QUEENSTOWN AIRSPACE PETITION

Volume One, Version 2.0*

29 May 2025

Queenstown – Milford User Group
QMUG

*Version 2.0 – minor formatting/editorial; Q&A and Reference appendices added.

AIRWAYS

Contents

1. Queenstown Airspace Petition

1.1 Introduction

For some time, issues of complexity, capacity/volume and workload for pilots and air traffic control in Queenstown controlled airspace have been discussed.

In the latter part of 2024 Airways carried out a thematic safety review of ATS operations at Queenstown and a series of meetings occurred between Airways, the Queenstown Milford User Group (QMUG) and Queenstown Airport Corporation (QAC) to address items raised in the report. These meetings went some way to better prepare for the 2024/25 summer period and raised further awareness of the operational issues.

In early 2025 an Interested Based Problem Solving (IBPS) methodology was utilised in subsequent workshops to better focus on aviation challenges, interests and resolutions. These IBPS workshops contained senior QMUG members, QAC and Airways' management.

One outcome of this extended period of collaboration is this Queenstown airspace petition, which is being presented to the CAA on behalf of QMUG, QAC and Airways.

The primary goal is to enhance Aviation Safety - through reduced frequency congestion, reduced separation complexity, and reduced controller workload. VFRs will be able to communicate with each other on a common frequency; ATC will have greater capacity to effectively manage IFR and VFR traffic.

1.2 Proposed changes to Queenstown Control Zone (QN CTR/C A756)

Part 71.55(b) requires Control Zones to be as small as practicable consistent with the need to protect the flight paths of IFR flights arriving at and departing from the aerodrome.

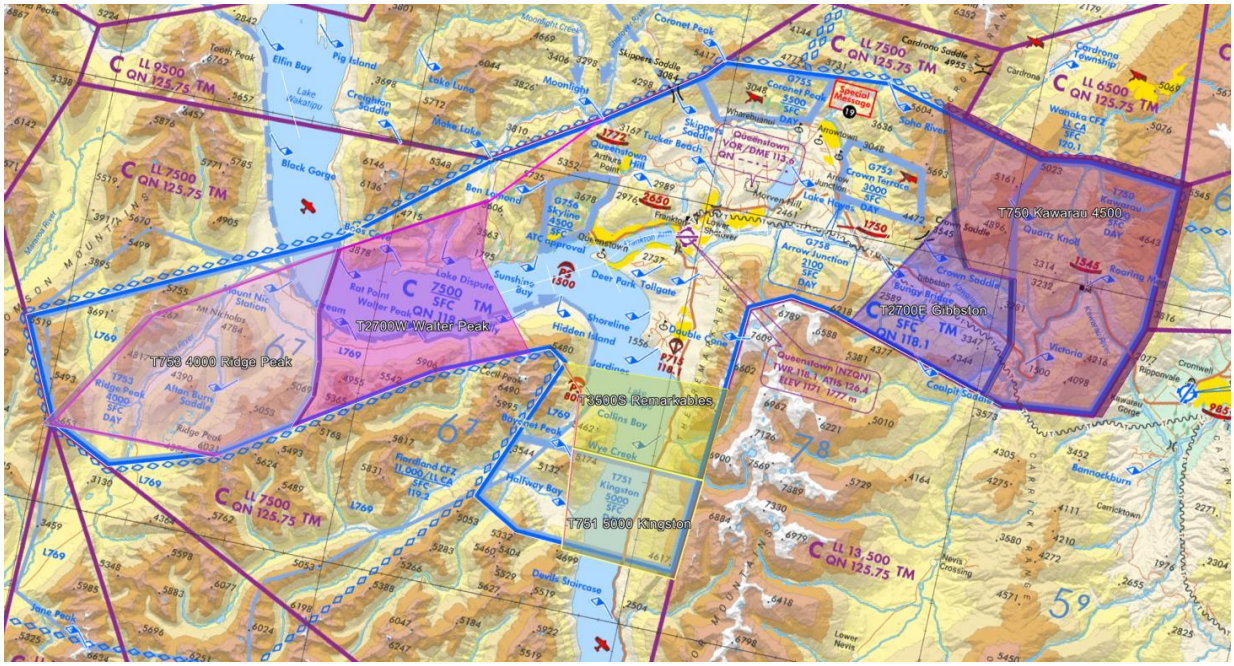
As per an assessment completed by Aeropath on 22 March 2024 (see attached) portions of the current QN CTR/C can be released from controlled airspace as they are not required for IFR flight path protection.

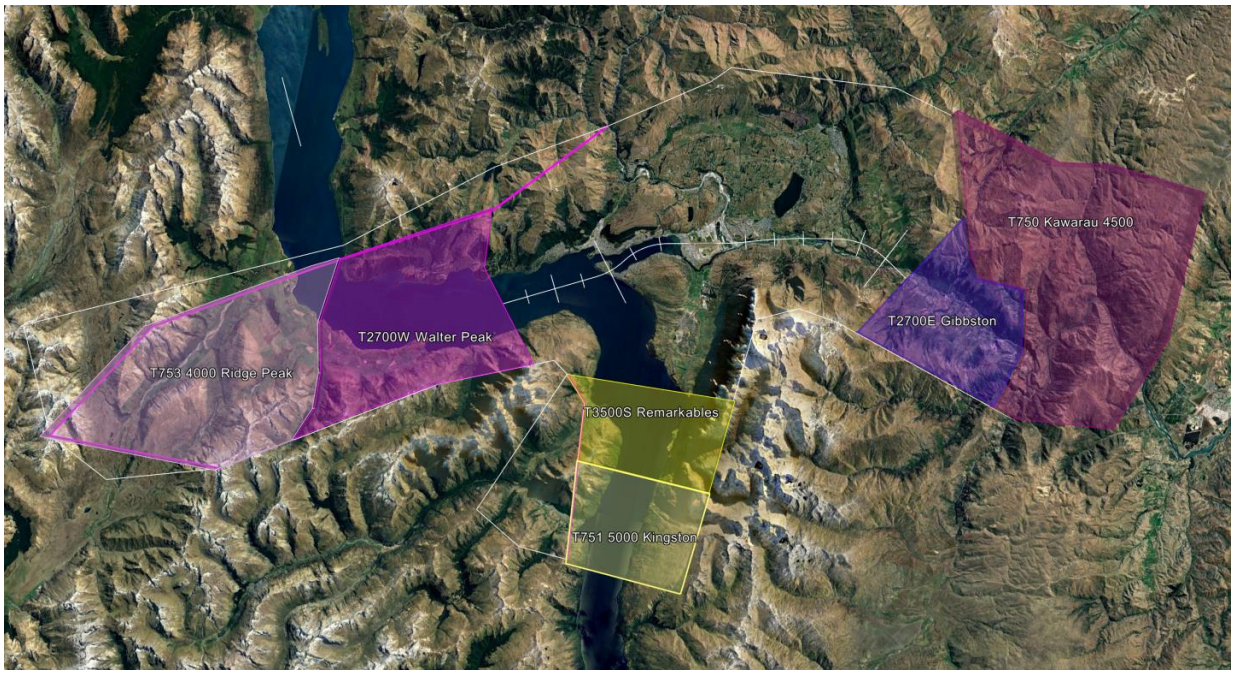
Airways is not proposing to release CTR/C in the vicinity of the Crown Saddle due to the complex CTR/C boundary created to facilitate the release of a relatively small area of CTR/C.

A previously established temporary GAA at Moke Lake NZG759 (Refer NON-AIRAC AIP SUPP EFF 23 DEC 24) will be removed from use on 11 June 2025. NZG759 was

temporarily established to better manage ATS workload issues with VFR traffic in this area.

This portion of the QN CTR/C can be permanently released from controlled airspace and in doing so it remains aligned with better management of ATS workload issues.





2. QN CTR/C

2.1 QN CTR/C A756 SFC/7500ft is currently defined as:

NZA756 1 445553.90S 1690748.70E GRC
NZA756 2 450102.90S 1690734.80E GRC
NZA756 3 450424.10S 1690554.00E GRC
NZA756 4 450445.40S 1690120.10E GRC
NZA756 5 450430.40S 1690009.10E GRC
NZA756 6 Ben Cruachans, 6217 ft 450247.20S 1685158.90E GRC
NZA756 7 450236.40S 1685003.30E GRC
NZA756 8 450316.50S 1684809.30E GRC
NZA756 9 450924.80S 1684732.40E GRC
NZA756 10 451255.80S 1684711.30E GRC
NZA756 11 451238.30S 1683903.60E GR
NZA756 12 451141.60S 1683639.70E GRC
NZA756 13 450911.60S 1683805.20E GRC
NZA756 14 450629.00S 1683937.90E GRC
NZA756 15 450607.00S 1683851.40E GRC
NZA756 16 Walter Peak, 5904 ft 450743.70S 1683335.40E GRC
NZA756 17 450920.00S 1683004.60E GRC
NZA756 18 Ridge Peak, 6030 ft 451207.20S 1682358.40E GRC
NZA756 19 451318.70S 1681834.80E GRC
NZA756 20 451213.40S 1681524.00E GRC
NZA756 21 451007.40S 1681359.60E GRC
NZA756 22 450840.90S 1681301.60E GRC
NZA756 23 450344.00S 1682736.40E GRC
NZA756 24 Moke Lake 450001.10S 1683403.20E GRC
NZA756 25 Moonlight 445749.50S 1683903.20E GRC
NZA756 26 445534.30S 1684333.10E GRC
NZA756 27 Coronet Peak, 5417 ft 445456.90S 1684423.00E GRC
NZA756 28 445435.70S 1685010.90E GRC
NZA756 29 Soho 445427.10S 1685231.30E GRC
NZA756 30 445511.20S 1685633.90E GRC
NZA756 31 Queensberry Hill 445556.10S 1690041.40E GRC
NZA756 32 445539.50S 1690305.40E GRC.

2.2 Proposed CTR definition SFC/7500ft (changes in *italics*)

NZA756 1 445553.90S 1690748.70E GRC
NZA756 2 450102.90S 1690734.80E GRC
NZA756 3 450424.10S 1690554.00E GRC
NZA756 4 450445.40S 1690120.10E GRC
NZA756 5 450430.40S 1690009.10E GRC
NZA756 6 Ben Cruachans, 6217 ft 450247.20S 1685158.90E GRC
NZA756 7 450236.40S 1685003.30E GRC
NZA756 8 450316.50S 1684809.30E GRC
NZA756 9 450610.20S 1684753.80E GRC
NZA756 10 450924.80S 1684732.40E GRC
NZA756 11 451255.80S 1684711.30E GRC
NZA756 12 451243.60S 1684130.0E GRC (north of 4699ft feature)
NZA756 13 450915.90S 1684101.80E GRC (north of 5174ft feature)
NZA756 14 450724.00S 1684046.0E GRC (west of Collins Bay)
NZA756 15 450629.00S 1683937.90E GRC
NZA756 16 450607.00S 1683851.40E GRC
NZA756 17 450625.50S 1683758.60E GRC
NZA756 18 Walter Peak, 5904 ft 450743.70S 1683335.40E GRC
NZA756 19 450920.00S 1683004.60E GRC
NZA756 20 Ridge Peak, 6030 ft 451207.20S 1682358.40E GRC
NZA756 21 451213.40S 1681524.00E GRC (5653ft feature)
NZA756 22 450750.30S 1681914.60E GRC (6267ft feature)
NZA756 23 450413.50S 1682743.9E GRC (coastline north of Rat Point)
NZA756 24 450128.80S 1683425.40E GRC (small lake beside road south of Moke Lake)
NZA756 25 Moonlight 445749.50S 1683903.20E GRC
NZA756 26 445534.30S 1684333.10E GRC
NZA756 27 Coronet Peak, 5417 ft 445456.90S 1684423.00E GRC
NZA756 28 445435.70S 1685010.90E GRC
NZA756 29 Soho 445427.10S 1685231.30E GRC
NZA756 30 445451.70S 1685441.30E GRC (current CTR boundary east of 5604ft feature)
NZA756 31 445511.20S 1685633.90E GRC
NZA756 32 Queensberry Hill 445556.10S 1690041.40E GRC
NZA756 33 445539.50S 1690305.40E GRC

2.3 Revised CTR boundary graphics

Proposed boundary revision (crimson) reduces QN CTR/C to the west and south-west.

