Notice of Requirement for

Space Operations New Zealand Limited

Space Operations New Zealand Limited

Restrictive Airspace and Land Designation

Updated 24 March 2026

The Property Group

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Document control

Title:	Space Operations New Zealand Limited Notice of Requirement (Airspace and Land)
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Form 18

Notice of requirement by Minister, local authority, or requiring authority for designation of alteration of designation

Sections 145, 168(1), (2), 168A, and 181, and clause 4 of Schedule 1, Resource Management Act 1991

To: Invercargill City Council

Space Operations New Zealand Limited hereby a Notice of Requirement (NoR) in respect of surrounding airspace and land surrounding the Awarua Satellite Ground Station.

The site to which the requirement applies is as follows:

The airspace surrounding Lot 1 Deposited Plan 483454 and Lot 1 DP 524692 held in Record of Title 837915 – located at 781 Colyer Road, and Lot 2 DP 524692 held in Record of Title 1134415 – located at 721 Colyer Road. This designation would also restrict the establishment of any activity on land that results in electromagnetic emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station as set out in Table of Radio Spectrum Usage in New Zealand (PIB 21).

The proposed designated airspace is as follows:

- A 'horizon mask' of 5 degrees as measured from 2 metres above the boundary of the physical site extending out 3km in all directions excluding the coastal marina area and all public conservation land.

The proposed designated land and airspace above this land is as follows:

- An Electromagnetic Interference (EMI) that will extend 2km in all directions (excluding the coastal marine area and all public conservation land) from the boundary of the designated site to limit emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station set out in Table of Radio Spectrum Usage in New Zealand (PIB 21) dated 11 June 2021 and any subsequent amendments and/or updated to this document. These frequencies can be found at: https://www.rsm.govt.nz/assets/Uploads/documents/pibs/table-of-radio-spectrum-usage-in-new-zealand-pib-21.pdf

The nature of the proposed public work (or project or work) is:

The nature of this work is to place a restrictive designation on the airspace surrounding the Awarua Satellite Ground Station site. This will mean that no building, structure, or vegetation can protrude through the horizon mask when measured 3km from the boundary of the subject site. The EMI will place a restriction on all emissions within a 2km radius to ensure any activity does not generate any emissions above -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station set out in Table of Radio

Spectrum Usage in New Zealand (PIB 21). The radius does not apply to the coastal marine area and/or any public conservation land as shown on the plan provided.

The nature of the proposed restrictions that would apply are:

Restrictions are proposed and contained within Section 7.2 of this report.

The effects that the public work will have on the environment, and the ways in which any adverse effects will be mitigated, are:

See Assessment of Environmental Effects contained below.

Alternative sites, routes, and methods have been considered to the following extent:

No alternative sites have been considered or deemed necessary as the satellite ground station is currently operating from this site. Therefore, it is necessary to also impose the relevant restrictions on the surrounding airspace and land to ensure the successful transmission and reception of radiowaves between the on-ground antennas and orbiting satellites.

The public work (or project or work) and designation (or alteration) are reasonably necessary for achieving the objectives of the requiring authority because:

The Designation sought is required to ensure that Space Operations New Zealand Limited continue to operate successfully as a satellite ground station. The satellite ground station plays an important role in transmitting broadcasts to and receiving broadcasts from satellites orbiting the Earth.

The following resource consents are needed for the proposed activity and have (or have not) been applied for:

Resource consents have been granted for the activity previously. As the activity is established, no further resource consents are required at this point in time. It is anticipated that any future activities on the site will establish via an Outline Plan or a Waiver.

Any Regional Council consents required for future activities will be applied for if and when required.

The following consultation (or No consultation) has been undertaken with parties that are likely to be affected:

An initial pre-app discussion was had with ICC. No other consultation has been undertaken.

Space Operations New Zealand Limited attaches the following information required to be included in this notice by the district plan, regional plan, or any regulations made under the Resource Management Act 1991:

Space Operations New Zealand Limited	
Requiring Authority	Space Operations New Zealand Limited
Purpose	Airspace Limitation Surface and Electromagnetic Interference Limitation Area
Locality	Areas extending for a maximum of three kilometres of land and 2km of airspace surrounding Lot 1 DP 483454, Lot 1 DP 524692 and Lot 2 DP 524692 (excluding the Regionally Significant Wetland). The restrictive designation does not apply to the Coastal Marine Area or any public conservation land.
Legal Description	N/A
Map No	TBC
Designation No	TBC
Conditions	Yes

1 Notice of Requirement details

Requiring Authority:	Space Operations New Zealand Limited
Territorial Authority:	Invercargill City Council
Nature of the Notice:	A Notice of Requirement (NoR) to designate in respect of airspace and land surrounding the Awarua Satellite Ground Station where a restriction is necessary for the efficient functioning and operation of the Satellite Station
Address for service:	The Property Group Limited Wānaka Office Level 1 IT House 1 Umbers Street Three Parks Wānaka 9305 Attention: Alex Dunn
Site address:	721 and 781 Colyer Road
Legal Description:	N/A as it relates to airspace– this NoR relates to airspace surrounding Lot 1 DP 483454 and Lot 1 DP 524692 held in Record of Title 837915 and Lot 2 DP 524692 held in Record of Title 1134415 as measured 3km from any point

	from the land designation boundary and excludes the coastal marine area and conservation land. This designation also relates to land within a 2km radius from any point from the land designation boundary and excludes the coastal marine area and conservation land.
Registered owner:	N/A
Site area:	N/A
District Plan zoning:	Rural

2 Introduction

Space Operations New Zealand Limited (SpaceOps NZ) intends to designate the airspace and land surrounding the existing Awarua Satellite Ground Station. The proposed designation in this instance is twofold:

- A restriction on any built form that would protrude an angle of 5 degrees as measured from 2 metres in height from the boundary of the existing satellite ground station as measured 3km from any point from the boundary; and

- A restriction on Electromagnetic Interference. Specifically, the designation would not allow any activity to operate within a 2km radius of the site that generates emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station as set out in Table of Radio Spectrum Usage in New Zealand (PIB 21).

