

**Before the Hearings Commissioner appointed by
the Invercargill City Council**

Under

the Resource Management Act
1991 (**Act**)

And

In the Matter of

a notice of requirement for a
designation under Section 168 of the
Act to place a restriction on built form
and electromagnetic interference
around the Awarua Satellite Ground
Station

**Statement of Evidence of
Christine Elizabeth McMillan
for Stewart Family Assets Limited
(Planning)**

Dated: 21 September 2026

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INTRODUCTION

Qualifications and Experience

1. My name is Christine Elizabeth McMillan. I am a Planner employed by Bonisch Consultants, a consultancy firm specialising in land development, and I operate out of the Invercargill office.
2. I hold a Bachelor of Arts (1999) and a Master of Planning (2008) from Otago University. I am a full member of the New Zealand Planning Institute. I have over 19 years of planning experience. My role at Bonisch Consultants includes the preparation of resource consents and private plan change applications as well as resource management advice to clients.

Code of Conduct for Expert Witnesses

3. Although this is not an Environment Court hearing I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023. This evidence is within my area of expertise, except where I state that I am relying on material produced by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

SCOPE OF EVIDENCE

4. The topics covered in my evidence are as follows:
 - (a) Stewart Family Assets Limited (**SFAL**) land;
 - (b) Industrial 4 (Awarua) Zone;
 - (c) Horizon mask;
 - (d) Electromagnetic Interference;
 - (e) Response to the Section 42A Report; and
 - (f) Response to the evidence of Mr Dunn.

EXECUTIVE SUMMARY

5. This evidence addresses the implications of the proposed designation for the land owned by Stewart Family Assets Limited (**SFAL**) within the Industrial 4 (Awarua) Zone and considers the proposed Horizon Mask and Electromagnetic Interference

(EMI) restrictions. The evidence also responds to the Section 42A Report and the evidence presented for the requiring authority.

6. The SFAL land is located within the Industrial 4 Zone, which was established to provide for large-scale industrial development and renewable energy generation. Activities anticipated within the Zone include heavy industrial activities, associated buildings and structures, and renewable energy generation infrastructure.
7. In relation to the proposed Horizon Mask, I have relied on the evidence of Mr Morley, the peer review undertaken by AnS Consulting, and the conclusions reached in the Section 42A Report. That evidence indicates that the effects of structures on ground station reception are dependent on the characteristics of the individual structure and its relationship to the receiving equipment. In my opinion, the evidence does not support the application of a uniform 3 kilometre restriction across the Industrial 4 Zone. I consider the Horizon Mask has the potential to constrain activities anticipated by the planning framework, including heavy industrial development and renewable energy generation.
8. In relation to the proposed EMI restrictions, I accept the evidence that the amended designation conditions now closely align with protections already provided through the existing Radio Spectrum Management framework. While I consider the resulting effects on activities within the Zone, including the SFAL land, are likely to be less than minor, I also consider it relevant that similar protections already exist through the Radiocommunications legislative regime. While outside my area of expertise, I also consider that the existence of a designation can have impacts on a landowner due to market perceptions.
9. I generally agree with the conclusions reached in the Section 42A Report regarding the effects of the Horizon Mask on future development opportunities within the Industrial 4 Zone and the tension between the designation and the objectives and policies that seek to enable industrial development in Awarua. I also agree that further consideration of alternatives to the proposed Horizon Mask is warranted.
10. Having reviewed the evidence presented by the requiring authority, I remain of the opinion that the evidence demonstrates that the proposed Horizon Mask has the potential to materially affect the development opportunities anticipated by the planning framework, while the necessity of the EMI restrictions is less clear given the existing regulatory protections.
11. Overall, I conclude that the Horizon Mask raises significant issues in relation to the future use and development of the Industrial 4 Zone and that the Notice of Requirement should be carefully assessed against the statutory tests in section 171 of the Resource Management Act 1991, including the consideration of alternatives

and whether the proposed restrictions are reasonably necessary to achieve the requiring authority's objectives.

STEWART FAMILY ASSETS SITE

12. The SFAL site (**Site**) is approximately 493 ha of land with frontage on Bluff Highway (SH1) and Colyer Road and can generally be described as bare land operated as a dairy farm, including associated infrastructure. **Appendix 1** shows the area of the Site shaded blue, in relation to the designation extents.
13. Opposite the Site on SH 1 are several large industrial operations including Ballance Agri-Nutrients, Open Country Dairy, South Pacific Meats and South Wood Export. The surrounding area is otherwise rural in nature.
14. The Site is within the Industrial 4 (Awarua) Zone (the **Zone**) of the Invercargill City District Plan and is subject to APP5 Concept Plan – Industrial 4 (Awarua) Zone. There are no other overlays for this site.
15. The overview of the Zone states that *'in providing for its long term future, maintaining and diversifying its economic critical mass may be the most important issue that Invercargill has to address on an ongoing basis. In further recognition of this, land has been zoned for large industry in anticipation of development'*¹.
16. The site contains a significant number of delineated natural inland wetlands and most development will be subject to the National Policy Statement for Freshwater Management (**NPS-FM**) and the National Environmental Standard for Freshwater (**NES-F**).

