TODD & WALKER law
LAWYERS | NOTARY PUBLIC

PHONE: +64 (3) 441 2743
FAX: + 64 (3) 441 2976
EMAIL: enquiries@toddandwalker.com
WEB: www.toddandwalker.com

QUEENSTOWN OFFICE: Level 2
Craigs Investment Partners House,
Five Mile Centre,
36 Grant Road, Frankton 9300

WANAKA OFFICE: Level 1, 78 Ardmore Street,
Wanaka 9305

POSTAL ADDRESS: PO Box 124, Queenstown 9348, NZ

5 September 2025

Space Operations New Zealand Limited
PO Box 1306
Invercargill

By email: robin.mcneill@spaceops.nz

Dear Robin,

Consenting Advice for Awarua Satellite Ground Station

Brief

1. Space Operations New Zealand Limited (**Space Ops**) applied, as a network utility operator (**NUO**) under s 167 of the Resource Management Act 1991 (**RMA**), for requiring authority. The Minister for the Environment approved the gazettal of Space Ops as a requiring authority, by notice dated 13 March 2025.

2. The notice of approval in the Gazette is upon the following conditions:

> Space Operations New Zealand Limited is approved as a requiring authority under section 167 of the Resource Management Act 1991 for its network utility operation of constructing, upgrading, maintaining and operating the Awarua Satellite Ground Station based in Awarua, Southland to the extent that this station undertakes radiocommunication activities as defined in section 2(1) of the Radiocommunications Act 1989. For avoidance of doubt, this includes structures, works, and activities ancillary to transmission or reception of signs, signals, writing, images, sounds or intelligence of any nature by radio waves.[1]

3. As a requiring authority, Space Ops has served a notice of requirement (**NOR**) on Invercargill City Council proposing a restrictive designation in respect of land and airspace within which the current Awarua Satellite Ground Station is located.[2] This designation has included electromagnetic interference (**EMI**) restrictions to ensure that any activity within a 2km radius of the Space Ops site does not generate any emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at the Space Ops site, set out in Table of Radio Spectrum Usage in New Zealand (PIB 21).

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1 Found at: https://gazette.govt.nz/notice/id/2025-go1421.
2 MIC-2025-20.

4. An electromagnetic field (**EMF**) is the fundamental force created by electric charges at rest or in motion, which exists as electric and magnetic fields and can propagate as waves. Examples include radio waves for telecommunications / radiocommunications TV. EMI is the interference / disturbance generated by an external source that affects the performance of another EMF.

5. The Space Ops site is vulnerable to incompatible adjacent construction that could cause EMI by interfering with radio waves used by Space Ops in its operations.

6. Invercargill City Council has asked for confirmation that EMI can be regulated by the Resource Management Act 1991 (**the Act**). Specifically, information is requested on *'whether there is scope under the RMA to manage EMI, or whether this is not something that can be considered as an environmental effect or reverse sensitivity effect'.*

Executive summary

7. Electromagnetic effects are frequently regulated by territorial authorities through planning instruments promulgated under the Act.

8. Specifically, EMI (referenced as 'Electrical Interference') and the possible effects of EMI on operations are recognised in the Invercargill Operative District Plan.

9. The Environment Court has considered and addressed effects of EMI in relation to promulgation of district planning instruments, and no case law has expressly considered such effects would be ultra vires the Act.

10. A plain and ordinary interpretation of the widely expressed definitions of environment and effect in the Act, and when read in the context of NUOs in s 166 – 167, signals the intent of the Act is to regulate such effects.

Purpose of the Resource Management Act 1991

11. Section 5 provides that the purpose of the Act is to promote the sustainable management of natural and physical resources.

12. The Act is focused on managing the effects of activities, rather than regulating the activities themselves. 'Effect' is broadly defined as including any positive or adverse effect, temporary or permanent, past / present / future, and cumulative. Effects can be of high probability or low probability which has high impact.

13. Section 2 defines environment broadly as:

> (a) ecosystems and their constituent parts, including people and communities; and
>
> (b) all natural and physical resources; and
>
> (c) amenity values; and

(d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters.

