

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

In the hearing of submissions and further submissions by Meridian Energy Limited on proposed Plan Changes 28 to 30 to the Mackenzie District Plan

Meridian Energy Limited

Submitter

Mackenzie District Council

Territorial Authority

Statement of Evidence of Bazel Andrew Conrad Feierabend on behalf of Meridian Energy Limited

9 May 2025

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SUMMARY OF EVIDENCE

1. The purpose of this evidence is to provide an understanding of the previous Plan Change 13 process to the Mackenzie District Plan and its relationship to Proposed Plan Changes 28 and 30 in the context of mapping and regulating activities contained within the Hydro Inundation Hazard Overlay. My evidence also traverses the reasons why it is appropriate to extend the Hydro Inundation Hazard Overlay to those areas outside the scope of the Plan Change 13 process which was completed in 2018.
2. I have outlined in my evidence the national significance of the Waitaki Power Scheme to the New Zealand electricity system and the need to protect it from reverse sensitivity effects associated with land use and subdivision development.
3. I have also described why it is appropriate to regulate activities within the Hydro Inundation Hazard Overlay rather than rely solely on Dam Safety and Community Response Plans to manage the consequences of a dam or canal failure associated with the Waitaki Power Scheme.
4. Meridian largely supports Proposed Plan Change 28 and the associated planning framework as drafted and as set out in Ms Ruston's planning evidence.
5. Meridian has significant concerns on Proposed Plan Change 30, relating to:
 - (a) The lack of robust land use and subdivision controls within the Special Purpose Airport Zone (AIRPZ) as it relates to the Pūkaki Airport to manage reverse sensitivity effects on the Waitaki Power Scheme; and
 - (b) The lack of development controls to manage the potential consequences of a dam or canal failure on people and structures within this zone.

6. Meridian supports the recommendations from Ms Ruston as outlined in her expert planning evidence about how the above shortcomings of this plan change can be resolved.
7. Meridian has considered the s42A Report's assessment and recommendations concerning NOISE-P2 and NOISE-R17. Meridian no longer wishes to pursue its relief sought for these provisions.

INTRODUCTION

8. My full name is Bazel Andrew Conrad Feierabend. I am a member of the New Zealand Planning Institute and have over 30 years of planning experience under the Resource Management Act 1991 (**RMA**) in the context of both policy development and consenting processes.
9. I have read the relevant submissions and planning documents supporting Plan Changes 28 and 30 and the section 42A report prepared for the Panel as part of its consideration of these matters. I have also read and am familiar with the evidence prepared by William Veale, James Walker and Sue Ruston on behalf of Meridian Energy.
10. Meridian has made several submissions on matters relating to the plan changes. However, my evidence relates primarily to Plan Change 28 and Plan Change 30 in terms of the extension of the Hydro Inundation Hazard Overlay to Flanagan Lane, Lyford Lane and Pūkaki Airport and as it applies to the Waitaki Power Scheme (**WPS**). Appendix 1 to my evidence identifies the additional areas brought into the Hydro Inundation Hazard Overlay through this process.
11. I participated in Plan Change 13 to the Mackenzie District Plan on behalf of Meridian from the time the Environment Court issued its first interim decision in 2011¹ to the conclusion of the Section 293 process in 2018. My primary role in this process was to manage Meridian's advocacy response to this Plan Change.

¹ *High Country Rosehip Orchards Limited and Mackenzie Lifestyles Limited* [2011] NZEC 387-

12. As I explain further in my evidence, the Plan Change 13 process which first introduced hydro inundation hazard mapping to the Mackenzie District Plan was of narrow scope and applied only to the Rural Zone. This has resulted in planning maps with gaps across the Flanagan Lane and Lyford Lane areas and Pūkaki Airport. Meridian has been engaging with Mackenzie District Council on this issue since the Plan Change 13 process ended in 2018. Meridian supports the extension of the Hydro Inundation Hazard Overlay to areas not covered by Plan Change 13 and considers this a logical outcome to address these gaps.
13. I am authorised to present this evidence as a representative of Meridian and on behalf of the company.