INDUSTRIAL 4 (AWARUA) ZONE

17. The Zone is intended to provide for the future development of large industrial warehousing and large scale service activities which are more appropriately located outside the urban area (IND4Z-O1). IND4Z-P1 requires the establishment of the Zone to enable its use by industrial activities and IND4Z-P11 requires the height of buildings within the Zone to meet the operational requirements of the activities, whilst taking into account landscape qualities within the Invercargill District.
18. The following activities are permitted within the zone: agriculture, essential services, freight depot, heavy industry, land transport facility, light industry, specialist facilities for animal husbandry including veterinary clinic, storage and sale of liquid and

¹ Invercargill City District Plan page 197, Industrial 4 Zone Overview.

gaseous fuels.² Any activity associated with the investigation, development and operation of renewable energy generation is also a permitted activity in the Zone.

19. All buildings and structures within the Zone are controlled activities up to a maximum height of 35 metres above which the activity status is restricted discretionary.³
20. The Zone rules have been structured to enable a range of permitted activities whilst still requiring consent for all buildings or structures, and formation of hard surfaces as a controlled activity. Where buildings exceed the maximum (controlled activity) height of 35m the activity status becomes restricted discretionary, with discretion being limited to:
 - (a) reasons for the building or structure height;
 - (b) the compatibility of the proposed building or structure with the scale of development and character of the local area;
 - (c) the degree and practical effect of overshadowing of neighbouring properties; and
 - (d) the ability to mitigate any adverse effects of the increase in building or structure height.
21. Despite the controlled and restricted discretionary nature of buildings and structures within the Zone, I consider that in terms of the structure of the zone framework, the permitted activity status for heavy industrial and energy generation activities creates an anticipation for these types of activities in the Zone. Established heavy industry activities nearby such as dairy factories (for example Fonterra, Edendale and Open Country, Awarua) have building heights up to 56 metres high, Balance Agri-Nutrients located to the immediate east of the site has a chimney stack of approximately 40m, and the Tiwai Aluminium Smelter stack has a height of approximately 146m. In general, heavy industrial activities can frequently be expected to include tall chimney stacks in order to allow for suitable air dispersal, reducing ground level concentrations of contaminants, in accordance with environmental limits provided through national and regional direction.
22. Renewable energy generation is a permitted activity in the Zone and SFAL has applied for resource consent (ICC RMA/2026/26 & Environment Southland APP-2026/2069) to establish seven wind turbines over the site which enable up to 150GWh of power generation per year. The turbines are intended to support industrial development within the site while contributing to energy security and decarbonisation within the wider region. The turbines each have a height at the nacelle of 119m and 200m to the tip of blade when vertical.

² Invercargill City District Plan, page 120, IND4Z-R1.

³ Invercargill City District Plan, page 122, IND4Z-R12.

HORIZON MASK

23. SpaceOps propose to designate the airspace and land within the Zone to restrict any built form that would protrude through an angle of 5 degrees as measured from 2m in height from the boundary of the existing satellite ground station to a distance of 3km from the SpaceOps boundary (**Horizon Mask**).
24. The Horizon Mask is detailed on the attached plan at **Appendix 2** and shows the maximum height that will be permitted beneath the 5 degree mask at 500m intervals extending out from the boundary of the SpaceOps site. An example cross section is included on the plan showing the distance that industrial activities such as Fonterra dryers, Balance-Agri chimney stack and wind turbines would have to be located from the SpaceOps boundary in order to be under the horizon mask. In general terms at 500m the Horizon Mask will be at 45m, at 1 kilometre 89m, to the 3 kilometre mark where the Horizon Mask will be at 244m.
25. The Notice of Requirement (**NoR**) application states that the effects of the Horizon Mask on the Industrial 4 Zone will be minor, stating that the area affected would be limited to 4ha. The basis for this assessment limits the level of effect to the maximum permitted height of structures enabled by the plan, without considering the activities that are enabled or anticipated by the plan, in particular heavy industry and renewable energy generation.
26. When considering enabled activities, the area of effect widens considerably to 238 ha for wind turbines and 100 ha for heavy industrial activities such as those described above where large buildings and chimney stacks are typical. This is illustrated on the plan attached to this evidence in Appendix 2. This is likely to have a significant effect on the ability of SFAL to utilise their land in accordance with the industrial and renewable energy purposes that it was zoned for. Even considering a scenario where approval may be provided by SpaceOps on a case-by-case basis, the level of uncertainty created by the designation is considered by Mr Ballingall and Mr Jones to severely constrain the likelihood of businesses to invest in development of the land.
27. Mr Morley addresses the effects of the Horizon Mask in his evidence and considers that the 3km extent of the mask is excessive and the use of the height variable to determine effects on signals is flawed. He states the radio frequency (**RF**) signal between the satellite and the earth receiving station is not a narrow point source or line but is a large volume ellipsoid. Mr Morley considers that at 1km from the receiving antenna a maximum obstruction area of 177m² would be permissible without a significant degradation of signal. In relation to wind turbines as proposed by SFAL, Mr Morley considers that at a distance of 1150m from the receiver a turbine

as proposed by SFAL will block 20% of the signal and at 670m a turbine will block 40% of the signal. Mr Morley does note that buildings and other wide, solid structures will block more signal, although this depends on factors such as levels of glazing.

