

**Airways New Zealand submission to the
Civil Aviation Authority's
2016 Waikato and Bay of Plenty Airspace Review**

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Updated Submission

20 November 2015

This is one of three Airways submissions to the 2016 Waikato and Bay of Plenty Airspace Review.

This submission is an update to the Airways submission for Rotorua CTR dated 4 August 2015.

Rotorua CTR and CTA Proposal

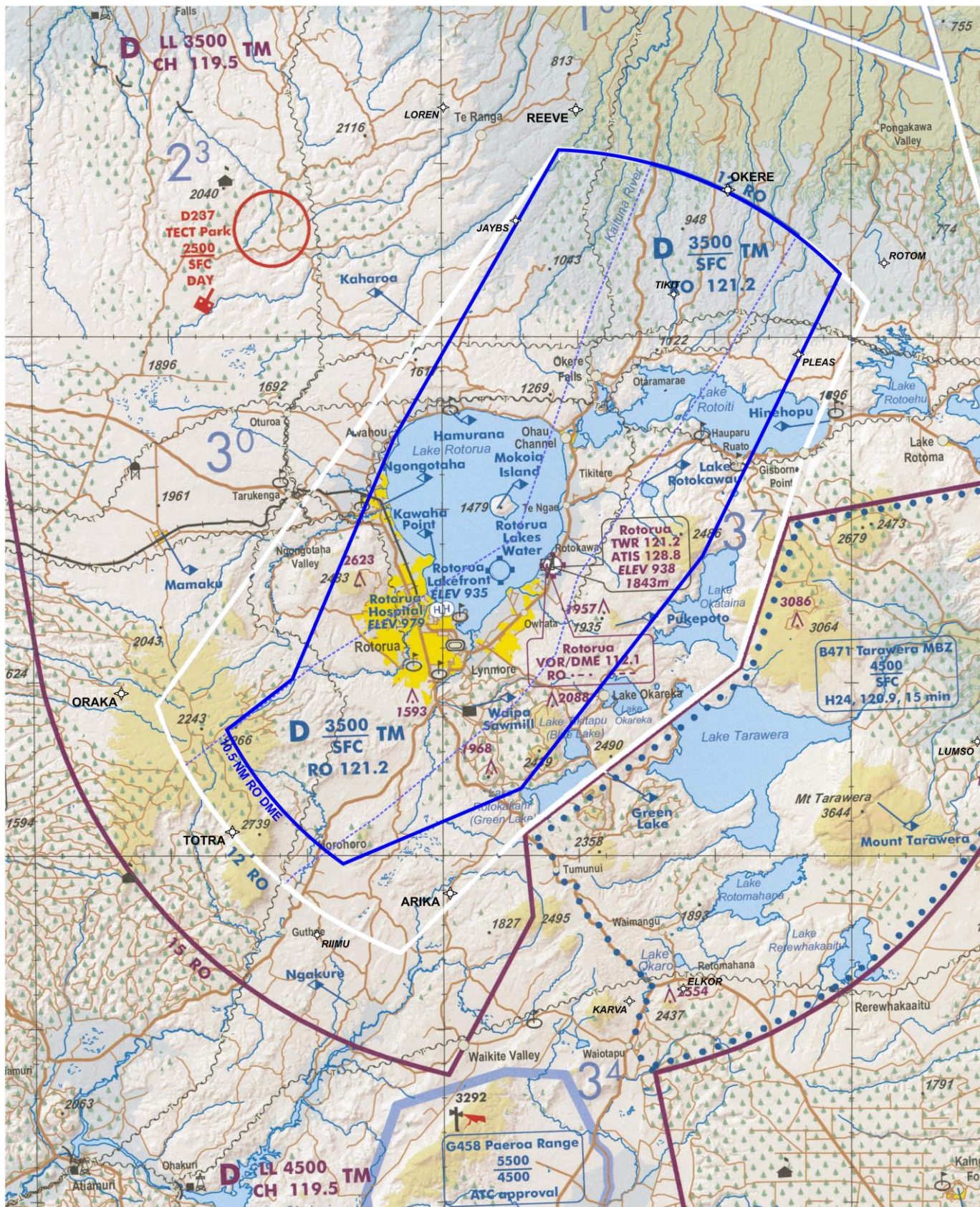
The Airways proposed airspace changes to the RO CTR and RO CTA are presented on the following pages. Note that the RO CTA changes extend to north of Tauranga so the diagram on page 5 also depicts the proposed changes around Tauranga.