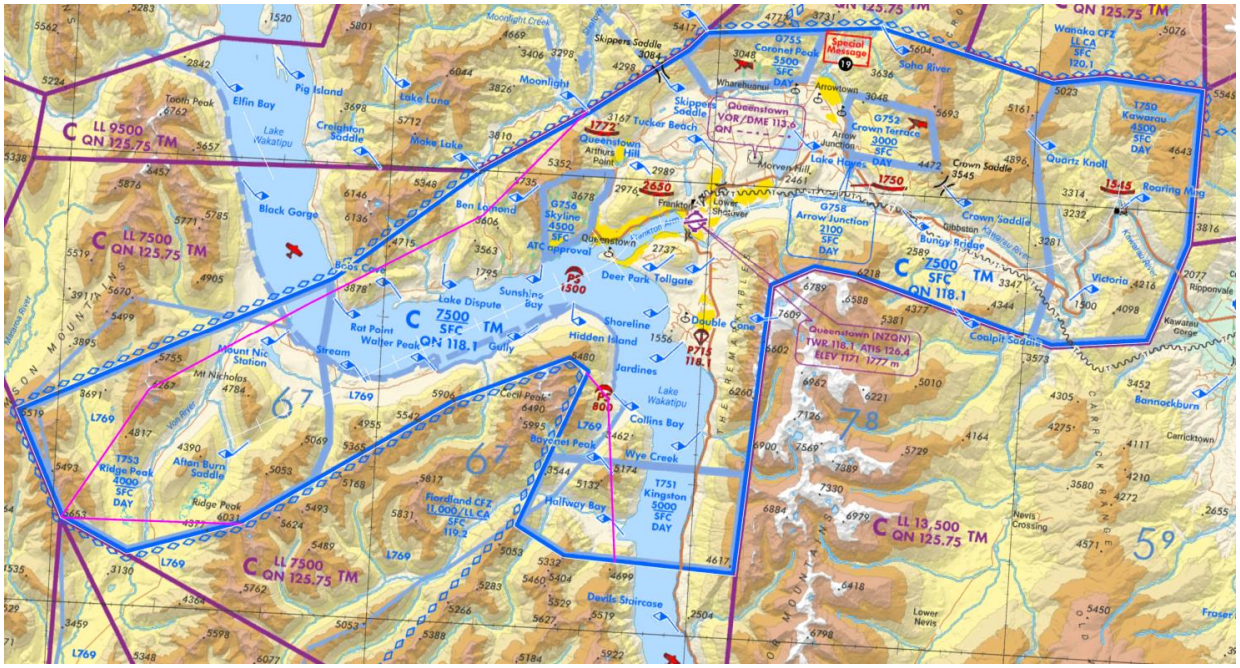


Figure 1: Proposed QN CTR/C SFC/7500ft (VNC)

Figure 2: Proposed QN CTR/C SFC/7500ft (Satellite)

3. Proposed Transit Lanes Changes in QN CTR/C

The QN CTR/C is unique due to high mountainous terrain within the CTR/C. The requirements of having controlled airspace to protect IFR Flight Paths, together with the limitation that CTA airspace cannot extend closer than 700ft from terrain, creates an unusually large CTR both laterally and vertically (approx. 40 NM wide and 20NM North to South).

Substantial volumes of airspace within the CTR are not required for the protection of IFR Flight Paths but are captured within the total lateral and vertical limits required. Three Transit Lanes (designed under CAA airspace design guidelines) already exist within the QN CTR/C.

High volumes of VFR traffic are forced into valley systems that are also occupied by IFR procedures, though at different altitudes. With QN CTR being Class C airspace, separation requirements between IFR and VFR aircraft become complex and significantly increases Controller workload (refer to Queenstown Tower VFR Geographic Separation Statements).

Many VFR aircraft are subject to restrictions under a control service when operating in airspace that is not required for IFR procedures; VFR interactions must also be managed by ATC, further increasing ATC and Pilot workload.

Part 71.57 allows the Director to designate a portion of controlled airspace as a VFR transit lane for the purposes of either or both:

- Separating transiting VFR traffic from arriving and departing flights
- Permitting transiting VFR traffic to operate within the VFR transit lane without requiring an ATC clearance.

Noting that:

- VFR transit lanes must be clear of airspace that encompasses IFR arrival and departure procedures within that controlled airspace
- Buffer zones are provided between nominal flight paths of arriving and departing IFR flights and each VFR transit lane (as per 2011 CAA Airspace design guide; buffers may be reduced when a prominent geographical feature defines the boundary of the transit lane).

Airways, in consultation with QN local VFR airspace users (QMUG), have identified additional portions of the QN CTR/C that could be released from controlled airspace by day as Transit Lanes. Such a change would allow freedom of operations for VFR traffic transiting in the area, outside the immediate vicinity of QN aerodrome, which in turn will significantly reduce workload and complexity for QN ATC through less interaction with those VFR aircraft. This in turn will reduce loading on the QN Tower control frequencies, benefitting all aircraft operations.

Transit Lanes exist around NZL of various shapes and sizes, in various locations within controlled airspace. The management of aircraft operations with respect to Transit Lane use is well known/understood. Abutting Transit Lanes of different levels have the same design style/complexity as abutting controlled airspace boundaries.

It should be noted that visual lines of sight from the QN Control Tower are limited due to terrain. This has a direct consequence that a prime Tower Control tool of visual separation is not able to be applied in substantial portions of the CTR/C.

Proposed changes align with future Queenstown aerodrome masterplan developments.

The designation of additional Transit Lanes, similar to those currently in the East, West and South of the QN CTR/C, simplifies airspace for ATC and pilots.

Where CAA airspace design guide buffers have been reduced due to the location of a prominent geographical feature, this has been specifically discussed with QMUG operators to ensure such features are readily identifiable, unable to be mistaken and from a pilots' perspective, are acceptable for use.

Changes to Existing QN CTR/C Transit Lanes

3.1 T753 Ridge Peak SFC/4000ft

Reduced in size as a consequence of the QN CTR/C reduction. No additional separation evaluation is required as no additional transit lane airspace is required.

Current T753 definition SFC/4000ft

NZT753 1 450344.00S 1682736.40E GRC

NZT753 2 Rat Point 450430.70S 1682742.90E GRC

NZT753 3 450622.30S 1682724.90E GRC

NZT753 4 450810.00S 1682755.70E GRC

NZT753 5 450918.30S 1682800.00E GRC

NZT753 6 451035.40S 1682720.00E GRC

NZT753 7 Ridge Peak, 6030 ft 451207.20S 1682358.40E GRC

NZT753 8 451318.70S 1681834.80E GRC

NZT753 9 Mt Lookup, 5653 ft 451213.40S 1681524.00E GRC

NZT753 10 450840.90S 1681301.60E GRC

Proposed T753 definition SFC/4000ft

NZT753 1 450413.50S 1682743.9E GRC (coastline north of Rat Point)

NZT753 2 Rat Point 450430.70S 1682742.90E GRC

NZT753 3 450622.30S 1682724.90E GRC

NZT753 4 450810.00S 1682755.70E GRC

NZT753 5 450918.30S 1682800.00E GRC

NZT753 6 451035.40S 1682720.00E GRC

NZT753 7 Ridge Peak, 6030 ft 451207.20S 1682358.40E GRC

NZT753 8 451213.40S 1681524.00E GRC (5653ft feature)

NZT753 9 450750.30S 1681914.60E GRC (6267ft feature)

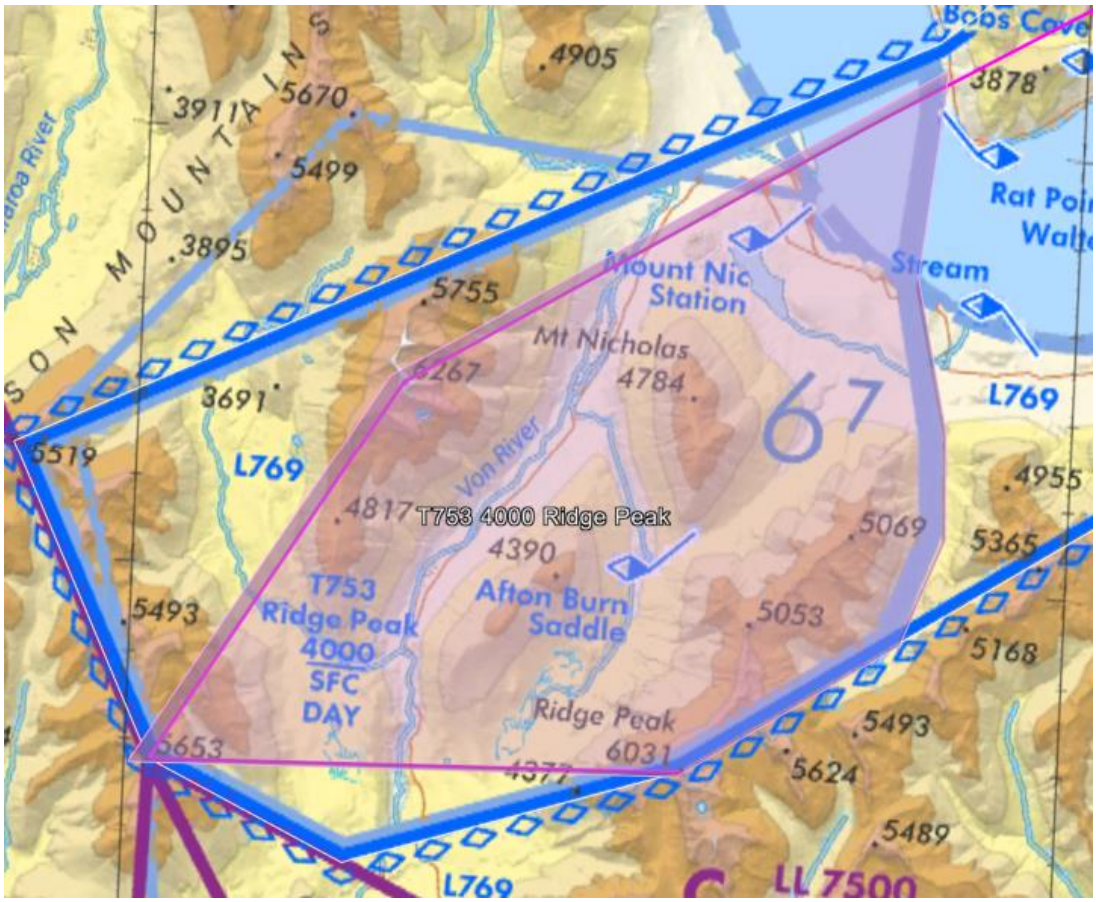


Figure 3: Proposed modified T753 Ridge Peak SFC/4000ft

3.2 T751 Kingston SFC/5000ft

Reduced in size as a consequence of the QN CTR/C reduction. No additional separation evaluation is required as no additional transit lane airspace is required.