28. Based on this, and the range of activities enabled in the Zone, I consider the imposition of a 3km horizon mask to be overly conservative in addressing potential effects on the requiring authority's operations and that the level of effect on the environment, including the SFAL land, will be more than minor.

ELECTROMAGNETIC INTERFERENCE LIMITATION

29. SpaceOps propose to designate the airspace and land within the Zone to restrict any activities emitting electromagnetic emissions greater than -154 dBW/MHz at frequencies used for the reception of radio signals from spacecraft at Awarua Satellite Ground Station.
30. Mr Morley's evidence considers the 2km EMI limitation area to be arbitrary and unnecessary as the limitation only applies to intentional radiators which will not be typical for activities which are likely to establish within the Zone. If an activity which did emit intentional radiators was to establish within the Zone, Mr Morley considers that the probability of generating emissions which are harmful to the SpaceOps operations would be low. Mr Morley also notes that the 2km restriction appears to be arbitrarily applied with no known rationale for this distance.
31. While Mr Morley considers it unlikely that activities that may establish within the SFAL site will include equipment that will be classed as intentional radiators, the imposition of the EMI restriction on the Zone may result in uncertainty over whether the plant and equipment necessary for the operation of new activities will transmit within the nominated range, particularly for technology intensive operations.
32. Should intentional radiators wish to establish within the site, the restriction will require assessment of the limit at the SpaceOps receivers, rather than at the emission source. Determining compliance would require specialist EMI analysis or testing, as there is no assessment or certification methodology through which compliance with the limit would be established. This may result in uncertainty for SFAL and prospective operators with the Zone. The EMI restriction imposes a blanket limitation that could constrain future use of the land even where the actual risk to SpaceOps has not been demonstrated.
33. The application states that it is not known whether there are any industrial activities which would have a functional need for terrestrial services to generate emissions greater than -54dBW/MHz. Despite acknowledging a lack of information on whether

such activities might establish on the site, the Applicant considers that the effects on the SFAL site will be minor, basing this on the existing protection provided by the Radio Spectrum Management and then confirming in the response to Council's engineering review that it is intended that the EMI restriction will place an additional constraint on the SFAL land.

34. Taking into consideration the evidence of Mr Morley, the amendments to the wording of the designation conditions and the constraint already in place through the Radio Spectrum Management decision, the Radio Communications Act 1989 and the Radio Regulation 2001, I consider that the adverse effects on activities within SFAL will be less than minor. However, regardless of that effects conclusion, I also consider that the given the protections already in place from these regulations that the EMI restriction is not reasonably necessary for Space Ops to achieve their objectives for which the designation is sought under section 171(1)(b)(ii).
35. Counsel for SFAL will address whether adequate consideration have been given to alternative sites, routes or methods of undertaking the work under section 171(1)(b)(i) but I have addressed Mr Dunn's alternatives assessment later in this statement of evidence.

RESPONSE TO SECTION 42A REPORT

36. I have read the Section 42A Report prepared by Ms Spalding and agree with the description of the receiving environment as it relates to the SFAL land.

Positive Benefits

37. Ms Spalding, in assessing the positive effects associated with the designation, considers that there will be positive effects through provision of certainty for the ongoing operation of SpaceOps but notes that the weight attributed to this positive effect is moderated by the protection already afforded by the Radiocommunications Act framework and that the wider economic and strategic benefits have not been specifically quantified. I agree with this assessment and refer to the evidence of Mr Ballingall who sets out in detail the economic benefits to the region resulting from the potential of the Awarua Quadrant and the consequential effects of the SpaceOps NoR on those economic benefits.
38. Mr Ballingall's modelling indicates Otago-Southland real gross domestic product (**GDP**) would be \$606m above baseline by 2040 with cumulative GDP benefits of \$4.16b over the 2027-2040 period, if development of the site is unconstrained. Under the NoR constrained scenario, the economic benefits are modelled as \$208m above baseline by 2040 with cumulative GDP benefits of 1.16b over the 2027-2040

period. This equates to one third of the benefits resulting from development unconstrained by the NoR.