SCOPE OF EVIDENCE

14. The purpose of this evidence is to provide a brief understanding of Meridian's operations and interests in the Mackenzie district. It describes why Meridian supports the planning framework proposed in Plan Change 28 which deals specifically with the Hydro Inundation Hazard Overlay with supporting regulation. It also identifies Meridian concerns that need to be addressed as part of Plan Change 30 as it applies to Pūkaki Airport.
15. I will be presenting evidence on:
 - (a) Meridian as a company.
 - (b) The role of renewable electricity generation in general and the importance of the WPS in assisting New Zealand to meet its climate change commitments and targets as it transitions to net zero greenhouse emissions and decarbonises the economy.
 - (c) The importance of consistency in application of the policy and regulation response arising from the updated Hydro Inundation Hazard Overlay introduced into the Mackenzie District Plan via Plan Changes 28 and 30 (this is particularly important to the existing Plan context as introduced via Plan Change 13).

- (d) Meridian's response to submissions received on Plan Changes 28 and 30 in relation to areas within the Hydro Hazard Inundation Overlay.
- (e) The s 42A reports prepared by Ms Megan Justice on Plan Change 28 and Mr Nick Boyes on Plan Change 30.
- (f) Meridians position on its submissions to NOISE-P2 and NOISE-R17

MERIDIAN'S POSITION ON PLAN CHANGE 28 & PLAN CHANGE 30

- 16. Meridian's general position on Plan Change 28 is that the provisions are shaped correctly to achieve the outcomes set out in Meridian's primary submissions.
- 17. Meridian has significant concerns on Proposed Plan Change 30 in the context of the Pūkaki Airport being in the Hydro Inundation Hazard Overlay. Meridian considers that Plan Change 30 lacks robust land use controls to manage the potential for harm to people and property and the potential for reverse sensitivity effects on the nationally significant Waitaki Power Scheme. Meridian considers the Objectives, Policies and Rules that apply to the Pūkaki Airport need to limit the activities to core airport and airport related activities. Controls are needed to prevent unnecessary increases in people occupancy at Pūkaki Airport.
- 18. The existing Hydro Inundation Hazard Area Maps in the Operative District Plan with supporting Objectives, Policies and Rules were introduced through the Section 293 process invoked by the Environment Court in 2011 under the Resource Management Act 1991 on Plan Change 13. The mapping and supporting provisions provide an important function to protect the safety of people and property and avoid the potential for reverse sensitivity effects on the WPS.
- 19. I consider that the extension of this mapping in the form of the Hydro Inundation Hazard Overlay to include Pūkaki Airport and areas of Lyford Lane and Flanagan Lane provides for the proper integration of the hydro inundation provisions into the Plan in a holistic manner. They are

necessary to achieve an appropriate balance between enabling landowners to develop and use their land while minimising risks to human health and property and avoiding reverse sensitivity risk to the WPS.

20. Meridian seeks the relief promoted in Annexure 1 of Ms Ruston's planning evidence regarding Meridian's submissions lodged on Plan Changes 28 to 30.

MERIDIAN ENERGY

21. Meridian is a limited liability company listed on the New Zealand Stock Exchange, with 51% of the company owned by the New Zealand Government.
22. Meridian's core business is the generation, marketing, trading, and retailing of electricity and the management of associated assets and ancillary structures in New Zealand.
23. In addition to being New Zealand's largest generator of electricity, Meridian is the country's largest generator of renewable electricity and is committed to generating electricity from 100% renewable sources.