For completeness, the restriction would not apply to the coastal marine area or conservation land to the south of the site. The area where the restrictive designation will not apply is evident on the map provided. It contains no 'restrictive' contours.

This Notice is provided to the Invercargill City Council in accordance with Section 168 of the Resource Management Act 1991 and in the prescribed form (Form 18) as set out in the Regulations (2003) of the Act.

This document particularly sets out:

- The nature of the designation.
- An assessment of the effects of the designation and therefore the nature of any proposed conditions for the designation.
- The ways in which any adverse effects will be mitigated.
- Any alternatives considered.
- The necessity of the designation in achieving Space Operation New Zealand's objectives.
- Any consultation undertaken.

3 Space Operations New Zealand Limited

3.1 Requiring Authority Status

Pursuant to Section 167 of the RMA, Space Operations New Zealand Limited is a Requiring Authority. The Requiring Authority Status was confirmed by way of the New Zealand Gazette on 13 March 2025.

3.2 Radio Spectrum Management

In November 2020, the Ministry of Business, Innovation and Employment, via Radio Spectrum Management (RSM), defined the Awarua Ground Station as one of three protection zones allocated for space research, space operation and Earth exploration-satellite services with the following parameters:

- Each protection zone is centred on a point location, which for Awarua is a 2km radius from -46.52864 168.37913 (Geo-reference – NZGD2000).
- The protection frequency range is 2200–2290 MHz.
- To avoid desensitisation of the satellite station receivers, permissible interference from terrestrial services within the protection area shall be less than -154 dBW/MHz

A copy of this decision is included as Appendix Two to this NoR application.

4 Background

SpaceOps NZ have identified several concerns relating to potential buildings and structures surrounding its satellite ground station site which have the ability to interrupt transmission between the ground and orbiting satellites. One such instance was Calder Stewart's attempt to have wind turbines established via the Fast-track Approvals Act 2004 which would have a maximum height of approximately 200 metres, which is significantly greater than the maximum permitted height of 35 metres in this zone.

A designation was favoured by SpaceOps NZ to protect the surrounding airspace because it would, among other things:

- Have the effect of applying a restriction to structures, buildings, trees, or other objects that may infringe on horizon mask.
- Have the effect of ensuring no emissions from any activities that would generate emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station as set out in Table of Radio Spectrum Usage in New Zealand (PIB 21). This is consistent with the already established Radio Spectrum Management (RSM) protection zone that has a radius of 2km.
- Provide greater certainty to not only SpaceOps NZ but also surrounding landowners.
- Reflect SpaceOps NZ's responsibility to ensure successful transmissions and communication between the ground and orbiting satellites can be retained.
- Helpfully be identified in LIMs. It is very unlikely that the current RSM decision is currently contained within LIMs.

5 Designation Purpose

This Notice is for the designation is for *Airspace Limitation Surface and Electromagnetic Interference Limitation Area* purposes.

As provided for in section 3.2 above, the space around the ground station is already in a protection zone. This restrictive designation will ensure that the protection zone is also recorded within the District Plan by limiting emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station set out in Table of Radio Spectrum Usage in New Zealand (PIB 21). This restriction would apply to all land and air above the land within the protection zone.

With specific regard to the horizon mask, the restrictive designation would prohibit any objective from penetrating the horizon mask surface unless approval was obtained from the Requiring Authority. The restrictive surface is measured at a 5-degree angle commencing two meters above any point of the boundary of the existing satellite ground station.

The objectives of Space Operations New Zealand Limited for the airspace designation are to:

- Ensure that the satellite ground station can continue to run in an efficient manner by sending and receiving radiotelecommunications as defined in the Radiocommunications Act 1989.
- Ensure that activities on surrounding land do not interfere with the already established protection zone for space research, space operation and Earth exploration-satellite services.
- Ensure that the District Plan is aligned with the RSM protection zone.

6 Description of Airspace and Land Designation

The airspace and land designation contained in this Notice of Requirement is based on the Requiring Authority's functional need to ensure a clear horizon that is free of any built form which could impede transmissions and to ensure that EMI is avoided.

7 Nature of proposed designation

7.1 Designation purpose

Space Operations New Zealand Limited, as a Requiring Authority, gives Notice of its intention to designate the airspace surrounding the established satellite ground station, as an *Airspace Limitation Surface and Electromagnetic Interference Limitation Area.*

The designation will prohibit any object including any building, structure, mast, pole, or tree from penetrating the horizon mask. This horizon mask will be measured at an angle of 5 degrees at a height of 2 metres commencing alongside the boundary of the established satellite ground station.

The designation will also prohibit any emissions from any activity that generate emissions greater than -154 dBW/MHz.