Electromagnetic Interference

39. Ms Spalding, referring to the engineering review by AnS Consulting and subsequent amendments to the applicant's proposed conditions, considers that the proposed EMI restrictions now closely align with the protections afforded by the Radio Spectrum Management (**RSM**). This conclusion generally aligns with the evidence of Mr Morley and is accepted.
40. Ms Spalding sets out a series of recommendations in Section 8 of the Section 42A report. In relation to EMI, Ms Spalding considers that the electromagnetic restriction aspect of the NoR is appropriate and should be confirmed, subject to conditions.⁴ I disagree that the EMI Limitation is appropriate. Section 171(1)(b)(ii) of the Act requires particular regard to be had to whether the work and designation is reasonably necessary. Given the existing protection afforded by the Radio Spectrum Management decision, the Radio Communications Act 1989 and the Radio Regulation 2001, I consider that the EMI limitation creates a duplication of these protections, without adding any additional protection. Therefore, the EMI limitation cannot be considered reasonably necessary.

Horizon Mask

41. In relation to the Horizon Mask, Ms Spalding considers that the effects on anticipated development within the Industrial 4 Zone as a result of the height restriction are significant and unjustified. I agree with this assessment and that the Horizon Mask may significantly constrain development within the Awarua Quadrant, preventing enabled activities with typically higher buildings and structures such as dryers, chimney stacks or wind turbines. I refer to the evidence of Mr Morley and of the AnS peer review in reaching this conclusion. Both Mr Morley and Mr Sathyendran consider that the level of effect caused by an object in a radar's path is very specific to the building or structure in question and that applying a uniform restriction over a 3km radius is excessive and conservative.
42. Ms Spalding considers that the proposed designation itself does not result in any actual or potential reverse sensitivity effects. Ms Spalding acknowledges that the ground station has been developed next to a site that is zoned for large scale industrial development and that the designation is seeking to curtail the development of the Zone. I disagree with the conclusion that the designation does not result in reverse sensitivity effects. As stated, the designation seeks to curtail development

⁴ Invercargill City Council Section 42A Report, 31 August 2026, page 40.

on the adjoining site, this is in line with the definition in paragraph 123 of the Section 42A Report which states that reverse sensitivity occurs where sensitive activities establish near infrastructure, industry, transport networks or primary production activities and later seek restrictions on the operation of those activities.

43. The evidence provided by Mr Morley and the engineering peer review by AnS Consulting state that not all structures will physically obstruct EMI. Mr Dunn⁵ supports this is his evidence, stating that the Ground Station could continue to undertake some operations even if the horizon line becomes obstructed, and then makes the distinction that the designation will provide for the efficient operation of the Ground Station. I do not agree that increased efficiency cannot be considered essential. I am therefore not satisfied that the horizon mask can be considered reasonably necessary under s171(1)(b)(ii).
44. Ms Spalding notes in the alternatives assessment that the Zone was introduced to the ICC District Plan in 2009 and therefore the Applicant would have been aware of the development potential of the zone prior to expansion in 2019 and 2023. In relation to this point, I note that 2009 was when the Zone was introduced to the plan, however the application was publicly notified in 2008 and SpaceOps was not a submitter on the plan change application. I agree with the wider conclusion of Ms Spalding that the requiring authority has not adequately satisfied the requirements of s171(1)(b)(i) particularly in relation to alternatives to the uniform Horizon Mask.

Relevant Planning Provisions

45. I agree with Ms Spalding's assessment of the relevant Invercargill City District Plan (ICDP) provisions in particular, that the designation is contrary to Objectives IND4Z-O1 and IND4Z-P1 which seek to ensure sufficient land is available for activities which due to their scale are encouraged to located in areas outside the urban area and to enable such development within the Zone. I also agree with Ms Spalding's conclusions in relation of IND4Z-R25 in that the designation creates a reverse sensitivity effect within the SFAL land, significantly constraining activities within the Site.
46. I also consider IND4Z-P11 Height of Structures to be relevant in that it seeks to enable heights of building within the Zone to meet the operational requirements of activities within the Zone. The designation is contrary to this policy.

⁵ Statement of Evidence of Mr Alex Dunn, dated 14 September 2026 at [371]-[372].

Southland Regional Policy Statement (SRPS)

47. Ms Spalding considers that the designation is consistent with the infrastructure policies and objectives of the SRPS because it seeks to protect the ongoing operation of nationally and regionally significant infrastructure. I consider that the assessment of the infrastructure chapter should also consider the effect of the designation on the establishment of renewable energy generation on the site. SFAL have applied for resource consent to establish a windfarm on the site, which finds considerable support in the SRPS particularly in Objectives ENG.3 and ENG.4, and Policy ENG.2 which aim to increase renewable energy generation, recognise and make provision for renewable energy generation. I consider that there is a clear conflict in support under the SRPS in that the SpaceOps operation and renewable energy generation are both identified as nationally and regionally significant infrastructure. The ICDP Energy Chapter gives effect to the SRPS and reflects these same goals in relation to renewable energy generation.

National Policy Statements

48. The National Policy Statement – Renewable Energy Generation (**NPS-REG**) requires decision makers to recognise and provide for the national significance of renewable electricity generation activities and have particular regard to meeting or exceeding central government's renewable electricity generation targets. The NPS-REG provides clear direction on the benefits of renewable electricity generation and requires all Councils to make provision for it in their plans which both the SRPS and the ICDP have done. The designation as proposed will significantly constrain the ability of the site to be developed for renewable energy generation in accordance with the aims of the NPS-REG.

