8. *Southern boundary:*

The southern boundary is determined by the airspace containment requirements for the CLARK1P departure, the 4.2 NM Cat C IFR circling area, the BROOK1Q departure and the RNAV (RNP) Y RWY 23L approach.

9. *Western boundary:*

The western boundary is 7.0 NM from the RWY 05R threshold. This is around 1 NM east of the existing western boundary.

This boundary is slightly further 'out' than the airspace policy of 300 ft per NM – under that policy the boundary could be at 6.6 NM from the RWY 23L threshold (6.6 NM x 300 ft = 1980 ft + 23 ft a/d elevation = 2003 ft)

The western boundary is determined by the 2 NM buffers from the CLARK 1P departure and the RNAV (RNP) Y RWY 05R and RNAV (RNP) X RWY 05R approaches.

Regarding the LOC/DME RWY 05R approach, IFR waypoint UGRUS is 8 NM final and is 0.8 NM outside the proposed CTR boundary. The LOC/DME RWY 05R specifies not below 2100 ft at UGRUS. Should an aircraft flying the LOC/DME approach descend below 2100 ft immediately after crossing UGRUS then it may not be correctly contained by controlled airspace until it crossed into the CTR at 7.0 NM final. The published advisory altitude for this approach is 2620 ft at 8 IAA DME (UGRUS) and 2280 ft at 7 NM IAA DME (i.e. well inside controlled airspace) but if the aircraft flew the approach as low as possible (duck and dive), then it may not be correctly contained. Should operators and/or CAA want to ensure containment for 'duck and dive' then the CTR boundary needs to be moved out to UGRUS.

VFR navigation consideration: Navigation accuracy would be needed by VFR flights as this boundary is close underneath the approaches and departures. Operators and CAA should consider whether the western boundary of the proposed CTR should be further west somewhat to allow for possible airspace infringement caused by VFR navigation errors (e.g. having the boundary through UGRUS – or even leaving it in its current location).

Wake turbulence consideration: The proposal involves the western boundary being brought in to 7.0 NM from RWY 05R THR. This would allow VFR flights that are transiting close around the western boundary to be closer underneath the IFR aircraft on approach or departure – potentially, a VFR flight just outside the CTR could pass less than 1000 ft underneath a heavy aircraft on approach. At the CTR boundary (7.0 NM);

- at a 300 ft per NM profile the IFR aircraft would be 2123 ft – VFR aircraft could be 623 ft below
- at the 3° advisory altitude the IFR aircraft would be 2280 ft – VFR aircraft could be 780 ft below

Consideration should be given by VFR operators and CAA to the potential increased risk of VFR flights encountering wake turbulence due to the reduced size of the CTR.

Reasons for reducing the CTR

The primary purposes of reducing the size of the AA CTR are to;

1. reclassify as class G (uncontrolled) airspace that is no longer needed for containment of instrument flight procedures and/or the management of air traffic at Auckland aerodrome.
2. satisfy a desire by VFR operators for airspace south of the Manukau Harbour to be class G.
3. meet the CAA desire to reduce existing control zone sizes as mentioned in the CAA 2015 – 2018 Airspace Review Plan.
4. meet the CA Rule 71.55 Control Zones (b) specification that a control zone must be as small as practical consistent with the need to protect the flight paths of IFR flights arriving and departing from the aerodrome.

Consequential changes

If the AA CTR is changed as requested then VFR operators and CAA should consider the following;

- amending the Ardmore CFZ (NZC278) boundary to match the new CTR eastern boundary.
- amending the boundary between Auckland City MBZ (NZB179) and the Ardmore CFZ.
- amending the Ardmore MBZ (NZB272) to match the new CTR boundary.
- NZD225 Karaka model flying area could be amended to a circular shape.

There may be other consequential changes not identified by Airways.

CAA comment

CAA airspace design policy when determining the lower limits and lateral boundaries of controlled airspace uses a 300 ft per NM climb or descent gradient determined from the runway ends. This profile is more conservative than the standard 3° glide slope of 318 ft per NM.

Controlled airspace is not designed to account for pilots flying ‘dive and drive’ descent profiles. Maintaining a constant angle of descent is the recommended technique to reduce

the potential of a CFIT accident (refer AIC 5/05). Pilots using the ‘dive and drive’ method must take into account the lower limits of controlled airspace if they wish to remain contained inside.

There is a difference between containment within controlled airspace and application of separation criteria between tow controlled flights. Aircraft operating outside controlled airspace are considered clear from aircraft operating within controlled airspace. An aircraft operating at 6500 ft in a location where the lower limit of the control area is 6500 ft is considered clear of the airspace. A controlled flight in the same location may be operating at 7000 ft so the vertical displacement is 500 ft. The vertical separation criteria minimum if both are operating within controlled airspace is 1000 ft above 4500 ft AMSL.

A 1 NM buffer for visual fix error is applied when separating instrument approach and departure procedures from congested VFR airspace such as VFR transit lanes and general aviation areas. These areas temporarily amend portions of controlled airspace to Class G classification. Specifically, Rule 71.57(a)(2) requires that transiting VFR traffic is separated from arriving and departing IFR flights.