For the purpose of this NoR:

- Objects (as referred to throughout this NoR) include, but are not limited to, vegetation (including trees), buildings, structures (including buildings masts and poles), cranes, construction machinery or other equipment that might penetrate the surfaces on a temporary or permanent basis.

- The designation restrictions do not apply to objects located beneath the limitation surface, provided these objects do not create emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station as set out in Table of Radio Spectrum Usage in New Zealand (PIB 21) This means that objects can be established within the area without the Requiring Authority's approval provided the electromagnetic emissions for any device are compliant. Common domestic applicants such as cellphones, personal locater beacons, and domestic scale satellite dishes will not be affected by this designation.

As the Notice of Requirement is for a restrictive designation, pursuant to Section 184(1)(c) of the RMA, the designation will have immediate effect once it is included in the District Plan.

7.2 Designation conditions

The following conditions in relation to the restrictive designation are proposed to be incorporated into the District Plan:

1. The *Airspace and Electromagnetic Interference Limitation Surface* covers the following land and airspace:

    a. All land and airspace within a 2km radius as measured from any point of the boundary of the land designation (Lot 1 DP 483454, Lot 1 DP 524692, and Lot 2 DP 524692 but excluding the Regionally Significant Wetland as the wetland is not part of the land designation) as it relates to Electromagnetic Interference from terrestrial services; and

    b. All airspace within a 3km radius from the horizon mask as measured at an angle of 5 degrees at a height of 2 metres commencing land designation (Lot 1 DP 483454, Lot 1 DP 524692, and Lot 2 DP 524692 but excluding the Regionally Significant Wetland as the wetland is not part of the land designation boundary).

    All land within the coastal marine area, and public conservation land, is not included within the designation. The extent of the designation is shown on the plan entitled "*Space Operations New Zealand Designation – Restrictive Air Designation Map*", reference 72350 and dated 19/03/2026.

2. New objects or extensions of objects that penetrate the *Airspace and Electromagnetic Interference Limitation Surface* shall be prohibited except where:

a. The party on whose land the object is located or who is otherwise responsible for the object has received written approval from Space Operations New Zealand Limited for the penetration.

3. All terrestrial services within a 2km radius of the Awarua Satellite Ground Station, as shown on the Designation Plan (enter reference) shall not produce electromagnetic emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station as set out in the Table of Radio Spectrum Usage in New Zealand (PIB 21) Issue 11, dated June 2021 and produced by the Ministry of Business, Innovation & Employment – New Zealand Government, and any subsequent amendments and/or updated to this document. For completeness, the restriction only applies to radio frequencies set out in Radio Spectrum Management's radio bandplan that are used for the reception of radio signals from space. Common domestic items such as cellphones, personal locater beacons and domestic scale satellite dishes that are utilised for internet connections, do not transmit on this radiofrequency and are therefore not affected prohibited by this designation.

8 Public Notification Assessment – Section 149ZCB

Section 169 (1)(b) directs Council to undertake a notification assessment in accordance with the provisions of sections 149ZCB(1) to (4), 149ZCC(1) to (4), 149ZCE and 149ZCF.

In accordance with section 149ZCB, Council must determine whether to notify an application. This requires an assessment in accordance with s149ZCE to determine whether adverse effects are likely to be more than minor.

Section 149ZCE requires that Council must disregard:

- Effects on the owners or occupiers of land on which the activity will occur and on adjacent land.
- Trade competition and the effects of trade competition.
- Any persons that have provided their written approval.

For the purpose of this assessment, the above matters have been disregarded.

The Notice of Requirement may potentially have the following effects on the environment which are assessed in detail below. Effects of the proposed designation are largely restricted to:

- Restrictions on future built form
- Restrictions on transmitting activities
- Restrictions on the radio frequency emissions by switched-mode power supplies, motor controllers, inverters and other industrial devices

Council may also disregard an adverse effect of the activity if a rule or national environmental standard permitted an activity with that effect – this is the permitted baseline. As this is a Notice of Requirement, there are no permitted activities associated with the actual designation itself. However, while there is no permitted baseline of relevance to this application, the existing and

receiving environment is of relevance as this provides important context as to why the restrictive designation is required.

In this instance, the existing environment is comprised of the existing satellite ground station forms as it has been established in accordance with underlying resource consent approvals. For completeness, a total of 148 antennas and 15 buildings/equipment shelters are approved across the subject site. The largest antenna has a maximum height of 17 metres. These antennas are as follows:

Type of Antenna:	Number Approved:
Patch	31
Yahi	29
Dish ≤3m	17
3-6m diameter	52
6-11m diameter	13
11-15m diameter	6

Not all antenna are yet established, however the consent does not lapse until 30 March 2038

The physical characterises of the existing and receiving environment is also of particular relevance to this application. The Satellite Ground Station is an internationally significant piece of infrastructure by virtue of Awarua's low horizon and southerly location in the southern hemisphere which makes it an ideal location to transmit and receive radiowaves.

The existing and receiving environment has been taken into consideration below.

8.1 Future Built Form

It is fundamental to the ongoing operation of the satellite ground station that there is a low horizon, as is the current situation. The location of the satellite ground station was specifically chosen due to its low horizon and the absence of surrounding built form and the flat topography of the Awarua Plains.