Part 2 of the Resource Management Act 1991

49. Ms Spalding considers that the NoR is consistent with Section 8 and that there are no relevant matters of national importance in Section 6. Ms Spalding however considers that the NoR is not in accordance with Sections 5 and 7 of the Act, as the proposed designation will impose significant restrictions on the use and development of the Industrial 4 Zone, limiting its future development potential. I agree with the conclusions reached by Ms Spalding in relation to Part 2 matters. The designation will impose significant restrictions on development of the Site. Mr Ballingall assesses the cost of the constraints on development of the SFAL land at \$3billion. Mr Ballingall further notes that having seen no quantified estimates of additional regional economic benefits as a result of SpaceOps imposing the proposed designations over the SFAL land that he does not expect these to be of the same magnitude of as the economic costs of the NoR as he has estimated. As

a result of this evidence I consider that the designations over the SFAL land will not enable people and communities to provide for their economic wellbeing and will not sustain the potential of the land resource to meet the reasonably foreseeable needs of future generations and cannot be considered to be in accordance with Part 2 of the Act.

RESPONSE TO SPACE OPS' EVIDENCE

Horizon Mask

50. Mr Dunn, in his evidence, states that it is not desirable for SpaceOps to have to rely on restricted discretionary activity status for buildings within the SFAL land which exceed 35m. Mr Dunn further considers that the controlled activity status for buildings less than 35m where consent must be granted may adversely affect SpaceOps established operations. This assessment considers the effect on SpaceOps operations but does not consider the effect of a second regulatory pathway on SFAL and future customers. The Zone was established to enable industrial development and renewable energy generation and the imposition of the designation serves to create uncertainty for SFAL and future customers in relation to permitted and controlled activities.
51. Mr Dunn further states that the 5 degree surface now functions as an assessment trigger rather than an absolute height limit, basing this on the set of conditions appended to his evidence as Appendix A which are intended by SpaceOps to provide a pathway for structures which breach the Horizon Mask. I do not consider that the conditions proposed in Appendix A provide a suitable pathway. The conditions do not provide a clear and objective benchmark or baseline that must be achieved, and are instead subjective; with SpaceOps able to withhold approval under all options presented. Due to this, I consider that the horizon mask remains an unjustified over-reach on control over SFAL's land requiring third party approval for activities within the Zone outside of the District Plan process.

EMI Limitation

52. In respect of the EMI limitation, Mr Dunn considers that the designation reflects the existing RSM protection framework applying to terrestrial services within the Awarua protection area, and that the designation simply provides greater planning visibility and certainty for landowners. I agree with Mr Dunn that the designation reflects the existing RSM protections without adding any additional or lesser constraint and that is why I consider the EMI designation to be redundant and unnecessary.

Economic Effects

53. Mr Dunn considers that there is potential for adverse economic effects, but does not consider that these effects are of such a scale that the Industrial 4 Zone should be excluded from the designation. Mr Ballingall has provided expert economic evidence in relation to development of the land constrained and unconstrained by the designation. His assessment indicates the NoR reduces the potential economic benefits of the Awarua Quadrant by \$3.00b (or 72.1%) over the 2027-2040 period. This is a significant economic cost resulting from the designation, the effects of which are clearly more than minor.

Policy Assessment

54. I generally agree with Mr Dunn's assessment of the ICDP objective and policies relating to both the Industry Overview Chapter and the Industrial 4 Zone. I agree with his statements explaining that the Awarua land was zoned specifically for industrial development and that the Industrial Overview objectives support the enabling of the Site. I also agree with the assessment that IND-P2 further supports the development of large industry outside of the urban area and within the Zone. I do not agree that IND-P2 provides for further restrictions to be imposed, the wording of the policy is to minimise restrictions on industrial activities located outside the District's built-up urban areas whilst having regard to the need to remain the amenity for neighbouring zones. The existing controls and matters of discretion for the IND4Z provide for consideration of amenity effects, the policy does not suggest third party constraints should be added beyond this.
55. I agree with Mr Dunn's assessment that if the designation was to materially sterilise the Industrial 4 Zone or prevent it from fulfilling its strategic industrial purpose that the NoR would be difficult to reconcile with IND4Z-O1. I disagree with Mr Dunn in his conclusion that the 35m building height is the limit of what should be considered when assessing this objective. The 35m height is a controlled activity status, buildings and structures beyond that are assessed as restricted discretionary activities, with limited matters of discretion applying. Within the approximately 590 ha Zone, the designation may impose limitations over an area of up to 100 ha for activities typically anticipated within a Heavy Industrial Zone, and up to 200 ha in relation to wind turbine development, which is also enabled by the ICDP. The proposed designation assessment trigger also does not resolve this issue, with no clear pathway for approval from SpaceOps. I consider the designation to be contrary to IND4Z-O1.