Current T751 definition SFC/5000ft

NZT751 1 450924.80S 1684732.40E GRC

NZT751 2 451255.80S 1684711.30E GRC

NZT751 3 451238.30S 1683903.60E GRC

NZT751 4 451141.60S 1683639.70E GRC

NZT751 5 450911.60S 1683805.20E GRC

Proposed T751 definition SFC/5000ft

NZT751 1 450924.80S 1684732.40E GRC

NZT751 2 451255.80S 1684711.30E GRC

NZT751 3 451243.60S 1684130.0E GRC (north of 4699ft feature)

NZT751 4 450915.90S 1684101.80E GRC (north of 5174ft feature)

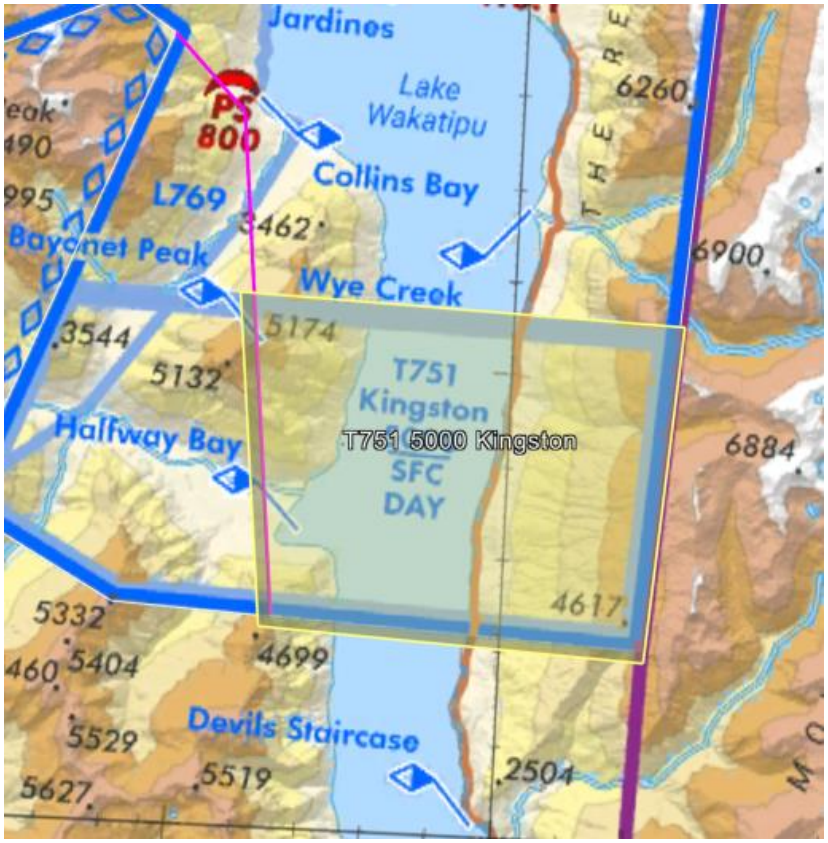


Figure 4: Proposed T751 Kingston SFC/5000ft

3.3 T750 Kawarau

Increased lateral dimensions but remains SFC/4500ft.

Current T750 definition

NZT750 1 445553.90S 1690748.70E GRC

NZT750 2 450102.90S 1690734.80E GRC

NZT750 3 450424.10S 1690554.00E GRC

NZT750 4 450445.40S 1690120.10E GRC

NZT750 5 450430.40S 1690009.10E GRC

NZT750 6 450234.60S 1690057.40E GRC

NZT750 7 Quartz Knoll, 5226 ft 445737.50S 1685939.80E GRC

NZT750 8 Queensberry Hill, 5023 ft 445556.10S 1690041.40E GRC

NZT750 9 445539.50S 1690305.40E GRC

Proposed T750 definition

NZT750 1 445553.90S 1690748.70E GRC

NZT750 2 450102.90S 1690734.80E GRC

NZT750 3 450424.10S 1690554.00E GRC

NZT750 4 450445.40S 1690120.10E GRC

NZT750 5 450430.40S 1690009.10E GRC

NZT750 6 450234.60S 1690057.40E GRC

NZT750 7 445848.70S 1685944.60E (4896 feature) GRC

NZT750 8 445913.30S 1685544.50E (4472 feature, boundary of G752) GRC

NZT750 9 445451.70S 1685441.30E GRC (current CTR boundary east of 5604ft feature)

NZT750 10 445511.20S 1685633.90E GRC

NZT750 11 Queensberry Hill, 5023 ft 445556.10S 1690041.40E GRC

NZT750 12 445539.50S 1690305.40E GRC

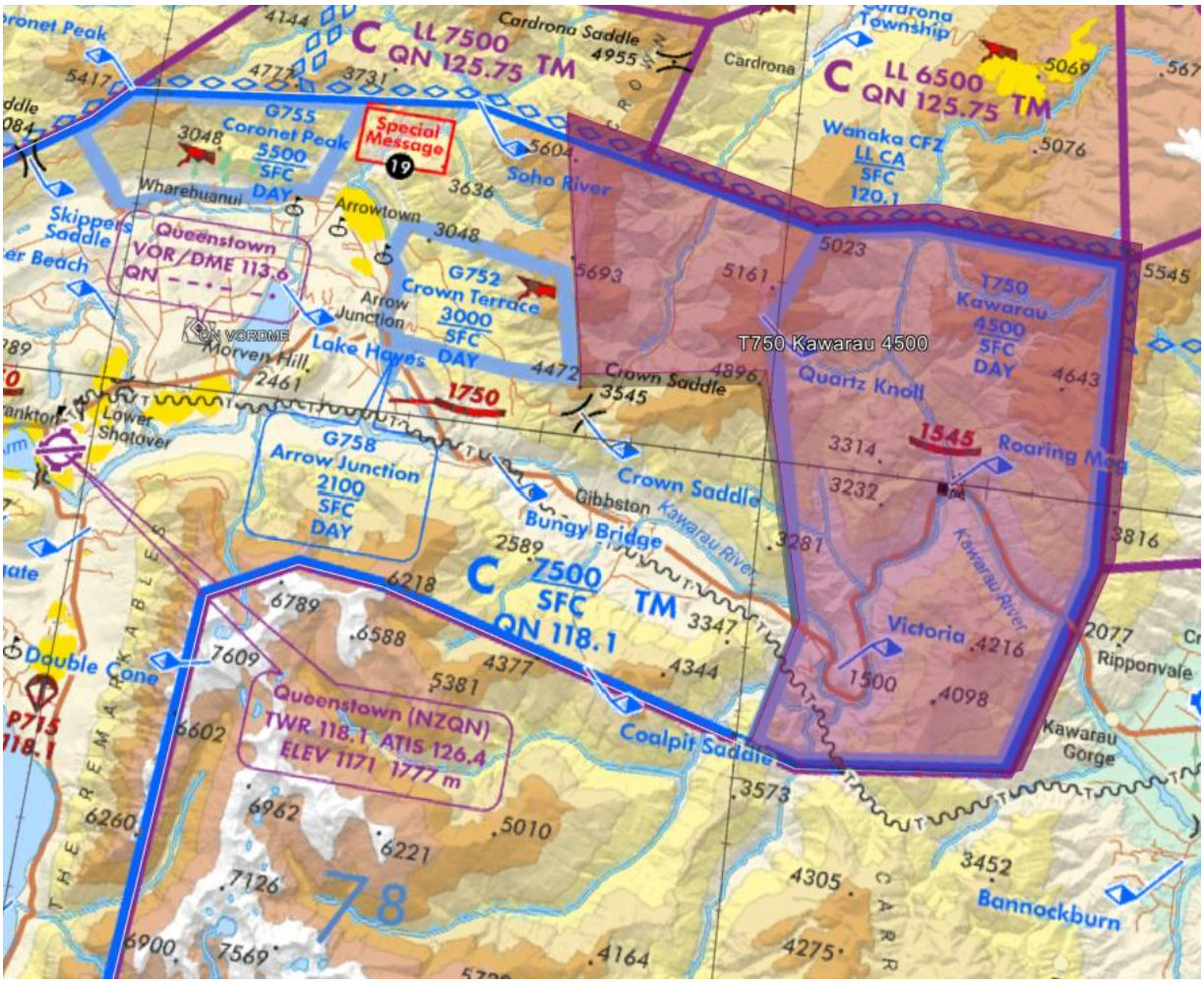


Figure 5: Proposed T750 Kawarau SFC/4500FT

New Transit Lanes

3.4 T2700W Walter Peak SFC/2700ft

Proposed Definition

NZTXXX 1 450128.80S 1683425.40E GRC (small lake beside road south of Moke Lake)

NZTXXX 2 450335.30S 1683441.80E GRC (1795 feature)

NZTXXX 3 450625.50S 1683758.60E GRC (though Gully VRP)

NZTXXX 4 Walter Peak, 5904 ft 450743.70S 1683335.40E GRC

NZTXXX 5 450920.00S 1683004.60E GRC

NZTXXX 6 451035.40S 1682720.00E GRC

NZTXXX 7 450918.30S 1682800.00E GRC

NZTXXX 8 450810.00S 1682755.70E GRC

NZTXXX 9 450622.30S 1682724.90E GRC

NZTXXX 10 Rat Point 450430.70S 1682742.90E GRC

NZTXXX 11 450413.50S 1682743.9E GRC (coastline north of Rat Point)

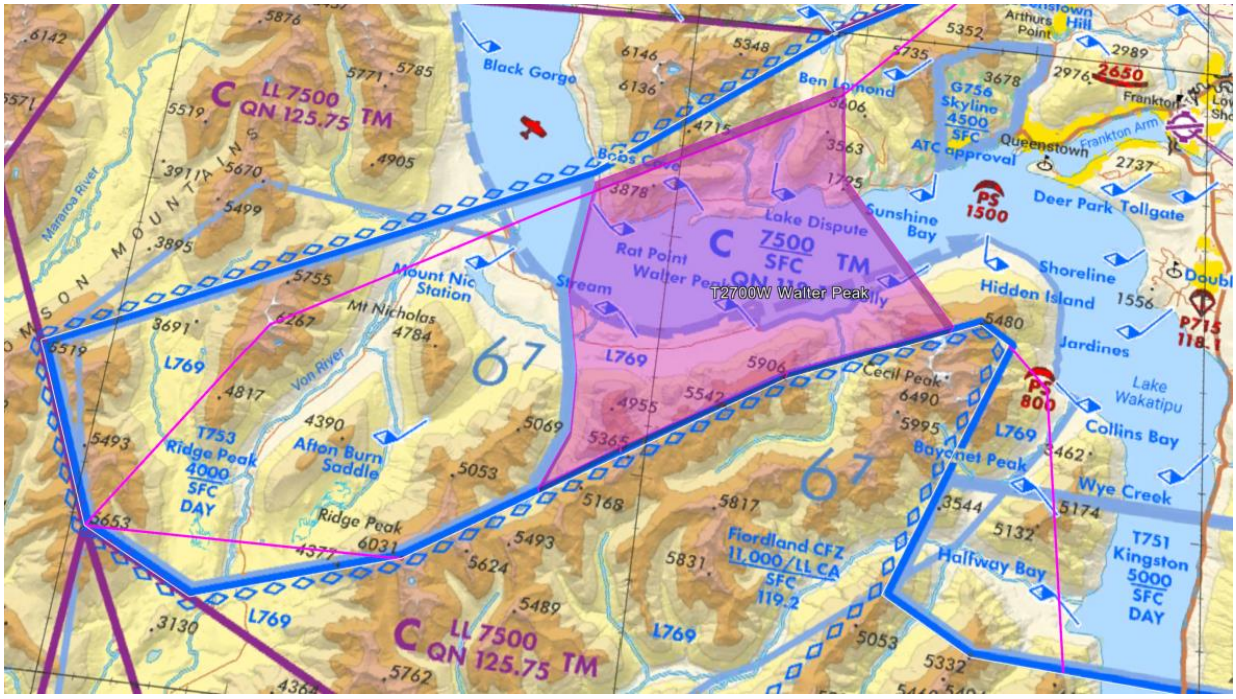


Figure 6: Proposed T2700W Walter Peak SFC/2700ft

Procedures Assessed

The controlling Instrument Flight Procedures for the proposed Walter Peak Transit Lane are the RNP Y and Z approach for RWY05, the RNP Y and Z RWY23 Missed Approaches, the RNP045 approach and the BOTNI1 SID.