The restriction on built form will be relatively minimal and will essentially only prohibit built form that is within proximity to the satellite ground station. Effects relating to the restriction are largely confined to the radius covered by the proposed designation and will not have any wider adverse environmental effects.

The protection of the airspace will positively allow SpaceOps NZ to operate with transmissions between Earth and orbiting satellites not being affected. This designation ensures the ongoing efficient of the satellite ground station for current and future.

8.2 Restrictions on transmitting activities

The designation would prohibit any activities that produce electromagnetic emissions greater than -154 dBW/MHz at radio frequencies used for reception of signals at Awarua Satellite Ground Station as set out in Table of Radio Spectrum Usage in New Zealand (PIB 21).

It is important for the ongoing operation of the satellite ground station to protect transmissions from EMI.

The existing protection zone established by RSM applies only to terrestrial services, i.e. radio transmitters. As such, this protection does not extend to non-terrestrial transmitters.

It is a fundamental component of the satellite ground station's operation to communicate between the ground and orbiting satellites. In this regard, New Zealand is bound by the International Telecommunications Union (ITU) which is an implementing agency of the United Nations. The ITU has established the Radio Regulations (RR). Of particular relevance with regard t the RR, is Chapter 4 (Section II) which deals with interference from electrical apparatus and installations. These regulations state:

> *Administrations shall take all practicable and necessary steps to ensure that the operation of electrical apparatus or installations of any kind, including power and telecommunication distribution networks, but excluding equipment used for industrial scientific and medical application, does not cause harmful interference to a radiocommunication service and, in particular, to radionavigation or any other safety service operation in accordance with the provisions of these Regulations.*

To this effect, the current protection to the satellite ground station afforded by the RSM confirm adherence to these international regulations.

While the restrictive designation will prohibit some terrestrial services within a 2km radius of the site, effects on the wider environment arising from this are assessed to be less than minor as the restrictive designation will essentially confirm the existing protection set out by RSM within the District Plan.

8.3 Positive effects

The associated positive effects arising from the restrictive designation are as follows:

- SpaceOps NZ can continue to operate its crucially important activities that provide services to multiple different international space agencies.
- To enable the sustainable growth of the facility.
- To provide the surrounding community with clear height restrictions and EMI restrictions.

8.4 Special Circumstances – Section 149ZCB(4)

There are no special circumstances that require public notification in this instance.

8.5 Public Notification Conclusion

In conclusion, it is assessed that the effects on the environment arising from the activity will be less than minor and there are no special circumstances that would require public notification.

9 Limited Notification Assessment – Section 149ZCC

In accordance with section 149ZCZ, Council must determine whether to limited notify an application. This requires an assessment in accordance with s149ZCF to determine whether adverse effects are likely to be more than minor.

Council must have regard to every statutory acknowledgement. In this instance, the Notice of Requirement area has no impact on any statutory acknowledge area.

9.1 Assessment on Persons

Owners and Occupiers of Section 11 Block XII Campbelltown HUN (711 Colyer Road) and the Department of Conservation

This site is located to the south of the land subject to this application (on the opposite side of an unformed legal road) and is crown land. In 1960, this land was set aside for New Zealand Post Office purposes (transmitter station) by the Crown. This land is now conservation land managed by the Department of Conservation and is still owned by the Crown.

Given the fact that there is a legal road the separates the l subject site and 711 Colyer Road and the fact it is Crown land, it is assessed that there is a less than minor effects on the owners/occupiers of this land. For completeness, effects on the public conservation land as a whole is assessed to be less than minor.

Owners and Occupiers of Section 22 Block III Campbelltown HUN (Stephen and Tracy Henderson and NZ Forest Products Limited)

This property is located to the west of the subject site and contains some agricultural activities toward the northern part of the site. The southern portion of the site is comprised of vegetation and is not utilised for any purposes.

The proposed designation would restrict built form over certain heights that are in close proximity to the boundary. However, given that the horizon mask commences at a height of 2 metres from the subject site's boundary and is at 5 degrees, the actual area of land impacted by reduced building heights is very limited. In addition, the Rural Zone sets a maximum height of ten metres. In addition, there is a non-objection covenant that burdens Section 22 in favour of Space Operations New Zealand Limited. This restricts the owners of Section 22 from objecting, complaining, and lodging any submissions against use of the Site by Space Ops NZ, or existing or future effects of such activities including noise visual amenity, light spill and odour. The covenant specifically states that the burdened land cannot be developed or used in a way which may cause interference with the use of the SpaceOp's site.

Restricting electromagnetic emissions from terrestrial services on this portion of land will not impact the rural use of the site as there is no functional requirement for radio transmitters to be located on this land.

Overall, it is assessed that the NoR will have less than minor effects on the owners/occupiers of this land.

Owners and Occupiers of Lot 2 DP 347109 (South Light Dairies Limited and NZ Forest Products Limited)

This property is located on the opposite side of Awarua Siding Road to the north and east of the subject site. The land is within the Rural Zone as well and is currently used for general agricultural purposes. The proposed designation would restrict built form in close proximity to the boundary. However, given that the horizon mask commences at a height of 2 metres from the subject site's boundary and is at 5 degrees, the actual area of land impacted by reduced building heights is very limited. In addition, the Rural Zone sets a maximum height of ten metres.

Restricting electromagnetic emissions from terrestrial services on this portion of land will not impact the rural use of the site as there is no functional requirement for radio transmitters to be located on this land.