Alternatives Assessment

56. Mr Dunn provides an overview of the SpaceOps site suitability and the reasons why the location was chosen. Mr Dunn agrees with Ms Spalding that SpaceOps would have been aware of the development potential of the Site and that the Zone forms part of the planning environment. He acknowledges that SpaceOps could have, and did not, seek additional planning protection at the time of the last District Plan review, I further note that SpaceOps did not submit on or seek protections at the time that the Zone was included within the District Plan. SFAL purchased the land with the on the basis that the Zone enabled industrial development. Mr Dunn considers that relocation of the Ground Station is not realistic based on the attempts to find a suitable location elsewhere in New Zealand, including Lochiel and Ruakaka. No consideration has been provided for alternate sites within Awarua itself. I note there are several nearby properties which presumably have the same characteristics as the subject site and are more than 3km from the Zone. Accordingly, I consider that alternative locations are a realistic method of achieving the objectives of the NoR.
57. Mr Dunn considers that the status quo, without additional planning mechanisms would not reliably achieve SpaceOps objective of maintaining an unobstructed low horizon. Mr Dunn acknowledges that the EMI limitation replicates the existing RSM protection. I agree with this and consider that there is no change from the status quo in relation to the EMI limitation designation as those protections already exist (and as mentioned earlier, are unnecessary). In relation the Horizon Mask, I agree that no designation has the potential to result in the increase of effects on the unobstructed low horizon sought by SpaceOps.
58. Mr Dunn considers the alternative of an exemption for narrow structures such as cranes or turbines. Mr Dunn does not consider a blanket exemption of that nature appropriate as the technical evidence accepted into the Section 42A Report is that even relatively narrow structures can interfere with Ground State reception. Mr Morley has addressed this point in his evidence, stating *'It is correct that narrow structures such as cranes and wind turbines can obstruct and reduce the radio signal, however this is a function of the structure blocking a smaller area of the beam compared to the total beam area of the receiving antenna.'* It seems clear from the evidence that while there is an effect from slender structures this is very limited and will not prevent the Ground Station from functioning. I therefore consider that an exemption for slender structures is a realistic alternative which will enable the objective of the SpaceOps designation.
59. Mr Dunn considers that the proposed conditions provide a suitable response to submitters' requests for an objective, transparent and timely process for assessing penetrations of the Horizon Mask. I have reviewed the conditions proposed and

consider that none of the options provide a transparent or timely process for approval to be given. In all cases SpaceOps retains control of the approval process with no clear pathway for arbitration or mediation should there be a dispute between two parties, this is particularly the case for Option B. The conditions also do not provide a clear baseline for assessment of effects and the result is essentially a subjective test, with no clear outcome. Mr Ballingall, in his evidence has not attempted to quantify the effect of the level of uncertainty resulting from such a process but notes *'From an economic perspective, there is a meaningful difference between development that can proceed under the ordinary planning framework and development that becomes contingent on a further approval. The latter can create additional risk, delay and design cost.'* When considered overall my opinion is that the proposed condition framework is uncertain, unclear and is likely to have real world consequences on the ability of SFAL to attract business to the Site.

60. Overall, I consider that the requestor has not adequately considered all alternatives in relation to relocation, and maintaining the status quo (in relation to EMI), and exemptions for narrow structures. I also consider that SpaceOps could have intervened at a much earlier opportunity in the plan change process in 2008 and again in the District Plan Review process in 2019.

Reasonable Necessity

61. Mr Dunn considers that the key issue in regard to the designation being considered reasonably necessary is its application over the Zone. Mr Dunn then states that he does not consider it reasonably necessary to demonstrate that every penetration of the 5 degree plane would necessarily cause a material operation effect. I disagree with this and as a planner would take a different approach and look to be satisfied that there was robust evidence that the Horizon Mask was necessary to be imposed over the SFAL site. Mr Dunn then relies on the case by case assessment conditions proposed to determine whether a development should be approved for the site. As discussed above I do not consider the proposed conditions to be suitable as there is no clear baseline of assessment nor is there a pathway for arbitration. The level of uncertainty for those assessing suitability of the site for investment remains significant.

Part 2

62. Mr Dunn considers that the designation promotes sustainable management and is consistent with Part 2. In reaching this conclusion, Mr Dunn states that efficient use the development applies to both the Zone and the Ground Station and that the proposed condition pathway provides for the development of the SFAL land while managing effects on SpaceOps' operations. I have discussed my concerns in relation to the proposed conditions above and do not consider that they provide

adequate relief or certainty to enable development within the SFAL land. I consider that the designation will impose significant restrictions on development of the Site, this will not enable people and communities to provide for their economic wellbeing and will not sustain the potential of the land resource to meet the reasonably foreseeable needs of future generations. The designation, in my opinion, is not consistent with Part 2 of the Act.