Note: The Cat H RNP045 procedure would not be separated from T2700W.

RNP Y & Z RWY23 Missed Approach - are laterally separated from the lateral protection areas of RNPx2 + 1 NM.

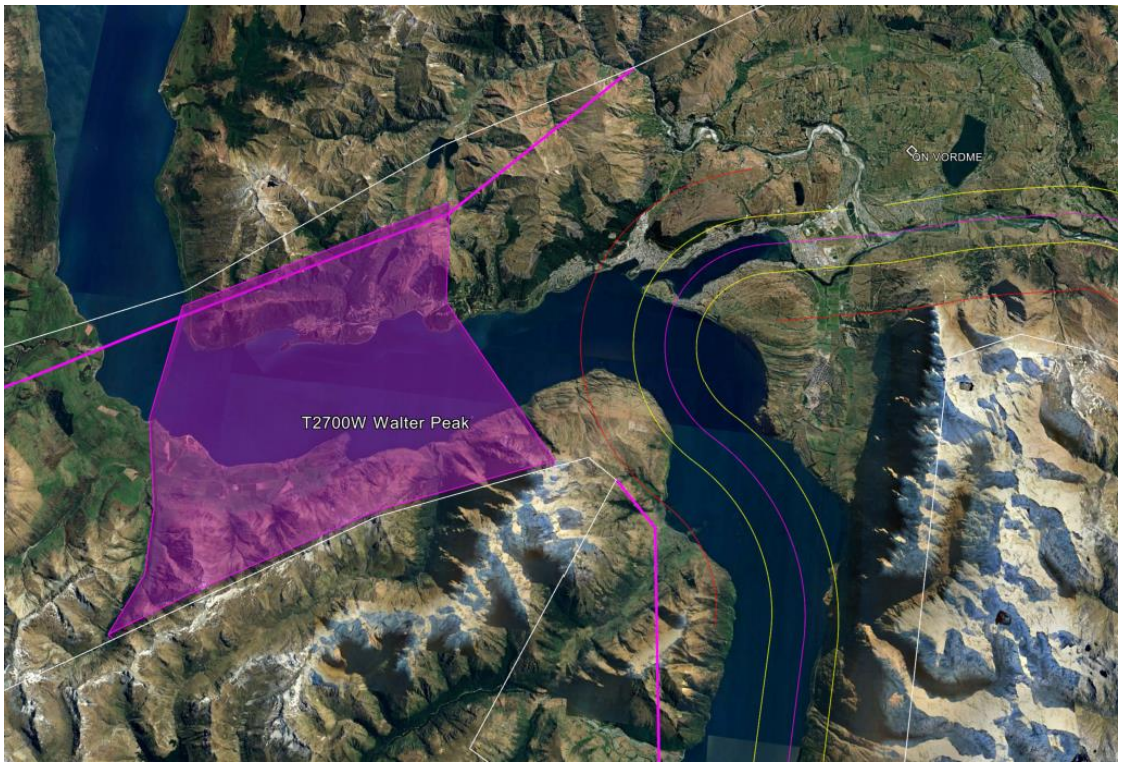


Figure 7: RNP Y&Z RWY23 MA vs T (Walter Peak)

RNP Y & Z RWY05 - OMUBO (FAF) is not below 3100ft, so 500ft above proposed transit lane upper limit of 2700ft will be 0.3NM prior to OBUBO at procedure 3.2° approach gradient.

The proposed controlling boundary of the Walter Peak transit lane is a direct line between two prominent geographical features, Gully and the 1795ft feature on the north lake shore.

On nominal flight path at the 500ft separation point above T2700W there is a 1.1NM buffer from the transit lane. This reduces to 0.75NM at the full width of the lateral protection area.

The co-submitters confirm that in their view, given the prominent geographical features that define this boundary, a slightly reduced buffer than 1NM at the limits of the lateral protection area would be acceptable.

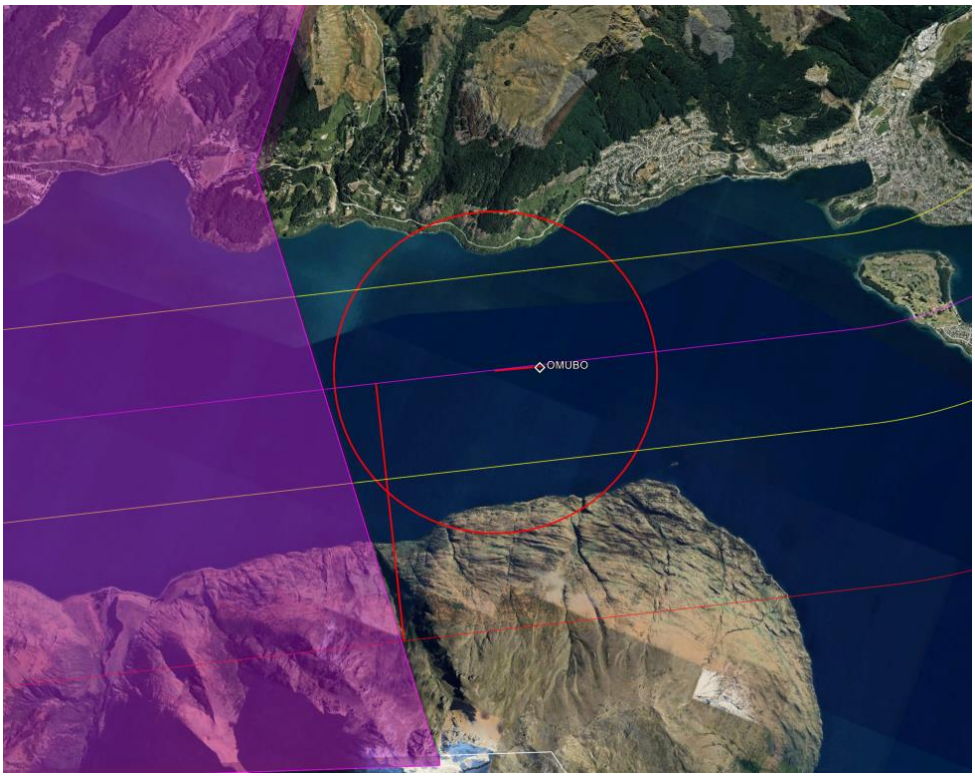


Figure 8: Buffer Area for RNP Y&Z RWY05 vs proposed T2700W

BOTNI1 SID - Crosses QN589 at or above 2250ft. 950ft of climb required to reach separation level above T2700W requiring 1.83NM. Vertical separation point is reached prior to a 1NM buffer.

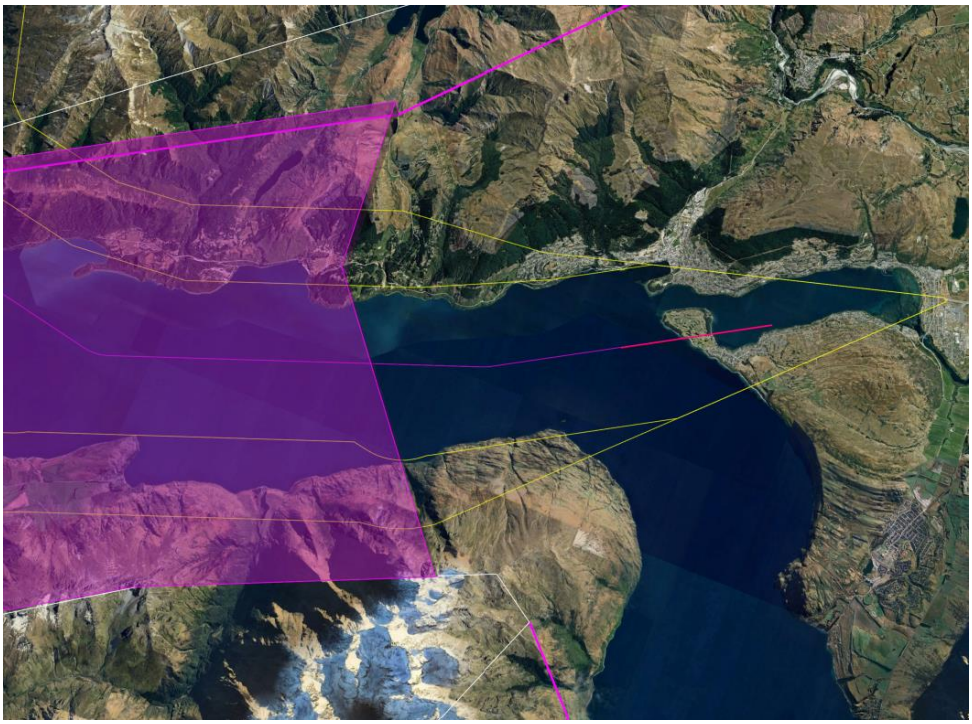


Figure 9 BOTNI1 SID vs Proposed T2700W

3.5 T3500S Remarkables SFC/3500ft

Proposed Definition

NZTXXX 1 450610.20S 1684753.80E GRC

NZTXXX 2 450924.80S 1684732.40E GRC

NZTXXX 3 450915.90S 1684101.80E GRC (north of 5174ft feature)

NZTXXX 4 450724.00S 1684046.0E GRC (west of Collins Bay)

NZTXXX 5 450629.00S 1683937.90E GRC

Figure 10: Proposed T3500S Remarkables SFC/3500ft

Note: Cat H approach RNP330 and Cat H departure UNSEG1 are not separated from T3500S. These procedures are also not separated from the current T751 Kingston. Helicopters typically plan to leave controlled airspace.

Procedures Assessed

RNP Y & Z RWY23 - Protection from at or above 4000ft at NOLUV.

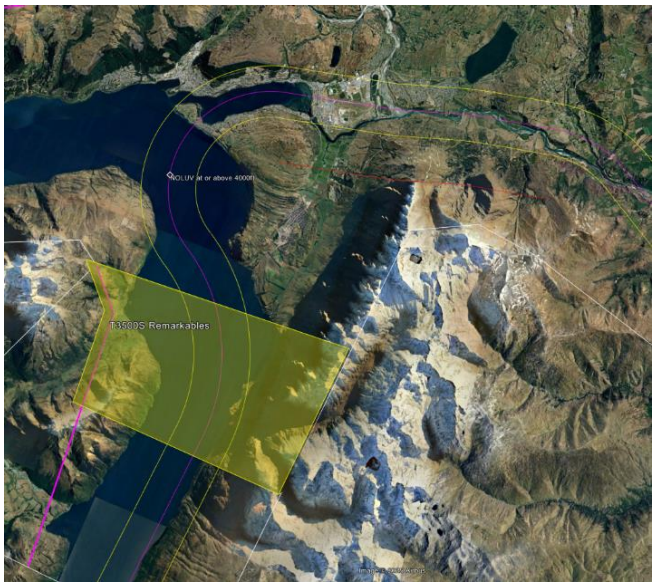


Figure 11 RNP Y & Z RWY23 vs proposed T3500S

RNP Z RWY05 Approach - MDA 2324ft, 1676ft required to climb above proposed T3500S at default MA airspace containment gradient 5% (300ft/nm) requires 5.6NM.