Overall, it is assessed that the NoR will have less than minor effects on the owners/occupiers of this land.

Owners and Occupiers of Lot 1 DP 347109 (Stewart Family Assets Limited and NZ Forest Products Limited)

This property is located to the north-west of the subject site on the opposite side of Awarua Sliding Road. This site is zoned as Industrial 4 within the District Plan. Industrial 4 zoning enables a wide range of industrial activities to occur, including buildings of up to 35 metres in height. It is noted that the Outline Plan for the Awarua Industrial Development envisions industrial buildings right to the boundary of Awarua Sliding Road. With a maximum permitted height of 35 metres, the restrictive designation has the potential to create effects on the owners/occupiers of this land that are at least minor as it relates to the horizon mask. The affected area of the site would be approximately 4ha and within this area, buildings would be required to be between 10m at the south-east corner of the site, eventually increasing in height to 35 metres from 250 to 300 metres from this point. The designation would restrict buildings reaching the maximum permitted height of 35 metres within this relatively small area of the site.

It is also not known whether any industrial activity would have a functional need for any terrestrial services with the ability to generate emissions greater than -154 dBW/MHz. However, given the existing protection afforded by the RSM, effects specifically relating to the restriction of certain electromagnetic emissions are assessed to be less than minor.

Overall, as the horizon mask has the potential to restrict some built development within the Industrial 4 Zone, effects on the owners/occupiers of this property are assessed to be minor.

Iwi

Consideration has been given to whether iwi are affected by the proposal. In this instance, the Waituna Wetland Statutory Acknowledgement Area id located approximately 4km to the east of the subject site. Figure 2 below shows the extent of the Statutory Acknowledgement Area (outlined in yellow) compared to the location of the site this NoR application relates to (highlighted green).

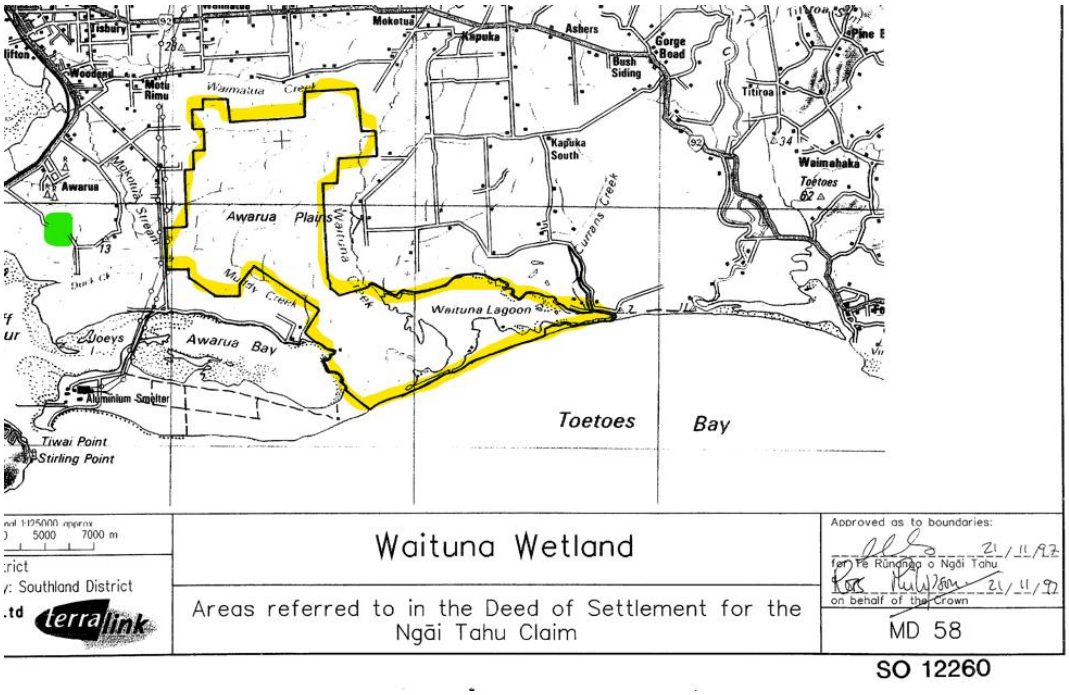

FIGURE 2: THE WAITUNA WETLAND STATUTORY ACKNOWLEDGEMENT AREA (OUTLINED IN YELLOW) IN RELATION TO THE SUBJECT SITE (GREEN)

Iwi have been consulted with and it is anticipated APA is forthcoming.

NZ Forest Products Limited

NZ Forest Products Limited own the minerals below the subject site. The designation will have no impact on these minerals and does not impact the Title pertaining to the minerals.

It is assessed that the effect of the designation on NZ Forest Products Limited will be less than minor.

Others

Given the prevailing Rural zoning of the surrounding area (with the exception of land contained within the Industrial 4 zone as detailed above), it is assessed that the restrictive designation will have a less than minor effect on any other persons.

9.2 Limited Notification Conclusion

It is established that effects on the owners/occupiers of *Lot 1 DP 347109 (99 Awarua Sliding Road)* will likely be minor and the application is therefore required to be limited notified to this person(s).

10 s171 Assessment

Section 171(1)(a) of the Act requires that when considering the NoR, Council must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to any relevant provisions of national policy statement, a New Zealand coastal policy statement, a regional policy statement or proposed regional policy statement or a plan or proposed plan. The relevant planning documents are assessed below.