THE WAITAKI POWER SCHEME

24. Meridian owns and manages the Waitaki Power Scheme from Lake Pūkaki down to the Waitaki Power Station, comprising six power stations. The WPS is nationally important infrastructure and makes a significant contribution to New Zealand meeting its climate change obligations.
25. On average, the WPS contributes approximately 18% of NZ's annual electricity generation requirements and contributes proportionally more during periods of peak demand – up to 30% of the national requirement.
26. The output from the WPS in 2024 was 7,559 GWh – enough energy to meet Canterbury's annual requirements and help meet demand in other regions. There is no readily available alternative generation in New

Zealand that could substitute the volume of electricity produced by the WPS.

27. The operation of the WPS, including its protection against reverse sensitivity effects, should continue to be provided for in the Mackenzie District Plan. This can be achieved by effectively carrying over the outcomes of Plan Change 13 (albeit with a new Objective recognising the hydro hazard, and a refined policy and rule suite) through Plan Changes 28 and 30 and extending these provisions via appropriate mapping. It is also important to ensure that dam safety considerations are appropriately considered as part of the plan making process.
28. Through its submissions, Meridian seeks a Plan framework that recognises the importance of enabling the WPS to continue to operate while protecting it against reverse sensitivity effects. As set out in more detail in Ms Ruston's evidence², this is consistent with directions of the National Policy Statement Renewable Energy Generation 2011 (NPS REG), the Canterbury Regional Policy Statement, and Strategic Objectives ATC-O4 and ATC-O6 of the MDP. It is also appropriate to regulate activities in a way that does not encourage people and structures to be exposed to unnecessary harm from the consequences of a dam or canal failure.
29. Meridian considers it has a role in assisting achievement of government targets and aspirations for the reduction of greenhouse gases through the development of new renewable energy generation. The Government's current targets and intentions are set out below:
 - (a) New Zealand has signed and ratified the Paris Agreement³ and is committed to reducing greenhouse gas emissions to 30% below 2005 levels by 2030.

² Ms Ruston's planning evidence paragraphs 25-41

³ https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang_en

- (b) The Zero Carbon Act⁴ came into force in 2019 and has committed New Zealand to achieving net zero greenhouse gas emissions by 2050.
- (c) The New Zealand Government has set a target of 100% renewable electricity generation by 2030 (in an ‘average hydrological year’).
- (d) The New Zealand Government has committed to planting 1 billion trees by 2028 as a carbon sink (carbon storage)⁵.
- (e) New Zealand has signed up to the Powering Past Coal Alliance, which commits the country to phase out the use of coal in electricity generation by 2030.

30. The RMA requires persons exercising functions and powers under this Act to have particular regard to the effects of climate change and the benefits derived from the use and development of renewable energy in achieving the purpose of the RMA⁶.

31. Meridian seeks that the above commitments and directions can be given appropriate effect through compatible policy responses in the Mackenzie District Plan, including through Plan Changes 28 and 30. As previously indicated in my evidence, these plan changes are important in protecting the scheme from reverse sensitivity issues in the context of protecting current generation and output.

ELECTRICITY DEMAND PROJECTIONS

32. Electricity demand in New Zealand is projected to significantly increase over the next 30 years.

33. For instance, Transpower expects a doubling of electricity demand by 2050 (see Figure 1). Although the spread of projections from other

⁴ Climate Change Response (Zero Carbon) Amendment Act 2019

⁵ <https://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/>

⁶ Section 7(i) and (j) RMA

agencies is wide, all agree there will be an increasing electricity demand (see Figure 2).