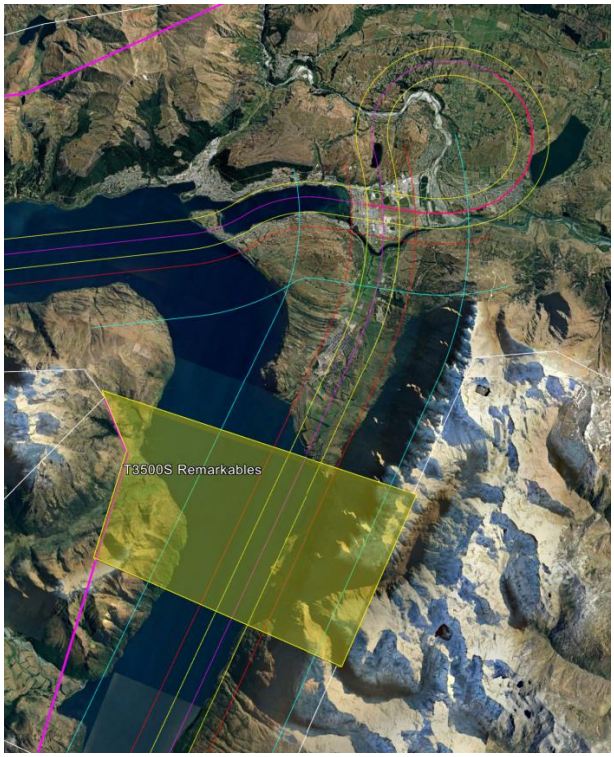


Figure 12: RNP Z RWY05 vs proposed T3500S

The Jardines PDS will remain wholly contained within QN CTR/C controlled airspace for protection of the PDS area.

3.6 T2700E Gibbston SFC/2700ft

Proposed Definition

NZTXXX 1 445848.70S 1685944.60E (4896 feature) GRC

NZTXXX 2 450234.60S 1690057.40E GRC

NZTXXX 3 450430.40S 1690009.10E GRC

NZTXXX 4 Ben Cruachans, 6217 ft 450247.20S 1685158.90E GRC

NZTXXX 5 445913.30S 1685544.50E (4472 feature, boundary of G752)

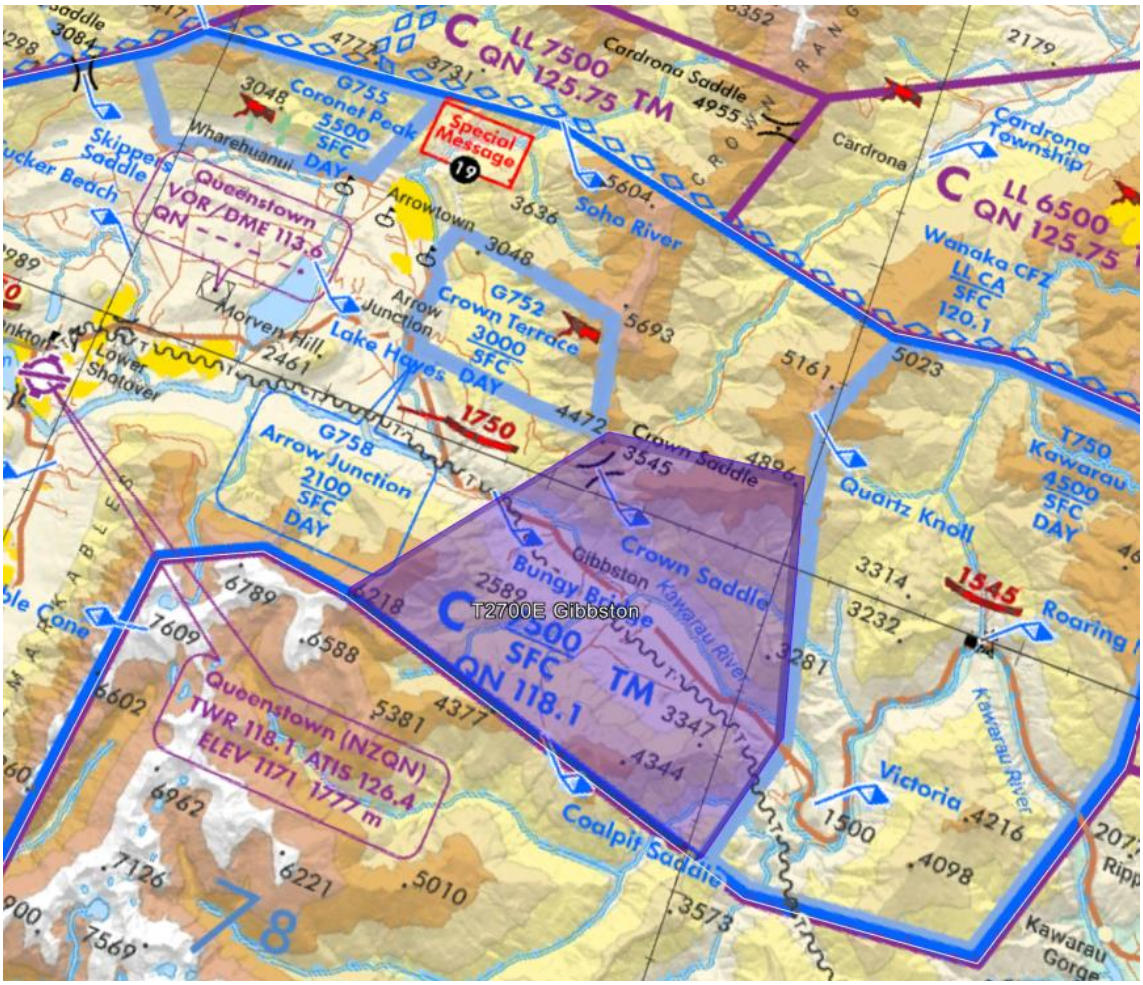


Figure 13 Proposed T2700E Gibbston SFC/2700ft

Procedures Assessed

RNP Y & Z RWY23 - At or above 3300ft at LARAV (FAF). Vertical separation point versus proposed T2700E is 0.3NM closer to QN at procedure approach angle of 3.2°.

At the boundary of the transit lane Gibbston Valley narrows significantly. Ben Cruachans, 6217 ft defines the boundary to the south, Bungy Bridge VRP in the centre of valley, and the 4472ft feature just Northwest of Crown Saddle to the north.

Such strong predominant geographical features will allow a reduction in the standard 1NM buffer from the vertical separation point. Buffer will be reduced to 0.5NM on the nominal track to 0.35NM at the limit of the lateral protection area.

The co-submitters confirm in their view that given such strong predominant geographical features that define this boundary, that a reduced buffer at the limits of the lateral protection area would be acceptable.

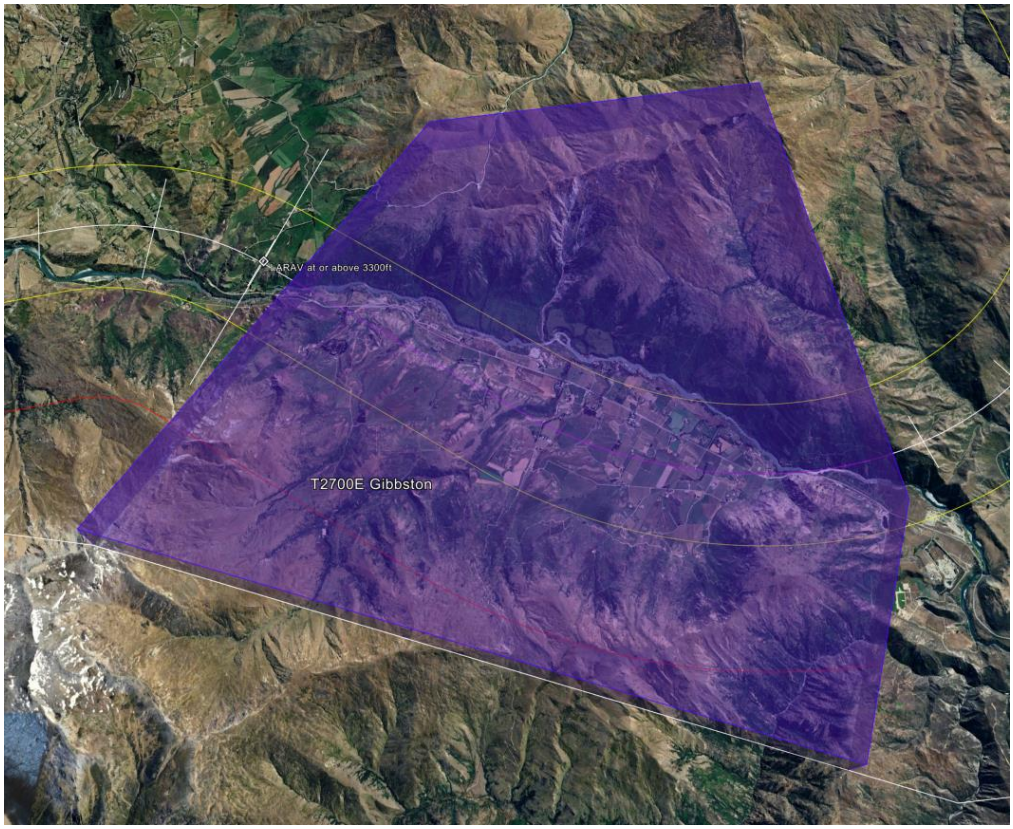


Figure 14: RNP Y & Z RWY23 vs proposed T2700E

SID DOVMA4 - Laterally separated outside of the protection area.

Figure 15: DOVMA4 SID vs proposed T2700E

SID IPNOR6 - Laterally separated outside of the protection area.

Figure 16: IPNOR5 SID vs proposed T2700E

SID ANPOV5 - Laterally separated outside of the protection area

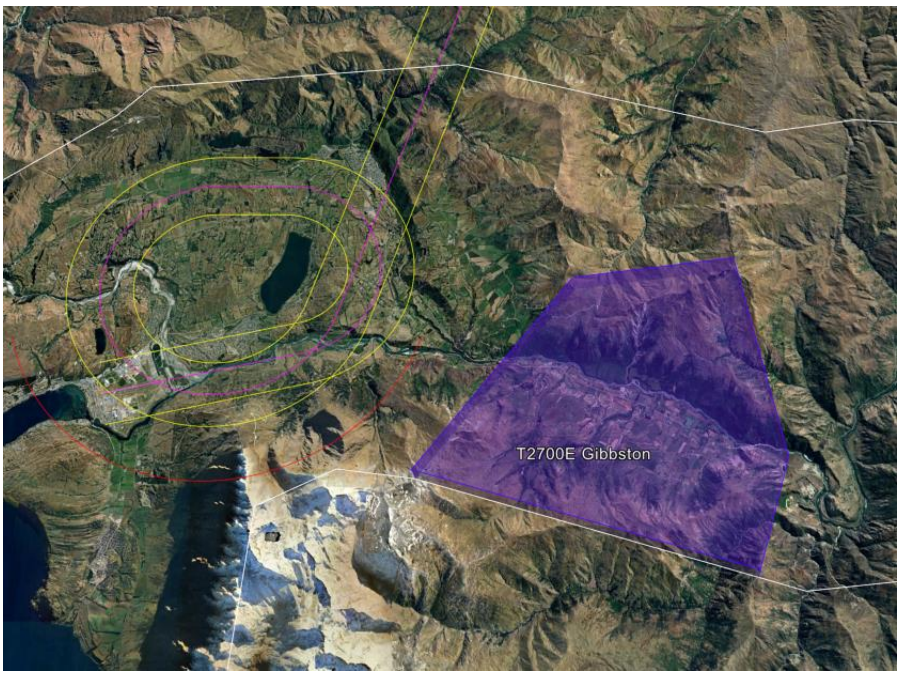


Figure 17: ANPOV5 SID vs proposed T2700E

SID BIXAL2 - Cross QN736 (IDF) at or above 1750ft, 1450ft to reach separation level above proposed T2700E at 570ft/NM requires 2.6NM. Vertical separation includes 1 NM buffer.