Approach by Invercargill City Council

14. Effects of Electrical Interference, defined as "the interruption, obstruction, or degradation of the effective performance of an electrical device or radio frequency" is recognised in the Invercargill Operative District Plan.[3] A number of zones in the Plan include Electrical Interference as a matter of discretion associated with building side yard and setback breaches. Furthermore, in a number of zones, objectives are included which are:

> To avoid nuisance from electrical interference.
>
> ***Explanation:*** *The possibility of electrical interference is an environmental effect that needs to be considered in the placement and maintenance of electrical equipment and machinery, including transmitting aerials.*[4]

15. Similar objectives and explanatory notes exist for other zones, including the Rural Zone, Business 1–6 Zones, Industrial Zones, Airport Zone, Hospital Zone, and Port Zone.

16. Although the definition of Electrical Interference is slightly different from the term electromagnetic interference as expressed in the Space Ops NORs, their meaning and intent are effectively synonymous.

17. Policies applying to the Airport Operations and Airport Protection Zones protect airport operations from adverse effects of electrical interference.[5] An explanatory note states: "Electrical interference has the potential to adversely affect the safe and efficient operation of the airport. The possibility of electrical interference is an environmental effect that needs to be considered in the placement and maintenance of electrical equipment and machinery, including transmitting aerials."

18. Existing designations also address the strength of electric and magnetic fields.[6]

Approaches by other territorial authorities

19. In *Transpower New Zealand Ltd v Wellington City Council* [2000] ELHNZ 256, the then operative Wellington City Council Proposed District Plan dealt with the electromagnetic effects of utilities throughout the city. In that case, the parties had subsequently agreed that electromagnetic effects in permitted and controlled activity rules should be controlled in line with the appropriate NZ Standards but, if appropriate and relevant, could be considered under discretionary rules.[7]

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3 See: RURZ-P17.
4 Otatara Zone.
5 See: AIROZ-P8 and AIRPZ-P8.
6 See, for example: APP7-7 Designation 60.
7 At [64].

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20. A brief review of approaches taken by various other territorial authorities has been undertaken. It appears that the view in the *Transpower* decision has been adopted by subsequent Wellington City Council District Plans and some other territorial authorities.

21. More detailed approaches have been taken in the:

Tararua District Council Operative District Plan

(a) The construction of renewable electricity generation facilities is a discretionary activity, with "the extent to which the facility will adversely affect the amenity values of the locality, having particular regard to the impact of the development on existing residential dwellings…electromagnetic interference to broadcast or other signals" included as an assessment matter.[8]

Dunedin City Council Second Generation District Plan

(b) Advice Note attached to activities in residential / rural residential zones:[9]

> Other requirements outside of the District Plan
>
> 1. Any electrical equipment used for an activity must be designed to meet the New Zealand electromagnetic compatibility (EMC) standards, to ensure there are no effects from electrical interference on surrounding sites. The Radio Spectrum Management (RSM) is the governing body which regulates EMC products in New Zealand and investigates interference to safety services, radiocommunication systems and broadcast services such as radio and television reception.

(c) Notification rules in rural zones identify Radio New Zealand Ltd as an affected party for proposed activities sensitive to "electromagnetic interference, noise or visual effects from Radio New Zealand's facilities" within the radio transmitters mapped area.[10]

(d) Designations refer to compliance with NZS2772.1: 1999.[11]

Thames Coromandel District Council Partly Operative District Plan (March 2024)

(e) Electromagnetic interference is an assessment matter for restricted discretionary activities proposed within some zones (for example, the Airfield Zone[12] and Commercial Zone).[13]

(f) Provides for a home business as a permitted activity in specified zones, provided there is "no electromagnetic interference with the operation of household equipment occurs outside the site" (among other requirements).[14]

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8 See: 5.3.7.4.
9 See, for example: 15.3.3.
10 See: Rule 16.4.
11 See, for example: A1.4.22 Transport New Zealand Ltd.
12 See: Section 40, Table 4.
13 See: Section 42, Table 3.
14 See: Section 41.4, Rule 16.

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Wellington City Council designations

(g) Transpower NZ Ltd Wilton substation – regulates electromagnetic field related to the substation at the boundary of the site.