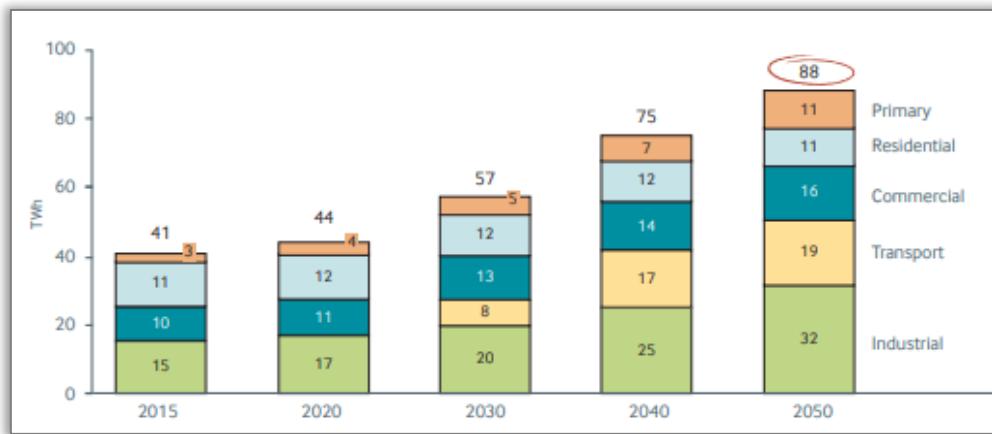


Figure 1 – Estimated New Zealand electricity demand by sector⁷

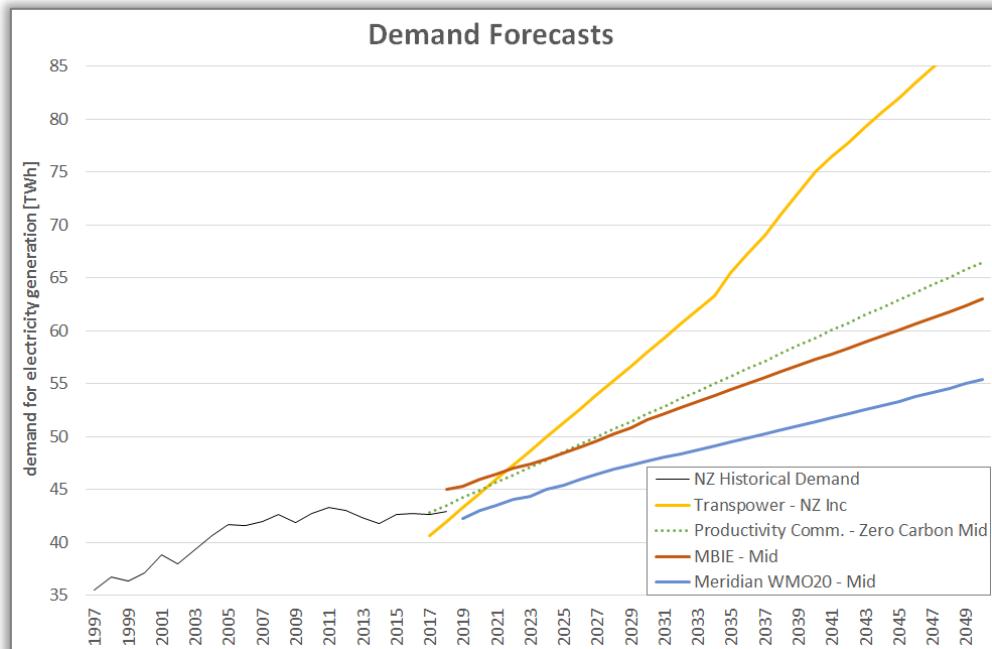


Figure 2 – Historical and forecast electricity demand in New Zealand 1997 to 2050, from Transpower, Productivity Commission, MBIE, and Meridian Energy

34. Transpower projects significant electrification in the shift from energy sources such as coal, gas, and oil to renewable electricity. The construction of new renewable generation and the move away from non-renewables will happen over time as assets naturally require replacement and generators respond to demand growth and the market opportunities this presents for commissioning new generation plant.