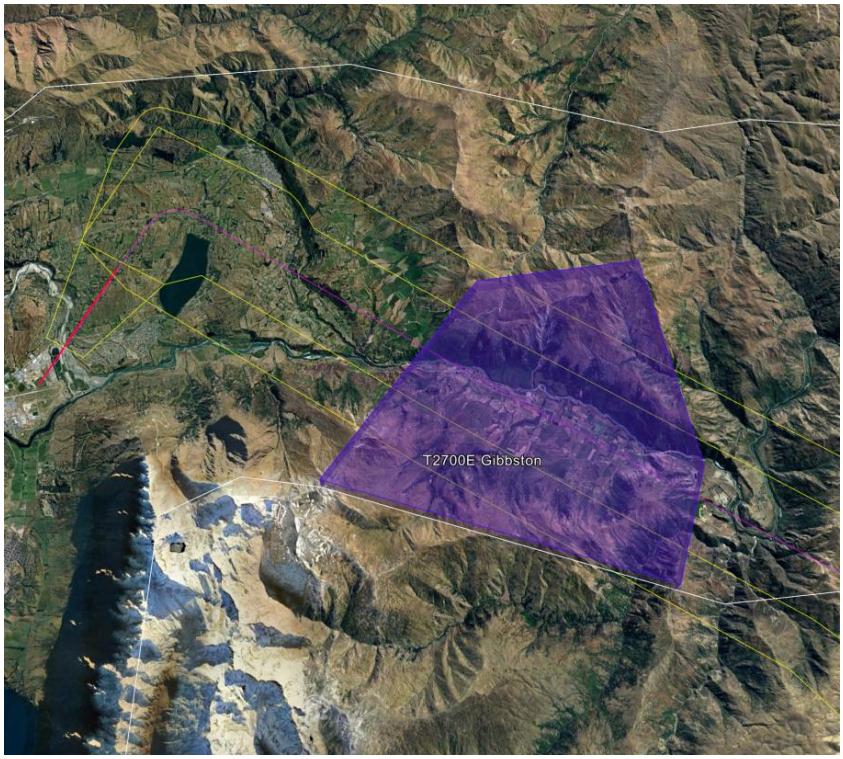


Figure 18: BIXAL2 SID vs proposed T2700E

RNP045 - MDA 1850ft, 1350ft to reach separation level above proposed T2700E at 8.7% (530ft/NM) procedure required gradient, requiring 2.55NM.

Figure 19: RNP045 vs proposed T270

4. Considerations

4.1 Transponder Mandatory Airspace

Part 71.201 allows the Director to designate any portion of special use airspace as transponder mandatory airspace if the Director determines that the traffic density in the airspace requires the operation of transponders to reduce the risk of an airborne collision with those aircraft that are required to be fitted with an airborne collision system.

The Director may also designate any portion of a control zone as transponder mandatory airspace if the Director determines that the traffic density in the airspace requires the operation of transponders to reduce the risk of an airborne collision with those aircraft that are required to be fitted with an airborne collision avoidance system.

Part 71.157 allows the Director to designate a portion of uncontrolled airspace as a mandatory broadcast zone if, due to traffic density or special circumstances, the pilots within that zone are required to make a broadcast of their position and intentions.

A Mandatory Broadcast Zone is a type of Special Use Airspace.

Part 71.57 allows the Director to designate a portion of control zone as a VFR transit lane.

Compared to other Class C aerodromes in NZL at times there is high density VFR traffic within the QN CTR/C, including within the proposed transit lanes. Given this high density of traffic it would appear prudent to find a pathway to designate these QN Transit Lanes as transponder mandatory. The CAA GAP booklet on airspace guidance already encourages pilots to use transponders while operating in Transit Lanes, and in all but exceptional cases traffic to and from Queenstown Airport fly with operable transponders.

There appear to be two possible pathways under Part 71:

1. The Director designates the transit lanes, being uncontrolled airspace, as mandatory broadcast zones, with the same coincident dimensions as the transit lanes. The Director then designates these Mandatory Broadcast Zones as being transponder mandatory.
2. The Director designates the transit lanes directly as being transponder mandatory as being a portion of controlled airspace (the same qualification as a “portion of a control zone” as used to define transit lanes).

4.2 Transit Lane Frequency Assignment

QMUG operators express a desire to have a specific frequency allocated to each Transit Lane to ensure that flight operations within each Transit Lane are communicating on the same frequency. Senior QMUG members met specifically to discuss frequency assignment considering all aircraft operations in the wider region.

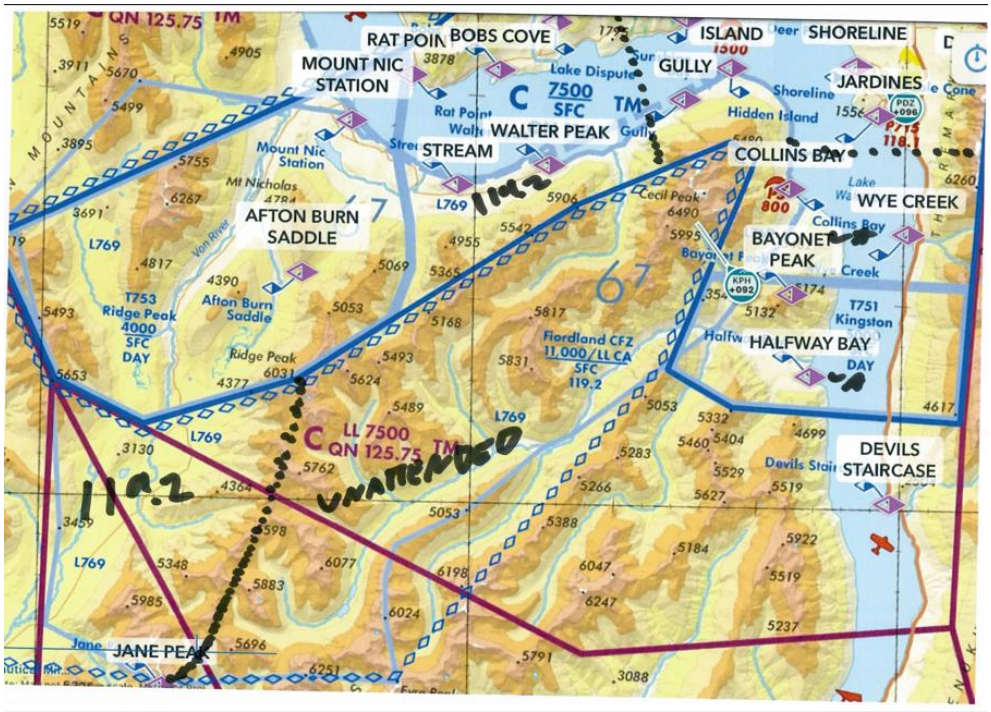


Figure 20 T753 & T2700W Frequency Assignment

Assign 119.2 MHz to T753 and the proposed T2700W Transit Lanes in addition to modifying the current CFZ boundary as indicated in the picture above. (New CFZ boundary line Ridge Peak to Jane Peak).

Assign T751, T750 and the proposed T3500S & T2700E Transit Lanes as unattended/119.1MHz.

4.3 Assessment Assurance

Protection areas and nominal tracks for all procedures have been provided by Aeropath. Determination on portions of the QN CTR/C that can be permanently released to Class G has also been previously supplied by Aeropath.

4.4 No Coincident CTA Change

The proposed change only affects the QN CTR/C dimension. No changes are envisaged to the current QN CTA boundary lines.

5. VRP Changes

Sunshine Bay VRP - no longer has relevance since the introduction of Class C and associated GAA changes. It is located within the GAA G756 so clearing a VFR aircraft to the point causes operational issues. It is also not geographically clear of the RWY 23 departure and missed approaches. Sunshine Bay VRP can be removed, and a new point established: **Kirks VRP**.

The Seven Mile/Closeburn area is well developed and easily visible by a prominent parking area and adjacent reserve close to Moke Lake Road. Its location sits nicely outside the geographic separation boundary for the RWY 23 departure and missed approaches and is well clear of the NZG756 SKYLINE.

Kirks VRP - can also be utilised to define the proposed T2700W transit lane.

Quartz Knoll VRP - is rarely used and not required. It can be removed.

Lake Dispute VRP - is rarely used and not required. It can be removed.

Coronet Peak VRP - another outcome of the IBPS workshops is a change to VFR/GA traffic handling techniques within the QN CTR/C. The group will stop using the area behind and around Coronet Peak to enter and exit the QN CTR/C as it generates crossing flight tracks and interferes with NZG755. To support traffic handling changes, the Coronet Peak VRP can be removed.

Jardines VRP - indicates the old runway strip that is no longer in use. It can be removed. A new VRP should be established further south near Drift Bay: Lumberbox VRP, to better serve as a holding point before reaching Jardines PDS.

5.1 VRPs now in common use

- MT Dewar (new helicopter procedures to be developed),
- Lake Johnson (current helicopter procedure clearance limit),
- Peregrine (for more clarity within the Gibbston Valley,
- Remarkables Knoll, (a frequently used Heli VFR procedure point)
- Shotover Bridge, (a common point easily identifiable and always used, currently annotated on the chart by the words ‘Lower Shotover’)
- Cattle Stop [Flat] which is a regular landing spot for helicopters, just north and outside of the proposed new QN CTR/C boundary. The word Flat can be dropped for ease of charting.
- Doolans Junction (Nevis Valley)
- Gilbert Hut (Stoney Creek)
- Highland Saddle
- Lumberbox

5.2 Remove these VRPs

- Sunshine Bay
- Quartz Knoll
- Lake Dispute
- Coronet Peak
- Jardines

5.3 Add these VRPs

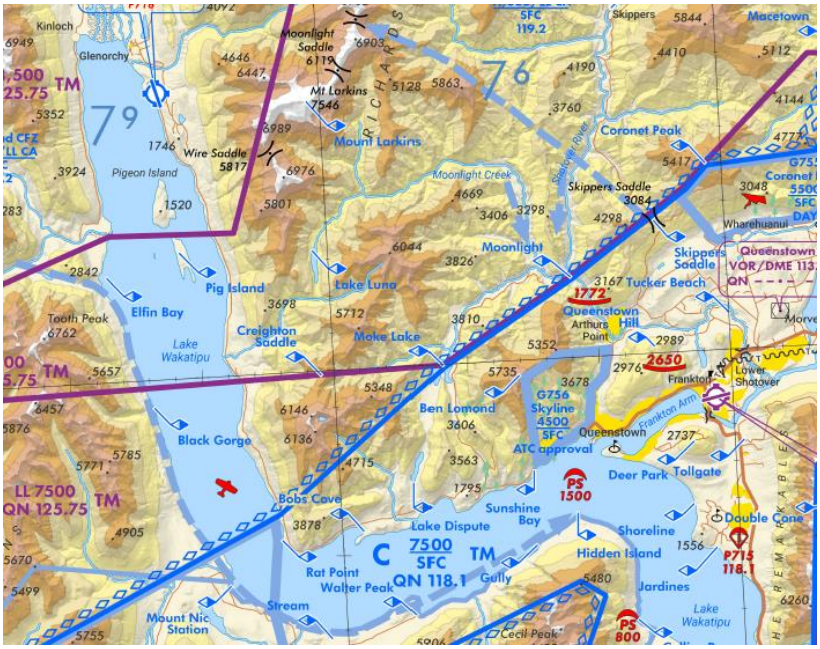
- **Kirks** 45°03’28”S 168°35’27”E (adjacent to Closeburn)
- **Dewar** 44°56'49"S 168°41'07"E (Mt Dewar)
- **Lake Johnson** 44°59'57.6"S 168°43'48.7"E (northern side)
- **Peregrine** 45°01’12”S 168°57’03”E
- **Remarkables Knoll** 45°01’33”S 168°46’38”E
- **Shotover Bridge** 45°00’03”S 168°45’31”E (replaces chart text Lower Shotover)
- **Cattle Stop** 45°019’892”S 168°573’543”E (Cattle Stop Flat)
- **Doolans Junction** 45°05’03”S 168°58’54”E
- **Gilbert Hut** 44°51’44”S 168°36’44” E
- **Highland Saddle** 44°44’23”S 169°00’51”E
- **Lumberbox** 45 06’19S 168 45’23”

6. VNC Arrow Indications

VFR Advisory Routes are indicated on the VNC in the vicinity of Queenstown. These should be removed to better align with future aerodrome masterplan infrastructure changes that will result in a runway dependant routing for VFR traffic. Runway dependant routing means the arrows are no longer relevant; this may occur during the subsequent Nov 2025-November 2026 period.