(h) Wellington International Airport Ltd – electromagnetic radiation required to comply with NZS 6609: 1990 (Radio Frequency Radiation). Designation conditions also note that where work on land within the "designation will adversely affect the operation of any Airways Corporation of New Zealand's electronic or visual navigation aid or air traffic service facility, the requiring authority shall consult with Airways Corporation of New Zealand to ensure that the requirements of the Parties' respective obligations under Civil Aviation of New Zealand Rules 139.121 and 172.57 (and any subsequent amendment) are met."

(i) This designation is comparatively very broad to the Space Ops NOR, which is limited to a specific emissions limit.

Christchurch City Council designations

(j) Designations refer to compliance with NZS 6609: 1990 or NZS 2772.1: 1999

22. Silence within District Plans does not mean that electromagnetic effects cannot be regulated under the Act. In developing District Plan provisions, territorial authorities must have regard to the matters in section 32 of the Act in determining the most efficient and effective regulation methods for controlling environmental effects. It may be that the territorial authority has concluded that effects can be managed in other ways, for example, compliance with the relevant NZS or another international standard.

23. Equally, reference in a District Plan to regulation of effects through an extraneous body, such as The Radio Spectrum Management (RSM) does not preclude consideration of effects under the District Plan / Act. Such a reference (for example as in the Dunedin Second Generation Plan) is in the nature of a signal to the user of the plan that other permissions or standards may be relevant to consider in addition to effects under the Plan / Act. That is a consistent approach, for example, with respect to signalling private property or covenant considerations, or Building Act permission requirements.

Statutory interpretation

24. When looking at the wide definition of Environment in S 2 of the Act, this includes people and communities, and all natural and physical resources. It also includes any social, economic, or cultural conditions which affect those.

25. Just as smell and sound are commonly regulated under the RMA, electromagnetic fields are a part of the environment as an emanating effect of use and development of physical resources. Ergo, any effect of interference on such use, is capable of regulation under the Act.

26. A broad interpretation of the Environment in this way also fits with the intention of s 166-167 of the Act in definition network utility operators as including those who:

operates or proposes to operate a network for the purpose of—

(i) telecommunication as defined in section 5 of the Telecommunications Act 2001; or

(ii) radiocommunication as defined in section 2(1) of the Radiocommunications Act 1989;

27. If the Act prescribes that such networks are within the ambit of a network utility operator so gazetted, then it is plainly the case that the Act envisages a regime that can regulate effects on those networks, be it from reverse sensitivity or other incompatible land and airspace uses.

28. There is nothing express in the Act which concludes the regulation of EMI, for example in the way that effects from trade competition are expressly regulated against.

Case law

29. A number of Environment Court cases have addressed concerns relating to effects of electromagnetic interference (albeit mostly related to concerns on health and amenity effects as a result of electromagnetic fields).

30. The case of New Zealand Association of Radio Transmitters Inc v Kapiti Coast District Council, the Environment Court considered an appeals against Kapiti Coast Proposed District Plan from the New Zealand Association of Radio Transmitters Incorporated (NZART) and the Kapiti Amateur Radio Society Incorporated (KARS) opposing a number of the amateur radio provisions in the PDP. Concerns from the Appellants called in evidence included that the PDP rules would render neighbourhood electronic radio devices more susceptible to unavoidable interference. The Appellant's witnesses considered that higher antennae permitted in the PDP rules also reduced the chances of electromagnetic interference with neighbours and the level of radio noise interference from neighbours' computers and electronic appliances.[15] The Court considered such effects and made no comments as to such being ultra vires the Act.

Conclusion

31. It seems trite law that EMF are part of the environment as defined, and therefore effects on their operation (for example through EMI) are also capable of being regulated. Effects and Environment are intentionally broad in their remit, and nothing in the drafting of the Act limits those to preclude regulation of EMI. To the contrary, a number

[15] *New Zealand Association of Radio Transmitters Inc v Kapiti Coast District Council* [2019] NZEnvC 39 at [13].

of planning instruments across the country (including the ICC) control such effects, and the Courts have also considered the effects of the same.

Yours faithfully
TODD & WALKER LAW

Rosie E M Hill
Principal
Email: rosie.hill@toddandwalker.com
Matter ID: 36365