⁷ Transpower 2018: Te Mauri Hiko – Energy Futures white paper

35. With this in mind, it is imperative that the current generation capacity of the WPS (and other major hydroelectric power stations) is not compromised because of reverse sensitivity and other effects.
36. Hydroelectricity has a particular importance within New Zealand's electricity system, given its role in supporting baseload demand. Baseload generation from hydro production was estimated to equate to 60% of New Zealand's electricity production in 2023.
37. It is recognised that any new, significant hydroelectricity generation would be difficult to consent, meaning there is a focus on renewable energy development projects from other sources (primarily from solar and wind). This means it is important that existing hydroelectric generation is protected particularly from reverse sensitivity effects in the context of security of supply to the New Zealand electricity system.

MERIDIAN'S CONCERN WITH REVERSE SENSITIVITY & RISK TO PEOPLE & PROPERTY

38. Meridian expended significant resources via Plan Change 13 to the Mackenzie District Plan to identify the potential extent of flow path scenarios and consequences associated with the unlikely event of both Pūkaki High Dam and/or Canal breaches associated with the WPS.
39. Mr Veale's evidence explains how this mapping was prepared, how it is used in Dam Safety Assurance Programmes, and how it was subsequently incorporated into the Operative District Plan via Plan Change 13⁸.
40. Reverse sensitivity from a dam safety perspective arises primarily in two forms: firstly, in the context of a changed Potential Impact Classification (PIC) of dams and canals (from Low PIC to Medium PIC or High PIC), and secondly, in the context of increased operational and monitoring obligations associated with such structures. Mr Veale's⁹ and Mr Walker's¹⁰ evidence describes such effects in detail, including requirements

⁸ Evidence of William Veale, Development of the Hydro Inundation Hazard Overlay, paragraphs 52–58

⁹ Evidence of William Veale Effect of Development on Dam and Canal with a High PIC paragraphs 76–78

¹⁰ Evidence of James Walker Reverse Sensitivity – Dam Safety Management paragraphs 20-32

associated with maintaining and updating the Dam Safety Assurance Programme and the physical works that may be required to meet the higher structural standards which may be triggered by downstream development.

41. Meridian's primary concern in the context of reverse sensitivity is where development establishes downstream of the WPS and consequently the Potential Impact Classification associated with its infrastructure changes from Low to Medium or High or a combination of these. The Environment Court, through the Plan Change 13 process, confirmed the validity of responding to such reverse sensitivity effects and established an appropriate policy and rule framework for their management.
42. As explained in Mr Veale's¹¹ evidence, the consequence of such changes in PIC can mean substantial investment is required by the scheme operator to ensure the existing infrastructure is upgraded to meet the required design standard of the new classification under the Dam Safety Regulations 2022 and the Dam Safety Guidelines. In turn, this can cause disruptions to generation and operations where substantial upgrades are required and can divert funding away from other projects as described in Mr Walker's evidence¹².
43. Having completed the dam break scenarios for the Plan Change 13 process, it became clear that several areas covered by the hydro inundation hazard mapping were impacted but were outside the scope of that Plan Change given the zoning of that land. Plan Change 28 and Plan Change 30 seek to address that matter, which from Meridian's perspective is appropriate and provides a consistent planning approach.
44. The areas outside the scope of Plan Change 13 subject to the extended Hydro Inundation Hazard Overlay have residential and commercial uses associated with them which have been enabled through the underlying historical zoning.

¹¹ Evidence of William Veale, Potential Impacts of Development on the Dam Owner, paragraphs 59–78