However, there is one amendment to the planned boundary change necessary as the previously used point feature no longer exists. The previous boundary line which goes from existing Alfriston (remains the same) boundary point following a straight line to ‘Training Track’ to Karaka VRP (this boundary point changes – existing VRP remains).

The ‘Training Track’ has now been closed and a housing subdivision has been built there. Refer to Figure 2 below. The blue line is the current CTR boundary. The photo on the left is from 2012 and the one on the right from 2015.

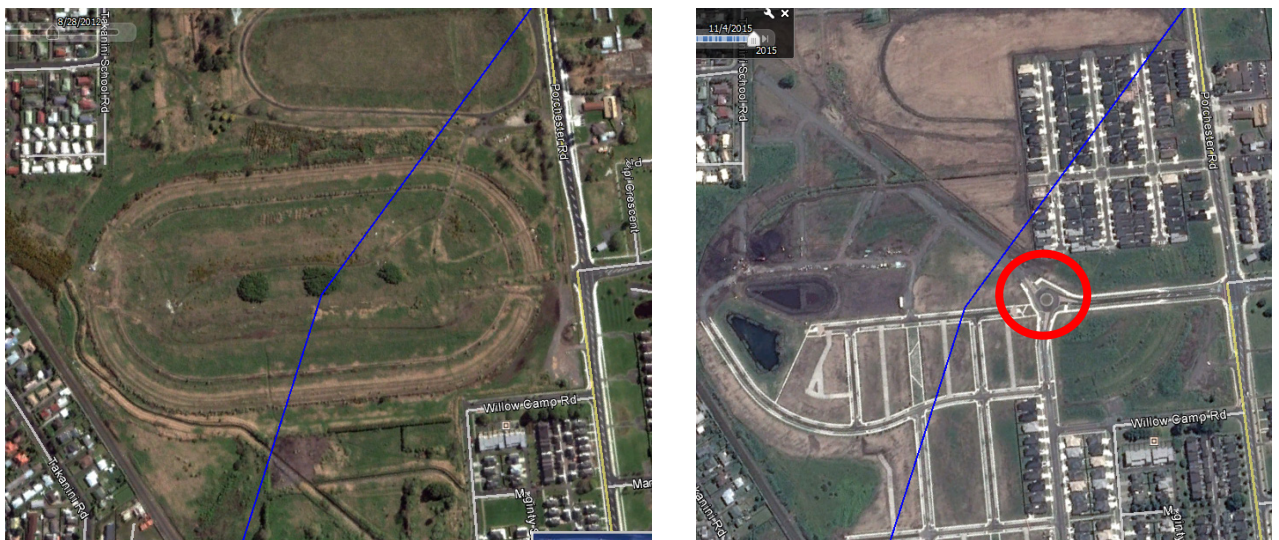


Figure 2 – ‘Training Track’

The choice is to either use the existing coordinate with no descriptor, or to make a small adjustment to overhead the roundabout (circled in red) would allow for an easily identifiable boundary point.

The existing VRPs on the Auckland CTR boundary will remain; but will now be outside the CTR.

The current eastern boundary of the Auckland CTR does not follow any identifiable ground feature, as well as other boundary lines of the CTR.

Potential wake turbulence from aircraft operating within controlled airspace, 500 ft above the lower limit, potentially flying over aircraft outside controlled airspace is an existing situation throughout New Zealand.

Consultation undertaken by Airways

Airways advised that they have consulted with various operators who regularly use, or are likely to be affected by, the requested airspace. There were six written responses received, with no objections raised.

Summary

The overall volume of the Auckland CTR will be reduced, in particular to the south. This will enable more freedom of movement for VFR aircraft in airspace which is not required for the protection of instrument flight paths and procedures.

Consultation list

This document will be sent directly to the following organisations:

- Air Freight New Zealand Ltd
- Air New Zealand Group – including Mount Cook and Air Nelson
- Aircraft Owners and Pilots Association
- Airways Corporation of New Zealand Ltd
- Airwork New Zealand Ltd
- Ardmore Flight Operations Group
- Auckland Airspace User Group
- Auckland International Airport Ltd
- Flying New Zealand
- Jet Connect/Qantas
- Jetstar
- North Shore Aero Club
- Recreational Aircraft Association of New Zealand

- Royal New Zealand Air Force
- Sport Aircraft Association New Zealand Inc
- Sport Aviation Corp
- Virgin Australia

Electronic notification of the consultation will be sent to subscribers to the CAA email Notification Service for Airspace Notifications Briefing Areas NZ 1, 2, 3 and 4.

This document is also available on the CAA website at the following link:

http://www.caa.govt.nz/airspace/airspace_review.htm

Submissions

Prior to making a designation or classification of airspace, Civil Aviation Rule 71.9 requires the Director to consult with all parties that may be affected within the aviation industry.

This document forms part of the consultation process. Submissions are sought from any interested person, organisation or representative group to provide further information relevant to this proposal.

Submissions are accepted either electronically or via mail.

Please address submissions to:

Group Executive Officer
Aviation Infrastructure and Personnel
Civil Aviation Authority of New Zealand
PO Box 3555
Wellington 6140

Fax: 04 569 2024

Email: dianne.parker@caa.govt.nz

Reference – Proposed amendment to Auckland control zone.

Closing date for submissions is **Thursday 25 February 2016**.

Further information

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