CONCLUSION

63. I consider that the proposed Horizon Mask would impose a significant and unjustified constraint on the development potential of the SFAL land and the wider Industrial 4 (Awarua) Zone. The evidence of both Mr Morley and Mr Sathyendran demonstrates that the 3 kilometre Horizon Mask is a highly conservative response to a potential effect that is dependent on the characteristics, location and scale of individual structures. A uniform restriction across the Zone is not supported by the nature of the effects being managed and would unnecessarily constrain activities that are enabled, anticipated and provided for within the planning framework.
64. The proposed designation would materially affect the ability of the Site to accommodate heavy industrial development, renewable energy generation and other activities anticipated by the Industrial 4 Zone. The resulting constraints are inconsistent with the purpose of the Zone and create a reverse sensitivity effect whereby development opportunities on adjoining industrial land are curtailed in order to protect the operation of a facility that established with knowledge of the surrounding planning environment.
65. While I agree that the amended EMI provisions are likely to result in less than minor effects on SFAL, I consider those provisions largely duplicate protections already provided through the Radiocommunications Act 1989, the Radio Regulations 2001 and the existing Radio Spectrum Management framework. For that reason, I do not consider the EMI designation to be reasonably necessary to achieve the requiring authority's objectives under section 171(1)(b)(ii) of the Act.
66. I am also not satisfied that the requiring authority has adequately considered alternatives to the proposed designation, particularly in relation to the extent and application of the Horizon Mask, exemptions for narrow structures, reliance on existing regulatory controls for EMI, and alternative methods of managing potential effects. Nor am I satisfied that the proposed approval pathway provides a clear, objective or certain mechanism through which future development could proceed. In my opinion, the conditions retain a substantial degree of discretion for SpaceOps and create a level of uncertainty that is likely to deter investment and development within the Site.

67. Overall, I consider that the proposed designation is not reasonably necessary in its current form, is contrary to the objectives and policies that seek to enable development within the Industrial 4 Zone, and would result in significant adverse economic and land-use consequences. In my opinion, the Notice of Requirement should be refused.