RO CTR and CTA Amendment – 20 November 2015

Notes associated with CTR and DRAFT v4 dated 30 October 2015 and amended RO CTA

DRAFT RO CTR Amendment
Version 4 30 October 2015

NOTES: Requires VOR/DME A approach to be raised so it turns inbound at 4000ft (current 3900ft)
Requires VOR/DME RWY 18 approach to be lengthened so it turns inbound at 12 NM at 4000ft.
This design does not contain VOR Departures other than OKERE3 and TOTRA4 to 4000ft



1. The upper level of DRAFT CTR remains at 3,500ft AMSL.
2. Changes to the RO CTA LL 3500ft (NZA447) and RO CTA LL 4500ft (NZA244) are necessary to contain proposed new PBN IFPs at RO and TG. These are discussed from page 4.
3. Airspace containment criteria applied

VOR approach inbound legs	VOR splay
RNAV approach inbound legs	VOR splay
Missed approach tracks - VOR and RNAV	2 NM buffer between nominal track and airspace boundary
OKERE3 and TOTRA4 departure tracks	2 NM buffer between nominal track and airspace boundary
Proposed new RNAV SID departure tracks	2 NM buffer between nominal track and airspace boundary
Holding Patterns	Basic area of holding pattern plus 1 NM

Width of CTR to the north of NZRO

4. The width of the CTR is primarily determined by containment of the proposed new RNAV SIDs off RWY 36. These maintain RWY centreline to 8 NM then turn to the west/east- reaching 4,000ft just prior to the CTR boundary.
5. The CTR is wider than the Instrument Sector for the existing approaches. This design assumes that any new PBN approaches would follow the same paths as the existing RNAV approaches.
6. This CTR design requires the existing RO VOR/DME 18 approach to be changed so that the approach turns inbound at 4,000ft or above. This is so that the CTR only needs to contain the inbound path and not the outbound and base turn of the teardrop approach. It is expected that the amended approach would retain the current 3.0° profile but it would need to have a longer inbound (and outbound) leg from around 10 NM.
7. This design would not fully contain the VOR RWY 18 approach outbound and base turn legs. The inbound leg would be fully contained once inside 12 DME RO. The existing CTR also does not fully contain the outbound and base turn legs - with the new CTR, containment would be very slightly less than current.

Width of CTR to the south of NZRO

8. The width of the CTR is primarily determined by containment of the current Instrument Sector.

The proposed new RNAV SIDs off RWY 18 have a steeper climb profile requirement (6.3% = 383ft per NM) that reaches 4,000ft prior to turning off the RWY centreline – hence the CTR does not need to be wider to contain these SIDs.

9. This CTR design requires the existing RO VOR/DME A approach (for RWY 36) to be changed so that the approach turns inbound at 4,000ft or above. This is so that the CTR only needs to contain the inbound path and not the outbound and base turn of the teardrop approach. It is expected that the amended approach may need a very slightly steeper profile.

IFR circling and aerodrome circuit

10. The width of the CTR contains Cat C circling to the west of NZRO (circling to the east is not permitted, nor is cat D circling)
11. The width of the CTR to the east of NZRO is sufficient for aerodrome operations.

Length of CTR - northern boundary

12. The northern boundary of the CTR would be the same as the existing CTR boundary at 12 NM RO.

This is to provide containment for the new RNAV SIDs off RWY 36 – particularly the SID to the northwest (to new point *LOREN*).

Length of CTR - southern boundary

13. The southern boundary of the CTR is at 10.5 NM RO DME – not so far out as the existing boundary at 12 NM.

This boundary is primarily determined by the descent profile of the RNAV (RNP) Y RWY 36 approach and the default 300ft per NM profile (10.3 NM from RWY 36 Thr/elevation).

Additional CTA to the northeast

14. The draft new RO PBN approaches and the existing approaches utilise the existing holding pattern at OKERE, an IFR waypoint to the northeast of RO. This holding pattern is currently not fully contained at the 300ft per NM profile.

To provide full containment, it is proposed that the RO CTA LL 3500ft (NZA447) is extended as depicted on the diagram on the next page. This diagram also depicts the CTA and CTR changes required for TG.

Also, one of the new approaches utilises a new waypoint 8 NM from RWY 18 THR on the centreline. This waypoint is tentatively called TIKIT. There would also be a holding pattern at TIKIT. The extended CTA would also contain this holding pattern.

The extended CTA LL 3500ft would also provide containment for a new holding pattern to the northeast of Tauranga.