VFR Advisory Routes to be removed are located as:

- Inbound from Elfin Bay via Black Gorge into the QN CTR/C
- Outbound from Skippers Saddle VRP (away from QN CTR/C).
- Both inbound to Moonlight VRP (towards QN CTR/C).



7. VFR Arrival/Departure Procedures

AIP procedures for NZQN will be removed, modified or added to - subject to approval of proposed changes, and to coincide with their effective date. For example, expect transit lane depiction on IFPs, revised VNC arrows and changes to VFR arrival/departure procedures so as to segregate flows and reduce risk:

- Afton arrival, Moonlight arrival removed.
- Dewar Departure newly generated.
- Remarkables Departure procedure modified.
- Moke Lake/Rat Point Departures modified.
- Hayes Arrival newly generated.

Conclusion & Signatories

This airspace petition has been collaboratively put together by QMUG, QAC and Airways utilising an extension period of consultation with IBPS methodology.

The following senior leaders of those parties sign below, indicating acceptance and support of the petition as documented.

5/5/2025

Todd Grace

Date

Chief Operating Officer

Queenstown Airport

todd.grace@queenstownairport.co.nz

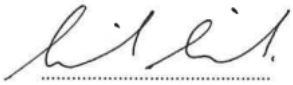
5/5/2025

James Stokes

Date

Chair QMUG

james@glenorchyair.co.nz



05-05-25

Ben Girard

Date

GM ATS

Airways NZL

Ben.Girard@airways.co.nz

Appendix A: Questions & Answers

Q&A relating to proposed Queenstown airspace changes:

No.	Query & Response
1	Does an Airways ISCIA risk rating of 12 accurately depict the risk level (and so safety argument) necessary for a change of this scope and complexity? Airways complies with SMS and ISCIA processes, including internal ATS reviews and then Change Review Board (CRB) endorsement. For CAA SMS needs, an expanded Safety Statement with Risk Register will be provided.
2	Part 71.55 (b) requires a CTR to be as small as practicable for the protection of IFR arrival and departure flightpaths. Also, a previous application for western transit lane at NZQN was declined in 2012; was this considered? Yes. Transit Lanes are proposed by QMUG, QAC and Airways as a means of reducing effective CTR size and frequency congestion, protecting IFRs and VFRs. Yes. But since 2012 the integrated PBN ATM system was introduced (Nov.2012), surveillance coverage was added (2013-14), Class C airspace (2016) and surveillance approach services (2019) were introduced, and traffic levels continued to increase – up 40% from 43,776 in 2012 to 61,199 in 2024.
3	Buffer zones provide airspace containment of nominal arrival/departure flight paths (per the 2011 CAA Airspace design guide), and buffers may be reduced when a prominent geographical feature defines a boundary. Has this guidance been applied? Yes. CAA airspace containment guidance has been applied so that published Instrument Flight Procedures (except Helicopters) are contained within controlled airspace / clear of proposed transit lanes per required buffer zones.
4	Part 71.57 (b) requires a VFR transit lane to be clear of airspace that encompasses IFR arrival and departure procedures within that CTA. Yes – published IFPs are clear of VFR transit lanes per CAA guidance (refer 3). Engine-out procedures are also considered – they are not published IFPs / are not publicly available, and do not require airspace containment. However, mitigations have been considered during airline consultation (refer slide pack). Eastern Transit Lane – a valley along the Kawarau River that reduces in width to Bungy Bridge, a well-known VRP. It is not possible to hold at Bungy Bridge because the valley is too tight. Traffic holds east of Bungy Bridge (if required) and this is SOP. The proposed transit lane has a height below terrain profiles, so the only way in/out of it is from the sides unless an ATC clearance is obtained. In practice traffic operates more than 1NM away (due very tight terrain) unless they have received an ATC clearance to proceed beyond BB inbound. Western Transit Lane – a wider valley across Lake Wakatipu very easily defined by terrain and VRPs. GULLY is a well-known VRP utilised by almost all VFR in the area. As above, due high terrain either side the only way in/out is from the sides unless an ATC clearance is obtained. These areas are within surveillance coverage.

5	Were Part 173 procedure designers Aeropath / GE, and were Airways QN APP consulted? Yes – refer to updated Vol.2 for consultation feedback. Aeropath have reviewed the QN CTR/C Petition and can confirm that Airways have correctly applied the Airspace design criteria with a 500ft vertical buffer and 1NM lateral buffer and the lateral buffer has been correctly reduced using prominent geographic features when required. GE have advised their RNP AR customers that Engine-Out flightpath containment is not assured with proposed Southern Transit Lane (also not assured with existing Kingston transit lane). This is info advice; consultation with GE and their customers highlighted a number of mitigations to this issue. QN APP confirmed that proposed changes have minimal impact on them.
6	Part 71.57 (b) requires a VFR transit lane to be clear of airspace that encompasses IFR arrival and departure procedures within that CTA. Does the assessment of procedures in Vol.1 referring to reduced buffer meet this requirement? What about with respect to Helicopter IFPs? Yes – procedures were assessed against proposed transit lanes according to CAA airspace containment guidance (2011). Co-submitters have agreed on acceptable predominant geographical features, where these are referenced. Heli-Otago are the only operator authorised to use Helicopter IFPs, and they have confirmed agreement with proposed airspace changes. These procedures already vacate CTA. As mitigation all transit lanes will be placed on all IFPs at QN.
7	Has there been any consideration of risk associated with Proposed T3500W vs the PDS at Jardines? Yes – NZONE have confirmed that they are ok with the change. An MOU is in draft and will be adjusted accordingly if T3500 is approved. GA operators consulted amongst themselves on how this is best handled, and it is referred to in Vol 1 s4.2 TL Frequency Assignment.
8	Is there any evidence that prominent geographical features used to allow a reduction in the standard 1 NM buffer, per CAA airspace containment guidance (2011), are suitable? Has Aeropath been involved in this? Co-submitting aircraft operators have confirmed that chosen PGFs are suitable. Yes. Aeropath have reviewed the QN CTR/C Petition and can confirm that Airways have correctly applied the Airspace design criteria with a 500ft vertical buffer and 1NM lateral buffer and the lateral buffer has been correctly reduced using prominent geographic features when required.
9	Part 71.201 Transponder Mandatory Airspace – does this permit a transit lane to be designated as Transponder Mandatory, or would a Rule exemption be required? Part 71.201 specifies that a control zone, or portion of, may be designated as transponder mandatory airspace if it is determined that traffic density requires the operation of transponders to reduce the risk of an airborne collision with aircraft that are required to be fitted with an airborne collision avoidance system. Proposed transit lanes are active by day in a portion of the designated control zone. Traffic density is significant at QN, and transponders would reduce the risk of airborne collision with TCAS aircraft. I.e. an exemption should not be required.

10	Confirm QN CTR/C release to Class G has been checked by Aeropath/GE? Yes – Aeropath confirmation email is in Vol.2 ver.2, and GE assessment has alerted airlines to potential for Engine-Out containment issue (similar to existing at T751 Kingston) which has been discussed, including mitigations, with airlines.
11	Has potential frequency congestion on 119.2 (western Transit Lanes with Fiordland CFZ/Glenorchy traffic), and risk of interference with 119.1 (south and east TLs with Cromwell unattended) been considered? Yes. QMUG has advised that 119.2 for western transit lanes in the valley will minimise congestion and provide awareness of Glenorchy traffic. 119.1 for eastern and southern transit lanes in the valleys will reduce the likelihood of frequency congestion on 119.2, have minimal interference due to terrain masking between the two frequencies, and provide awareness for eastern transit lanes of Cromwell and Cromwell Racecourse traffic. Transit lane frequency depiction on VNCs will enhance safety with better assurance of pilots being on common frequencies. With respect to potential interference between 119.1 and 119.2, this is not an issue now for CFZ vs Cromwell traffic.
12	Vol.2 should confirm that all IFPs have been assessed, and that appropriate IFP buffers would be provided. All IFPs have been assessed by Aeropath and GE. Aeropath have confirmed airspace containment for their IFPs, and GE have only highlighted potential issues around Engine Out to their RNP AR users. While the proposed safety enhancements were jointly developed over a significant timeframe, the airspace petition has been prepared to a very tight timeline with the goal of implementing changes in November 2025 (rather than a year later). As a result, the Vol.2 Consultation document is evolving. A version 2 will be provided to CAA including Aeropath, GE and other feedback.
13	GE technical staff advised their RNP AR users that Engine-Out profiles may not clear the proposed TAA T3500 (only) and requested a RNP AR User Group briefing. Airways provided a briefing on the airspace proposal to GE's RNP AR User Group. Discussions followed, noting Engine-Out is a very rare event, EO airspace containment is not a regulatory requirement, and EO containment not provided for existing T751 Kingston (3 NM further and 1500ft higher than T3500). A subsequent AirNZ, QMUG, QAC and Airways meeting focussed further on EO mitigations, with AirNZ keen to see a radio in QN TWR as an added mitigation. Refer to attached slide-pack for VFR traffic flows vs IFR (ATR) EO flightpath, a series of mitigations, and draft collision risk calculations. Proposed safety enhancements are expected to reduce radio congestion by 30%, and benefit service delivery, ATS resilience, and particularly safety for all airspace users on a daily basis. Feedback has been added to Vol.2
14	Is an airspace restructure with potential SID/STAR changes at QN in 2026 considered with this airspace petition? Resolving GA complexity/ATS workload safety concerns takes priority over future IFPs and airspace re-designs. A concept design has been proposed by GE/QN APP to reduce track miles for a RWY 05 RNP AR approach, but it requires a lot of airspace at low levels in the vicinity of Glenorchy. That is in the same area as GA operations and is likely to be