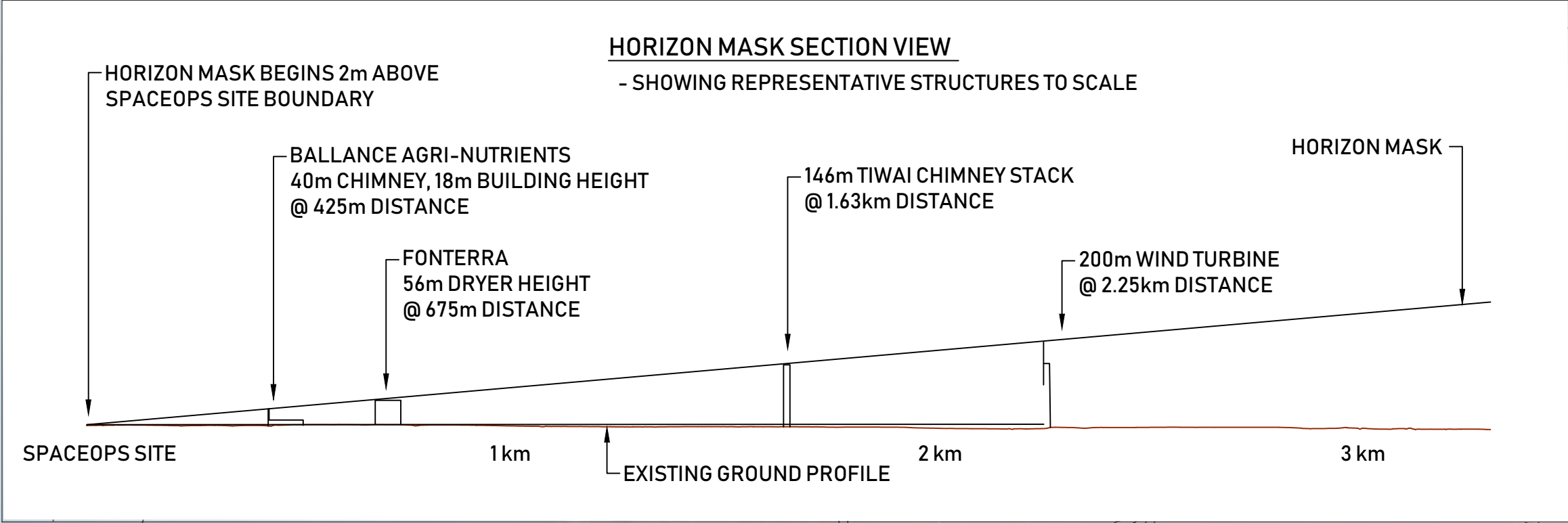


Christine Elizabeth McMillan

21 September 2026

Appendix 1: Designation Plan and SFAL Land

Appendix 2: Bonisch Horizon Mask Mapping 18 September 2026

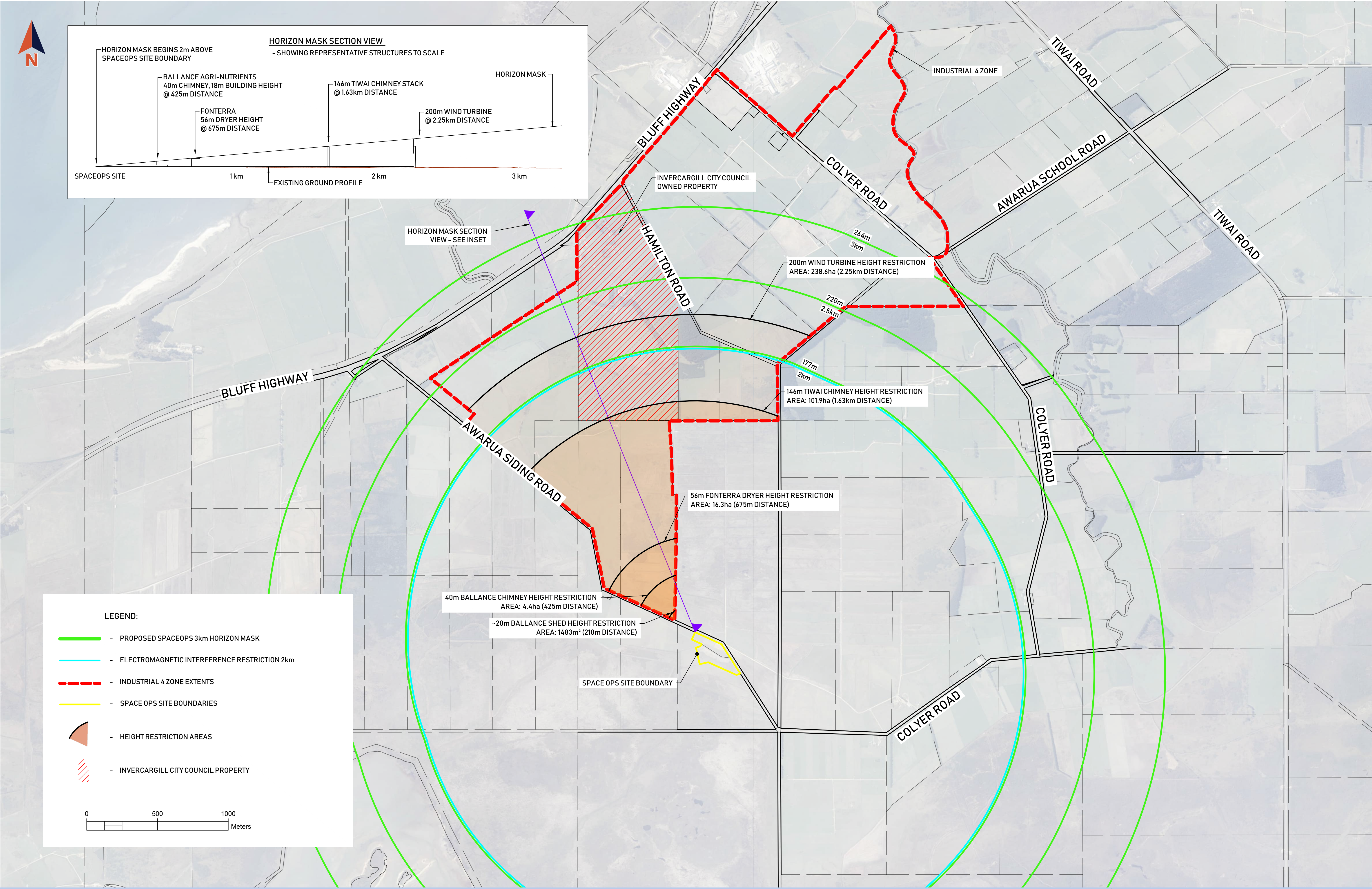


HORIZON MASK SECTION VIEW - SEE INSET

LEGEND:

- - PROPOSED SPACEOPS 3km HORIZON MASK
- - ELECTROMAGNETIC INTERFERENCE RESTRICTION 2km
- - - - INDUSTRIAL 4 ZONE EXTENTS
- - SPACE OPS SITE BOUNDARIES
- HEIGHT RESTRICTION AREAS
- INVERCARGILL CITY COUNCIL PROPERTY

0 500 1000 Meters



CLIENT:		PROJECT:		SHEET TITLE:		REV		REVISION DETAILS		DATE		SURVEYED:		JOB NUMBER		SCALE (@ A1)			
STEWART FAMILY ASSETS		SPACE OPS HORIZON MASK				AWARUA QUADRANT HORIZON MASK		A	SPACEOPS HORIZON MASKING PLAN	09/09/2026		DESIGNED:		7795-7		1:12,000			
								B	ADD SECTION VIEW AND ELECTROMAGNETIC RESTRICTION AREA	11/09/2026		DRAWN:						SHG	09/09/2026
								C	ADJUSTED HORIZON MASK TO BEGIN AT SPACEOPS SITE BOUNDARY	15/09/2026		DRAWING CHECK:						CEM	11/09/2026
								D	ADDED COUNCIL OWNED PROPERTY AND AREAS OF HEIGHT RESTRICTIONS	17/09/2026		DESIGN CHECK:							
																		APPROVED:	
														10F1		D			