10.1 Invercargill City District Plan

The relevant objectives and policies are contained within Part 2 of the Invercargill City District Plan. The relevant objectives and policies are contained within the Infrastructure and Rural chapters of Part 2. The relevant objectives and policies are assessed below.

Objective/Policy	**Assessment**
INF-O1 – Invercargill's local, regional and national infrastructure is secure and operates efficiently.	Infrastructure is defined within the Plan as "means the system, services, structures and networks necessary for operating and supplying essential utilities and services to the community including but not limited to…the receiving and sending of communications, including telecommunication and radiocommunication". In this instance, the restrictive designation satellite ground station is vital in ensuring the successful transmission and reception of radiowaves between Earth and satellites that are in orbit.
INF-O2 – Infrastructure is developed, operated, maintained and upgraded whilst: 1. Efficiently and effectively meeting the current foreseeable needs within and between Districts. 2. Fulfilling functional, locational, technical, and operational requirements and avoiding, remedying or mitigating the effects on the environment.	The satellite ground station is a critically important piece of infrastructure is within a location that fulfils SpaceOp NZ's functional, location, technical and operating requirements. The activity is largely established, and the restrictive designation will ensure that the satellite station can continue to operate free from objects and EMI which have the potential to create unacceptable interference with the day to day operations.

INF-O3 – Existing infrastructure is sustainably managed and protected from incompatible subdivision, use and development.	The infrastructure that this NoR application relates to is existing. The restrictive designation will allow this critically important infrastructure to continue to operate into the future with the knowledge that objects will not interfere with transmissions and there will be no EMI issues.
INF-O4 – To ensure that the location and design of infrastructure avoids, where practicable, and otherwise remedies or mitigates significant adverse effects on: 1. *The aesthetic coherence and character of residential neighbourhoods and the health of residents.* 2. *The natural character of wetlands, and lakes and rivers and their margins.* 3. *Outstanding natural features and landscapes.* 4. *Areas of significant indigenous vegetation and significant habitats of Indigenous fauna.* 5. *The maintenance and enhancement of public access to and along lakes and rivers.* 6. *The relationship of Māori and their culture and traditions with their ancestral lands, water, wāhi tapu, and other taonga.* 7. *Heritage*	The infrastructure does not, and will not, generate significant adverse effects on any residential neighbourhoods by virtue of the location being within the Rural Zone. While the site is adjacent to Awarua Wetlands, the restrictive designation will not adversely impact these wetlands as there is no functional need or demand for buildings or transmitting devices to be established within the wetland area. The site is not identified as being an ONF or ONL. The restrictive designation does not impact any significant indigenous vegetation. The restrictive designation will not have any impact on public access, Māori culture, or on heritage.
INF-O5 – To provide for the sustainable, secure and efficient operation, maintenance, upgrading and development of infrastructure while seeking to avoid, remedy or mitigate	The restrictive designation will provide for the ongoing, secure and efficient operation of the satellite ground station while providing a high level

adverse effects on the environment to the extent practicable, and while recognising the technical and operational requirements and constraints of the networks.	of certainty with regard to potential future upgrades.
INF-O6 – To recognise the importance of infrastructure to the social and economic well-being of the City, the Southland region and the nation.	The satellite ground station is unique and certainly not considered to be a regular infrastructure. The satellite ground station has the potential to further enhance Southland's economy as it will lead to the exposure of Southland has being somewhere where space related activities can feasibly take place without possible interference from objects and EMI on neighbouring properties which could restrict transmissions. This is all considered to be positive when assessed for the social and economic wellbeing of not only Invercargill city, but the wider Southland regional.
INF-P1 – Existing infrastructure: To recognise and provide for the continued operation, maintenance and upgrading of local, regional and national infrastructure and associated activities.	The restrictive designation will specifically provide for the continued operation, maintenance and upgrading of this existing internationally important piece of infrastructure. It is important that the existing satellite ground station is recognised as having functional needs to designate land and airspace around the facility to ensure its continued operation.
INF-P2 – Management of effects: Where practicable, avoid, remedy or mitigate adverse environmental effects arising from the development, construction, operation, maintenance and upgrading of infrastructure on the environment.	The restrictive designation will ensure that the existing satellite ground station facility can continue to operate and to provide confidence to multiple space agency's that it can be relied on.
INF-P3 – Reverse Sensitivity: To protect local, regional and national infrastructure from new incompatible subdivision, land uses and development under, over or adjacent to the infrastructure.	This restrictive designation will provide certainty with regard to the ongoing operation of the facility and is essentially required to ensure potential adverse effects relating to reserve sensitivity issues are never realised as this will compromise the established operation of the facility. It is important that a low horizon is retained and the EMI is avoided in the area around the facility.

INF-P5 – Natural hazards: To consider and adopt appropriate risk management strategies to protect essential infrastructure from the adverse effects of natural hazards and climate change and to ensure that the design and location of infrastructure does not exacerbate the adverse effects of natural hazards and climate change.	There are no identified natural hazards in this area.
INF-P6 – Functional need, technical and operation requirements: *To recognise that infrastructure can have a functional, technical or operational need for a particular location.*	Due to the low horizon and southerly location of the site, there is a functional, technical and operational need for the restrictive designation to ensure that SpaceOps NZ can continue to operate from this location.
INF-P7 – Location of facilities: *To encourage radio communication and telecommunication facilities to be located outside residential areas, unless there is a functional need to locate there.*	The site is not near or adjacent to any residential areas.
INF-P8 – Undergrounding: 1. *To require the underground placement of utilities in areas where existing networks are underground or extensions to networks are proposed, where this is economically viable and technically feasible.* 2. *To encourage the underground placement of utilities where they are currently above ground, particularly when those utilities are being upgraded or replaced, where this is economically viable and technically feasible.*	The restrictive designation relies on interference-free reception of signals at the satellite ground station from orbiting satellites being protected.

