9 September 2025

Invercargill City Council
101 Esk Street
Invercargill 9840

Attn: Emma Spalding

via email: emma.spalding@taylorplanning.co.nz

MIC/2025/20 – Space Operations New Zealand – s92 Request for Further Information Response

Dear Emma,

Please see the responses to your further information request.

1. **It is unclear how the designation would operate in practice, with only the site at 721 and 781 Colyer Road proposed to be subject to the designation. It is considered that the designation boundary would need to be amended to the outer 3km boundary as shown on the Restrictive Height Plan.**

   The effect of locating the boundary of the designation at the 3km boundary would be that this would restrict anyone from carrying out activities on the designated land that will breach the restrictive designation conditions to which the designation relates, without first obtaining the permission of the requiring authority.

   The underlying zone of the District Plan would remain over the land subject to the designation, and would apply to any other activities that are for a purpose different to the designation purpose. Therefore, any activity or works outside the scope of the designation (i.e. works that meet the EMI and height conditions of the designation) will require resource consent as per usual, unless the activity or works are a permitted activity within the underlying zone.

   If you have a different understanding of how the designation would operate, or could provide other similar examples, it would be useful to discuss this further.

Response:

It is proposed that the designation boundary apply to the outer 3km boundary as shown on the Restrictive Height Plan. The 'locality' description within the NoR states that the designation would apply to "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". This can be altered to include all land and airspace within a 3km radius as shown on the Restrictive Height Plan if this

makes it easier to understand and administer. Essentially we want to ensure that within this radius, the height of structures is managed (for the entire radius of 3km) and that activities that 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) are avoided.

The purpose is to restrict persons from undertaking activities within this radius from constructing buildings that would exceed the height plane and from generating emissions that would impact radio signals. The requiring authority accepts that any activities or works for a different purpose and outside the designation purpose would require resource consent or confirmation of a permitted activity status.

2. **Can you please provide a report from a suitably qualified expert which explains what the Electromagnetic Interference (EMI) restriction will mean for landowners or infrastructure operators in lay terms? It is unclear what activities would be prevented from occurring on land within the 2km radius subject to the EMI restriction. What impact would this restriction have on landowners within the 2km radius, and what activities would be restricted, for example telemetry of resource consent data, use of personal locator beacons, domestic scale satellite dishes? Is there any existing infrastructure within this radius which would be impacted, for example cell towers, high voltage transmission lines or substations?**

   It may be necessary to amend the designation so that the activities that are restricted are set out in the designation, to make it clear to plan users.

Response:

Robin McNeill, Chief Executive Officer of SpaceOps, has provided a response to this query:

1. Under the radio regulations it is already illegal for anyone to interfere with another service. Technically, the aspect of our NOR to Radio Spectrum Management's Field Officers (formerly known as Radio Inspectors) to find and prosecute anyone creating radio frequency interference to our operation. Interference is most likely to come from electronic switching equipment, especially if that equipment is connected to DC or AC power cables as the cables would act as antennas. It serves planners and engineers contemplating establishing electronic switching equipment to be formally aware that protection of our receiving frequencies is required and know that they have to specify equipment that is conformal. This is our biggest concern and the prime reason we want protection: should a solar farm be established in the vicinity with, say, $1 million of switching DC-to-AC inverters that are not conformal, it could be very difficult to get the solar farm to swap out these inverters for better performing inverters should the inverters prove to produce unacceptable EMI.

2. Under the Radio Regulations, it is not currently possible for a cellphone tower to obtain a radio transmitting licence for a cellsite transmitter within 2 kilometres of the station that would interfere with us. The NOR essentially makes this rule explicit to anyone not familiar with radio spectrum licencing.

3. Later this year Radio Spectrum Management is to go to public consultation for a decision on the use of K-Band radio frequencies that we use for space-to-Earth radio-communications. We know cellphone operators want to use this band and we need to protect our use of it. The cellphone operators can use other frequencies at Awarua, but without a Requirement, we cannot guarantee continued operations at K-Band, which would mean we could not provide service to our customers.

4. Under the Radio Regulations it is permissible for a point-to-point microwave radio link operating in the 8 GHz band to be established within 2 kilometres of the station. This would cause us significant problems, and is another strong reason why the NOR is necessary. Anyone wanting to establish an 8 GHz microwave link could just as easily and at no extra cost operate at another frequency that would not interfere with us.

5. The Restriction applied for only applies to the radio frequencies set out in Radio Spectrum Management's radio bandplan that are used for the reception of radio signals from space. With a few specific exceptions, it is not legal to have a terrestrial transmitter operating in these bands. Personal locater beacons do not transmit in these bands. Domestic scale satellite dishes such as used for Starlink and Gravity Internet transmit in frequencies reserved for Earth-to-space links and so would not fall within our requirement.