	met with significant opposition. Consideration has also been given to new SIDs and STARs, however current GAA design appears to prohibit any change. And again, the issue of addressing complexity far outweighs any IFP track-shortening.
15	Transit Lanes have been designed according to CAA airspace containment guidance. Was a Target Level of Safety (TLS) determined/supported? There is no definitive TLS published by ICAO or CAA, but TLS-based collision risk modelling has merit. A draft collision risk assessment (see Appendix) was carried out for RNP AR Engine Out vs Southern transit lane traffic, to inform GE RNP AR User Group discussions. Assessed levels fell comfortably within an Unmitigated TLS of 10^{-6} and Mitigated TLS 10^{-9}. Airlines will work to their own SMS.
16	Has AirNZ provided feedback? Yes – AirNZ highlighted a desire for a radio (119.1) in QN TWR to assist with alerting transit lane traffic in the event of a southbound IFR Engine Out. Refer to Vol.2.
17	Does the proposal meet with operating rule compliance (noise, MATS, CAA) noting CAR requirements of 71.105 Class C airspace, 71.51 CTA General, and 71.57 (b) VFR Transit Lanes? Noise – there are no changes to published IFPs. MATS – there are no issues with respect to MATS; complexity of ATM will reduce. CAR 71.51 and 71.55 – proposed VFR transit lanes are compliant; note 71.55 (b) a control zone must be as small as practical to protect IFR flight paths. CAR 71.57 (b) – proposed VFR transit lanes are compliant; clear of published IFPs in accordance with CAA airspace containment guidance (2011) buffers. CAR 71.105 – proposed airspace changes are compliant; in particular, 71.105 (1) (ii) transit lanes assist with management of separation between IFR and VFR flights. 71.105 (2) traffic information to VFR about other VFR flights is at risk given current frequency congestion; structured VFR arrival/departure procedures reduce risk. CAR 71.201 – Permits portions of a Control Zone to be designated Transponder Mandatory if traffic density requires operation of transponders to reduce the risk of an airborne collision with aircraft that are required to be fitted with an airborne collision avoidance system. For Transit Lanes in the busy Queenstown control zone, Transponder Mandatory would protect scheduled TCAS-equipped aircraft against risk of engine failure impacting airspace containment vs transit lane traffic. *Note: TM TL isn't a dependency but provides desirable risk mitigation for airlines.*
18	Are there National Training Board and Training Plan considerations? Simulator training of approx. 2-3 hours per ATCO will be scheduled to ensure ATCO familiarisation with the use of new transit lanes.
19	Is a change of QN FISCOM frequency from 128.9 to 122.2 and/or a move to inner and outer QN TWR ATCs a dependency, and would this require 12 staff? No dependency. Separate projects are progressing to explore potential additional improvements in complexity and volume management. If progressed, staffing levels will be appropriate to ensure a safe and effective ATS service delivery at QN TWR.
20	ISCIA score indicates that this is a minor change, whereas airspace classification is considered substantive change by CAA. Confirm compliance with ATSM pg51 s.13. ATSM s.13 details the requirement for a Safety Assessment; it links to the Initial Safety Change Impact Assessment (ISCIA). An ISCIA was completed, reviewed, and

	endorsed as requiring a Safety Statement. The Safety Statement has been expanded to a Risk Register, following CAA feedback.

Appendix B: References

B.1 AIPNZ ENR 1.5 1.3 – Containment Within Controlled Airspace

1.3 Containment Within Controlled Airspace

1.3.1 Controlled airspace may not totally contain the navigational tolerances associated with holding, approach, and departure procedures at controlled aerodromes.

1.3.2 Airspace is designed to contain arrivals based on a 5% descent gradient. When higher gradients are required, altitude constraints will be published to ensure airspace containment.

1.3.3 Airspace containment for approaches is based on the approach gradient or 5% where there is no stated gradient.

1.3.4 Minimum altitudes specified on DME ARCs and holding procedures provide terrain and obstacle clearance, but do not ensure flight is contained within controlled airspace.

1.3.5 Published minimum climb gradients (PDG) on instrument departures provide required obstacle clearance but do not ensure controlled airspace containment.

1.3.6 For departure procedures at Auckland, Wellington and Christchurch an advisory climb gradient for controlled airspace containment will be stated where this is higher than the obstacle clearance gradient.

1.3.7 Where controlled airspace containment has been assessed for a departure procedure at an aerodrome other than Auckland, Wellington or Christchurch, it will only include an advisory climb gradient where a climb gradient higher than 5% is required, as a 5% climb gradient is used to evaluate airspace containment requirements.

1.3.8 Published minimum climb gradients on a dedicated Radar SID will ensure both required obstacle clearance and containment within controlled airspace until the commencement of radar vectoring. During radar vectoring, controlled airspace containment and adequate obstacle clearance will be ensured by radar controller.

1.3.9 For a missed approach procedure, airspace containment is based on the assumption that a 5% climb gradient can be achieved and maintained. If the altitude given in the missed approach instructions cannot be reached, aircraft are to climb in the hold and at controlled aerodromes, the pilot is to advise ATC.

B.2 CAR Rule Part 71 – Designation and Classification of Airspace

71.55 Control zones

(a) The Director may designate as a control zone that portion of airspace around an aerodrome if—

(1) the Director determines that an aerodrome control service or an aerodrome and approach control service is required; and

(2) the traffic density and pattern requires controlled airspace.

(b) A control zone must be as small as practicably consistent with the need to protect the flight paths of IFR flights arriving at and departing from the aerodrome.

(c) The lateral limits of a control zone must—

(1) encompass at least those portions of the airspace that are not within a control area containing the paths of IFR flights arriving at and departing from the aerodrome under IMC; and

(2) extend to at least 5 NM from the centre of the aerodrome in the directions from which instrument approaches may be made; and

(3) take into account the category of IFR aircraft using the aerodrome and the areas of airspace that need to be protected for those IFR flights.

(d) Prominent geographical features must be used, where practical, to define the lateral limits of a control zone.

(e) A control zone with an upper limit above 3000 feet AMSL must coincide with a VFR cruising altitude or flight level prescribed in Part 91.

71.201 Transponder mandatory airspace within controlled airspace

The Director may designate a control area or a control zone, or any portion of a control area or a control zone, as transponder mandatory airspace if—

(1) the operation of transponders is required for the provision of an air traffic control surveillance service; or

(2) the Director determines that the traffic density in the airspace requires the operation of transponders to reduce the risk of an airborne collision with those aircraft that are required to be fitted with an airborne collision avoidance system.

71.57 VFR transit lanes

(a) The Director may designate a portion of controlled airspace as a VFR transit lane for either or both of the following purposes:

(1) separating transiting VFR traffic from arriving and departing IFR flights:

(2) permitting transiting VFR traffic to operate within the VFR transit lane without requiring an ATC clearance.

(b) A VFR transit lane must be clear of airspace that encompasses IFR arrival and departure procedures within that controlled airspace.

(c) The Director must—

(1) ensure that buffer zones are provided between the nominal flight paths of arriving and departing IFR flights and each VFR transit lane; and

(2) identify each VFR transit lane by the ICAO nationality letters of the State providing the air traffic control service followed by the letter "T" followed by a number.

(d) A VFR transit lane is class G airspace and may only be active during the day.

71.105 Class C airspace

Any portion of airspace that is designated as a control area or control zone under rules 71.51(a) or (b) must be classified as Class C airspace if the Director considers it necessary in the interests of aviation safety that—

(1) separation is required between—

(i) IFR flights; and

(ii) IFR and VFR flights; and

(iii) IFR and special VFR flights; and

(iv) special VFR flights when the flight visibility is reported to be less than 5 km; and

(2) traffic information must be provided to VFR flights about other VFR flights; and

(3) traffic avoidance advice must be provided to VFR flights on request.

B.3 Draft Collision Risk Assessment

QN RNP AR SID/MA Engine-Out

Draft Collision Risk Assessment

1. Risk of QN RWY23 RNP AR SID/MA with engine out vs VFR traffic in proposed Transit Lane:
   a. Skybrary refers to engine failure rates of 1:100,000 flight hours; Wikipedia to *turbine* engine failure rates of 1:375,000 (FAA) and 1:000,000 (GE90). ATR72 failure rate is 1:660,000 flights. Jets are better, so assume ***1:660,000-hour failure rate for turbine engines*** (1 in 75 years)
   b. Assume ***engine failure in first 5 mins of SID/MA*** will impact aircraft ability to maintain airspace containment vs Transit Lane
   c. Allow **50% reduction** in conflict likelihood due:
      i. EO aircraft may climb above / clear of Transit Lane traffic - albeit not 500ft contained
      ii. EO aircraft may climb above Transit Lane with 500ft containment if aircraft is light / winds are favourable / temperature is cold.
      iii. EO aircraft may climb above Transit Lane on MA if engine failure occurs sufficiently before or after the minimum missed approach altitude.
      iv. Some EO aircraft may cancel SID/MA if engine failure occurs in VMC and they are able to join the figure-8 circuit (e.g. AirNZ).
      v. However, risk of bird-strike resulting in engine failure is *greater* at low level.
   d. Likelihood RNP AR aircraft Engine Out occurs in critical period of EFATO/MA = 1 in (660,000hrs x 60/5mins x 2) = ***1 in 15.8M flights***
   e. Likelihood VFR aircraft is in transit lane and in conflict with EO aircraft
      i. Indicative 30 (mainly helicopter) flights/day use transit lane. Allow growth = 50/day.
      ii. If 50 aircraft/day take 1.2 minutes each to transit conflict zone = 1 hour conflict/day
      iii. If transit lane is active 12 hours / day (daylight and VMC) then risk period is 1hour/12hours, so 1:(15.8Mx12) = **1 in 189.6M flights**

   Unmitigated risk per flight = 1/189.6M flights **= 5.27×10^{-9}**, meets TLS 1×10^{-6}.

   f. Aircraft numbers flying RWY23 RNP AR SID or MA at Queenstown per year.
      i. Total QN IFR movements in 2024 = 19,907 flights
      ii. 2024 DEPs 19,907/2 + MAs 134 ***= 10,088 flights*** (note: some night/IMC so no TL)
      iii. QAC Strategic Plan FY22 9,736 actual vs FY32 20,387 forecast.
      iv. 2024 SID/MA 10,088 x 20,387/9,736 = 21,124 total flights/year RNP AR SID/MA in 2032
      v. RWY23 flights (2024: 6007/8148 DEPs) = **74%** x 21,124 = **15,632 flights/year in 2032**
   g. Likelihood RNP AR aircraft on SID/MA experiences EFATO/MA Engine Out and conflicts with VFR flight in transit lane = 1:(189.6M flights / 15,632 flights/year) = **1 in 12,100 years**

2. Collision risk mitigations include:
   a. EO pilot awareness of airspace containment risk in event of EFATO/EO on MA. Highlighted with transit lane depicted on AIPNZ charts that are briefed prior to departure/approach.
   b. EO aircraft should have TCAS for enhanced awareness and conflict resolution.
   c. VFR pilot relies on scan for visual sighting and traffic avoidance outside controlled airspace
   d. VFR pilot is on higher alert VIC QN due awareness of high traffic density and complexity – most are familiar with environment / with CAA GAP "*In and around Queenstown*".
   e. VFR traffic in TL nearly all have transponders (some ADSB-in) – due mandate operating in/out QN CTR; this aids pilot awareness and visual sight-and-avoid.
   f. VFR aircraft in transit lane may fly below the upper limit – and must if cloud base is lower – and many will also transit south of the critical northern boundary of the transit lane.
   g. ATC prioritise emergency traffic, including provision of traffic information / avoidance advice.
   h. 119.1MHz common frequency could be used by IFR; and will be investigated by ATS.

   Mitigated risk per flight if Visual sighting or TCAS alerting / avoidance reduces risk x 100.
   = $5.27 \times 10^{-9}/100$ **= 5.27×10^{-11}**, meets Target Level of Safety 1×10^{-9}.