INF-P9 – Co-location: To encourage the use of utility corridoes, co-location or sharing of facilities where this is feasible and practical.	This policy is not considered to be relevant for the proposal.
RURZ-01 – The rural environment is maintained and enhanced while allowing for productive rural activities to be undertaken	The restrictive designation will not impact on any rural activities in the surrounding environment.
RURZ-02 – Provide for the use and development of land within the rural area while maintaining, and where practical enhancing, amenity values.	The restrictive designation will not adversely impact the wider amenity values of the area.
RURZ-P1 – To require rural allotments to be of a size and nature that enables rural activities and maintains the rural character and visual amenity of the Rural Zone.	The proposal is not for a subdivision.
RURZ-P2 – Rural activities: To provide for rural activities to establish and operate within the Rural Zone.	While this is not a rural activity, there is a functional need for the satellite ground station to be in this specific location and as such, there is a functional need for this restrictive designation. As the satellite ground station is existing, it is assessed that there is almost no ability to establish rural activities within this specific location.
RURZ-P3 – Non-rural activities: To avoid activities that do not have a need to locate within the Rural Zone and which would result in adverse effects inconsistent with the function, character and amenity provided for by the Rural Zone.	There is a clear need for the existing satellite ground station to be located within the Rural zone and as such, this restrictive designation is required to ensure the successful ongoing operation of the facility.
RURZ-P4 – Soils: To maintain the life supporting capacity and productive	The soils will not be affected by this restrictive designation.

value of the soil resource in the Rural Zone.	
RURZ-P15 – Odour: *To accept that intermittent emissions of agricultural related odours will occur within the Rural Zone.*	While no odour is emitted from the activity, it is accepted that odour will be emitted from surrounding rural activities. This has no impact on the land that is proposed to be designated.
RURZ-P25 – Height and location of structures: To manage the scale of development in rural areas is an important dimension of amenity, recognising that the height and location of structures are main components of that.	The restrictive designation does not introduce any new built form.

10.2 Southland Regional Policy Statement

Provision:	**Assessment:**
Objective RURAL.1 – Sustainable use of the rural land resource Achieve sustainable use of Southland's rural land resource, in respect of: a. agriculture and primary sector activities; b. subdivision, use and development activities; c. earthworks and vegetation clearance activities; d. the use of soil resources; and	As this is a restrictive designation, there is no adverse effect on the rural land resource as surrounding rural land can still be used for general agricultural activities.

e. mineral extraction activities; and on-site wastewater systems.	
Objective RURAL.2 – Life-supporting capacity of soils Safeguard the life-supporting capacity, mauri and health of soils in rural areas, and prevent or minimise soil erosion and sedimentation from land use soil disturbance.	As this is a restrictive designation, there is no adverse effect on the rural land resource as surrounding rural land can still be used for general agricultural activities
Policy RURAL.4 – Loss of high value soils from productive use Avoid the irreversible loss of high value soils from productive use, through inappropriate subdivision, use and development.	As this is a restrictive designation, there is no adverse effect on the rural land resource as surrounding rural land can still be used for general agricultural activities
Policy RURAL.5 – Effects of rural land development The effects of rural land development shall be sustainably managed and land management practices encouraged so that: a. soil properties are safeguarded; b. soil erosion is minimised; c. soil compaction and nutrient and sediment loss is minimised; d. soil disturbance is reduced; e. water quality is maintained or enhanced; f. indigenous biodiversity is maintained or enhanced; the mauri of water and soils is safeguarded.	As this is a restrictive designation, there is no adverse effect on the rural land resource as surrounding rural land can still be used for general agricultural activities.

10.3 National Policy Statement for Highly Productive Land

As this is a restrictive designation, there is no adverse effect on any productive land (noting the land in this location is classified as LUC4 and LUC7).

11 Alternatives considered

Section 171(1)(b) of the Act requires that when considering the NoR, Council must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if the requiring authority does not have an interest in the land sufficient for undertaking the work or it is likely that the work will have a significant adverse effect on the environment.

11.1 Alternative locations

A satellite ground station has already been established on the site that this NoR application relates to. The site was specifically selected due to its low horizon and lack of any built form or landforms that have the potential to interrupt radiowaves being sent between the ground and orbiting satellites which the Requiring Authority is specifically now seeking to protect by way of this designation. Many of the antennas at the station are able to communicate with spacecraft at or near an elevation of 0.5° and for certain space missions this is important. The antennas need unimpeded line of sight visibility to spacecraft at elevations above 5°. They also require dual, route-diverse very high-speed fibre-optic cable connectivity to New Zealand's backbone internet infrastructure. The absence of electro-magnetic interference is critical. For logistical purposes, ground station sites also require easy access to airports and access to skilled technical staff. SpaceOps found the Awarua site in 2004 after an extensive search around all of Southland and concluded that the site was by far the only suitable site. Sites further north than Winton would not be acceptable because of the need to support spacecraft in polar orbits. The qualities of the Awarua site are recognised throughout the international space community. In short, it is extremely difficult to find and develop stations supporting spacecraft in low Earth orbit and despite searching, there are no other locations in New Zealand that are anywhere near as good.