6. High voltage power lines do not emit radio frequency energy unless there is a faulty insulator that is arcing over—this is something the power line owner does not want either and they would want an arcing insulator found fixed, but we would want it fixed more urgently than the power line owner: we would want to be able to expedite a remedy.

7. Hand-held cellphones communicating with a cellsite would not interfere with our space-to-Earth reception

With specific regard to the electrical power inverters, the Requiring Authority seeks the ability to require an owner of the equipment either closes it down or repairs it if it interferes with or causes interruption to the ground satellite station operations. Providing good engineering practice is carried out by the designers and installers of the equipment, there should be no problem. But SpaceOp's does not want to find itself in a situation with a neighbour who is uninterested in fixing a problem should it arise.

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Mr McNeill holds the following qualifications which make him an expert in this field:

- BE(Hons.)(Elect. & Electronic)

- Senior Member Institute of Electrical and Electronic Engineers

- Chartered Professional Engineer
- Electrical Engineer under the Electrical Workers Registration Board

Further, Mr McNeill has worked in the following positions and roles which have dealt with EMI matters:

- Engineer and Supervising Engineer with New Zealand Post Office and Telecom New Zealand (1981-1993)
- Senior Expert, International Telecommunications Union (ITU)
- Telecommunications consultant 1993-1995, 1999-2004)
- Designed and managed deployment of wireless broadband networks 2004 – 2012
- In charge of Awarua Satellite Ground Station from 2004-present
- Member of Radio Spectrum Management's Technical Advisory Group, 2023 - present.

Mr McNeill is deemed to be a suitably qualified expert in this field. If necessary, Mr McNeill can provide a response to this question in a letter that is signed by him that confirms his qualifications and experience to answer this question.

3. **The document provided in Appendix 2 of the application does not explicitly mention the Awarua Ground Station or define it as one of three protection zones allocated for space research. The document appears to provide a general overview of frequency allocations and usage in New Zealand, including allocations for space research, but it does not specify particular locations or protection zones for space research activities. Is there another decision document that is missing from the application? (Referred to as the RSM decision throughout the application).**

Response:

This has been provided.

4. **The application mentions the Radio Regulations – can you please provide a copy of this document, and an explanation of the legal status of the document in NZ and how it relates to this application? The quote provided at page 13 of the application is not referenced and it is unclear what obligations are placed on Councils to ensure these regulations are enforced.**

Response:

The Radio Regulations can be found using this link (the English version of the Regulations are close to 70mb):

Radio Regulations - Link

New Zealand is bound by an international treaty to adhere to these regulations.

The International Radio Regulations are incorporated into New Zealand legislation by reference in the Radiocommunications Act 1989.

See https://www.treaties.mfat.govt.nz/search/details/t/3922/860

While there is no requirement on Councils to ensure these are enforced, the designation will ensure that surrounding land uses are compliant. This is similar to how airports include designations for heights that arise from Civil Aviation requirements (the RMA does not specifically control Civil Aviation requirements).

5. **Please provide details of any consultation that has been undertaken. As the airspace and land designation will place restrictions on landowners within the 2km and 3km radius, it is anticipated that the NOR would be notified to all landowners and any other affected parties, such as infrastructure providers. It also appears that the 3km designation boundary would overlap with existing designations for the state highway and railway corridor, therefore consultation should be undertaken with the Requiring Authorities for these designations to ascertain which designation would be the primary and secondary designation.**

   Please note, a full assessment of affected parties will be undertaken once the scope and effect of the designation are more fully understood.

Response:

The NZTA and Kiwirail designations are anticipated to be the primary designations. It is noted that the restriction imposed by way of this designation on these existing designations would only be in relation to built form. At this distance, the maximum height of built form imposed by the designation is over 200 meters. Therefore, it is not expected that the proposed designation will not impact these existing designations.

Approvals are being sought from both NZTA and Kiwirail and will be forwarded through once received.

6. **A legal opinion on whether there is scope under the RMA to manage electromagnetic interference, or whether this is not something that can be considered as an environmental effect or reverse sensitivity effect.**

Response:

A legal opinion has been obtained from Todd & Walker that deals with this question and is attached as Appendix 1 to this further information response. Essentially the opinion confirms that there is scope to manage EMI under the RMA and it is already a matter managed under the District Plan.

Conclusion

If you require further information or clarification on any point, please do not hesitate to contact me.

Yours sincerely,

Alex Dunn

Senior Planner

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