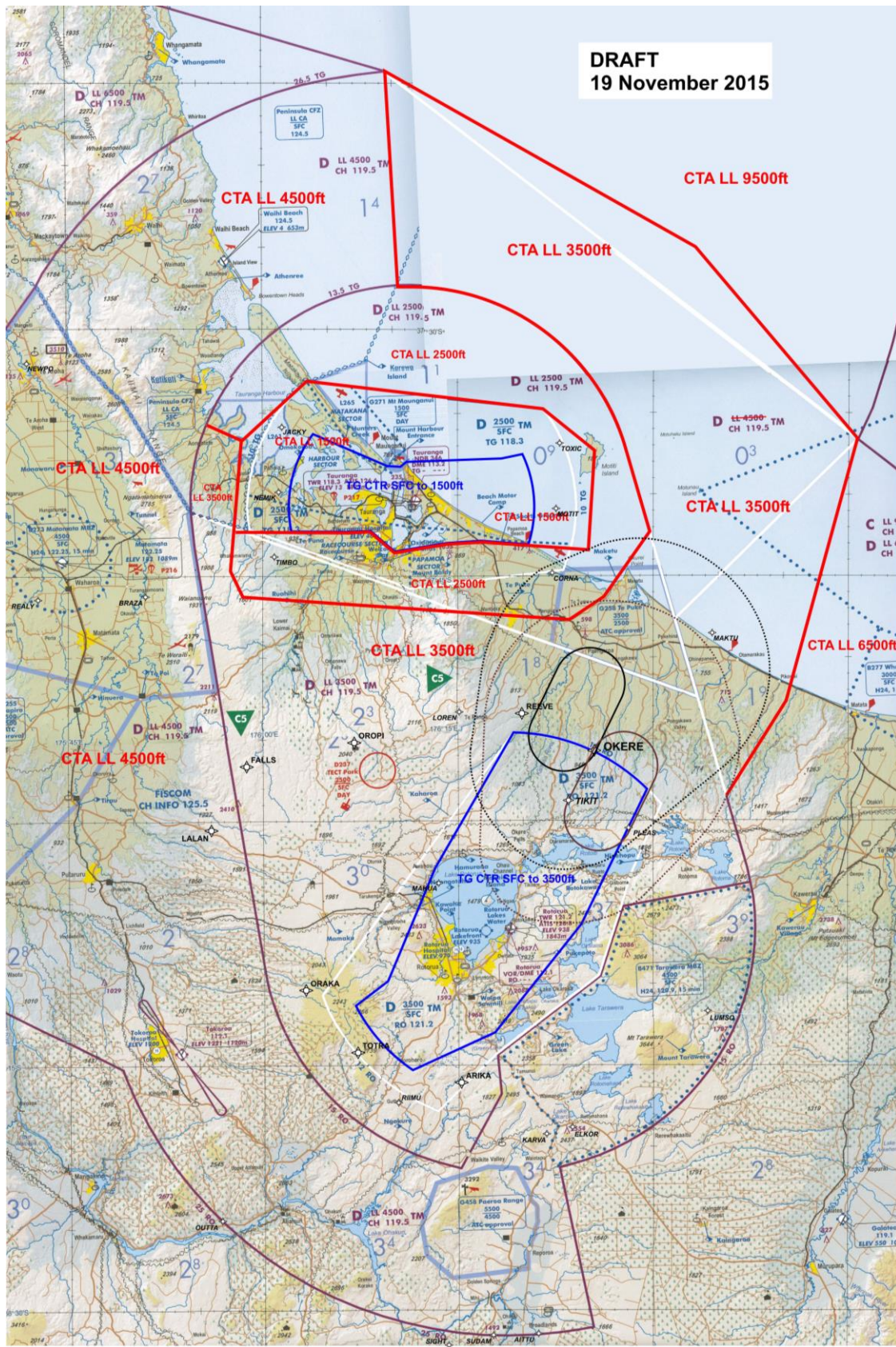


Diagram of extended RO CTA also depicting the holding pattern with protection area at OKERE and the holding pattern with protection area for the planned new waypoint TIKIT.

Containment of IFPs

15. Regarding the existing Rotorua instrument flight procedures (IFPs):

VOR/DME A cat A, B and C approach – outbound and base turn not fully contained by new airspace but the inbound leg is contained. **For containment, this approach needs the base turn complete altitude raised from existing 3900ft to 4000ft.**

VOR/DME RWY 18 approach – outbound and base turn not fully contained by new airspace but the inbound leg is contained. **For containment, this approach needs the base turn complete altitude raised from existing 3100ft to 4000ft.**

VOR RWY 18 approach – outbound and base turn not fully contained by new airspace but the inbound leg is contained inside 12 NM RO DME. GroupEAD advise it is not possible to raise the base turn complete altitude for this non-DME approach. The new CTR would provide slightly less containment than the existing CTR for the outbound leg once below 4,000ft until established inbound inside 12 NM.

RNAV (GNSS) B – contained by the new airspace

RNAV (GNSS) Z RWY 18 – contained by the new airspace

RNAV (RNP) Y RWY 18 – contained by the new airspace

RNAV (RNP) Y RWY 36 – contained by the new airspace

OKERE 3 Departure all the way to OKERE – contained by the new airspace.

HOWEVER, airspace containment may not be in place if the departure turns off the 006 radial at MNM 2700 ft as per the AIPNZ Note for this departure.

RWY 36 VOR Departure – May not be contained. Containment would depend on the level at which the aircraft turns off the 005 radial and the climb profile of the aircraft prior to reaching 4,000ft.

TOTRA 4 Departure all the way to TOTRA – contained by the new airspace.

HOWEVER, airspace containment may not be in place if the departure turns off the 210 radial at MNM 2900 ft as per the AIPNZ Note for this departure.

RWY 18 VOR Departure – Probably not be contained. Containment would depend on the level at which the aircraft turns off the 185 radial and the climb profile of the aircraft prior to reaching 4,000ft.

For those existing 4 departures, the facility to turn off the nominated radial passing 2700ft/2900ft should probably be withdrawn from the departure to ensure airspace containment.