It would not be functional, feasible, or logical, for the activity as a whole to relocate to another site.

Any alternative locations would likely be inferior to that of the subject site.

11.2 Alternative methods

A designation is deemed to be the most appropriate method to protect the ongoing and continued construction, operation, maintenance and upgrade of the established satellite ground station. For this to occur, it is fundamental that the low horizon and certain radiofrequencies are protected. It is noted that EMI issues are protected by the protection zone identified by RSM.

12 Necessity of the designation

Section 171(c) of the Act requires that when considering the NoR, Council must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard

to whether the work and designation is *"reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought*".

SpaceOps NZ is a requiring authority pursuant to Section 166 of the Act as it is an approved network utility operator.

The designation is required to enable SpaceOps NZ to continue to operate its satellite ground station by ensuring that the surrounding land and air remains free of conflicting built form and EMI that could create issues with its ongoing operation and objectives.

SpaceOps NZ has lodged this Notice of Requirement to achieve the following objectives:

- Ensure that the satellite ground station can continue to run in an efficient manner by sending and receiving radiotelecommunications as defined in the Radiocommunications Act 1989.
- Ensure that activities on surrounding land do not interfere with the already established protection zone for space research, space operation and Earth exploration-satellite services.
- Ensure that the District Plan is aligned with the RSM protection zone.

Therefore, the designation is deemed reasonably necessary.

13 Consultation

An initial pre-app discussion was had with ICC. Consultation has also occurred with Aukaha, as well as direct neighbours.

14 Other matters

14.1 District Plan Zone

The location of the subject site is within the Rural Zone. The purpose of the Rural Zone is to provide for rural activities such as agriculture, horticulture, and residential activities on larger allotments. The zone overview states that non rural land use activities are not always compatible with rural primary production activities and can give rise to reverse sensitivity effects and limit the productive of rural land.

In this instance, the Rural Zone is ideal for the satellite ground station activity and therefore, it is essential that the surrounding airspace and land is protected as well to ensure built form and EMI do not interrupt the facility's operation.

This restrictive designation is essentially required due to potential reverse sensitivity issues, particularly in relation to the Industrial 4 zoned land. In addition, with the Fast-track consenting process now in place, there is even more uncertainty regarding what could potentially occur on the Industrial 4 zoned land. As such, it is fundamental that this restrictive designation be put in

place. For the most part, the restrictive designation will have minimal impact on permitted activities anticipated by the District Plan.

Of particular importance and relevance to this NoR, is the following objective that relates to the Industrial 4 Zone:

> ***IND4Z-O7*** ***Reverse sensitivity effects on permitted and lawfully established activities within or adjacent to the Industrial 4 Zone as a result of any future subdivision or land use activities within the Industrial 4 Zone are avoided.***

In essence, this restrictive designation is seeking to protect the lawfully established satellite ground station. While the designation will also facilitate future growth, given the scale of the existing activity on the site and the overall consented activity, it is fundamental that the horizon mask and associated EMI matters are formally protected now. The satellite ground station is of international significance and importance due to its southerly location and low horizons. The use of 'avoid' in this objective sends a clear directive that activities within this zone must avoid adverse effects on the existing satellite ground station.

14.2 Part 2 matters

Section 171 of the RMA requires territorial authority consideration of a Notice of Requirement subject to Part 2 (the purposes and principles of the RMA).

Section 5: Purpose

The purpose of the RMA is to promote sustainable management of natural and physical resources. Sustainable management is defined in Section 5(2) as:

> *"…managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:*
>
> a. *Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> b. *Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*
>
> c. *Avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

As this is a restrictive designation, it is assessed that there are no adverse effects on Section 5 matters.

For these reasons, the proposed designation is consistent with the sustainable management purpose of the RMA as defined in section 5 of the Act.

Section 6: Matters of national importance

Section 6 of the RMA sets out matters of national importance which must be recognised and provided for. As this is a restrictive designation, there will be no adverse impacts on the Section 6 matters.

The NoR is consistent with the relevant matters of Section 6.

Section 7: Other matters

Section 7 of the RMA sets out other matters that must be considered.

There are no specific matters within Section 7 that are considered particularly relevant to this proposal.

Section 8: Treaty of Waitangi

This Section of the Act requires those exercising powers and functions under the RMA to take into account the principles of the Treaty of Waitangi. The area which would be subject to this restrictive designation are not within an identified statutory acknowledgment area.

Overall, the proposal is considered to be consistent with Part 2 of the RMA.

15 Conclusion

Space Operations New Zealand Limited requests that Invercargill City Council process this Notice of Requirement pursuant to Section 169 of the RMA and in accordance with relevant provisions of Part 8 of the RMA and anticipate Council's recommendation pursuant to Section 171(2) and (3).

Subsequently, and on the basis that this NoR addresses all the relevant matters under Part 8 of the RMA, Space Operations New Zealand Limited seek that the land designation be recommended to be confirmed.

Appendix One – Titles

Appendix Two – Radio Spectrum Management Decision

Appendix Three – Restrictive Height Plan