¹² Evidence of James Walker on costs of reverse sensitivity paragraph 32

45. In the case of Lyford Lane, Pūkaki Airport and substantial portions of Flanagan Lane, a potential dam break scenario could have significant consequences in the context of harm to life and structures. This is important as illustrated in Mr Walker's¹³ evidence given the lack of time available to evacuate from some areas and the estimated velocity and depth of water.
46. It is not Meridian's position that all development of land within these new areas should be prevented because of the extension of the Hydro Inundation Hazard Overlay proposed under Plan Change 28 and 30. Rather, its position is that subdivision and development should be constrained and managed in a way that:
 - (a) Recognises the consequences that could occur in the unlikely event of a dam break, and minimises where possible the number of people at risk in that scenario, and
 - (b) Protects the WPS from the reverse sensitivity effects which would flow from unrestrained intensification within the Hydro Inundation Hazard Overlay.
47. Meridian as part of its Dam Safety Assurance Programme puts in place emergency response planning to reduce potential impacts on people in the event of a dam or canal failure associated with the WPS.
48. In addition to this, the Mackenzie District Council has prepared a separate emergency response plan under its Civil Defence Emergency Management Act 2002 functions. The Civil Defence Community Response Plan provides information to residents of Flanagan Lane, Manuka Terrace, Lyford/Hocken Lane and Pūkaki Airport on the inundation hazard for these areas from a dam or canal break. It also provides emergency response preparation and evacuation guidance for this hazard.
49. However, it is Meridian's view that an emergency response approach alone is not sufficient with respect to the hydro inundation hazard in the Mackenzie district. Meridian's view is that the importance of the WPS as

¹³ Evidence of James Walker Reverse Sensitivity Dam Safety Management paragraphs 23-26

outlined in this evidence (as confirmed through the Plan Change 13 process) justifies the level of control of land use change and development via the district planning framework as proposed through Plan Change 28 and Plan Change 30, consistent with the changes proposed through Ms Ruston's evidence.

50. Both Plan Changes seek to recognise the hazard and curtail development in a way that minimises the risk to people and structures arising from a potential dam or canal failure. Meridian considers this is appropriate while recognising Plan Change 30 requires changes to meet this outcome.

RESPONSE TO POINTS RAISED IN SUBMISSIONS

51. A significant number of submissions have been received on Plan Changes 28 and 30 from residents and landowners of Flanagan Lane, Pūkaki Airport and Lyford Lane. Most of these submissions seek the removal of the Hydro Inundation Hazard Overlay and the regulation that goes with it.
52. There are several themes that arise from submissions, which I address below. The themes are:
 - (a) A risk-based approach not being followed for the management of the Hydro Inundation Hazard Overlay.
 - (b) The lack of knowledge of the existence of the hazard on purchase of land, and the impact of the Plan Changes on property values; and
 - (c) The need for structural solutions 'downstream' of the WPS to mitigate the risks of any dam or canal failure at the point where development is provided for.
53. As set out in Mr Walker's evidence¹⁴ Meridian and the Mackenzie District Council are taking a type of risk-based approach in that Meridian manages Dam Safety risk down to a very low level through its Dam Safety

¹⁴ Evidence of James Walker – Risk approach to hydro inundation hazard, paragraphs 50-53

Assurance Programme and the District Plan provisions are an appropriate means to manage the residual risk from this hazard.

54. From a district plan perspective, management of the hydro inundation hazard should first and foremost be a response to reverse sensitivity in the context of the WPS. As Mr Veale¹⁵ explains, the dam safety regulations are not focussed on the likelihood of dam failure, but on the consequences of a failure. It follows that any reverse sensitivity effect is not coupled to likelihood, but to the increased level of consequence in the unlikely event of a failure.
55. Several submissions have raised issues about the lack of knowledge of the potential hydro hazard and the potential impacts of extending the Hydro Inundation Hazard Overlay on property values.
56. In completing the mapping of the potential hydro hazard areas for the Environment Court Section 293 process for Plan Change 13 between 2011 to 2018, the full spatial extent of the area impacted by the hazard overlay became apparent. The mapping and analysis of information arising from this exercise was made available to the Council as it came to hand. My understanding is that the Council provided this information to land purchasers via land information memoranda provided under the Local Government Official Information Meetings Act 1987 after receiving the information Meridian provided.
57. As to the last matter, structural solutions are not seen as a practical solution to addressing very low probability events connected to a dam or canal failure associated with the WPS. As set out in Mr Veale's and Mr Walker's¹⁶ evidence, dam safety is focussed on ensuring the structures and supporting canal networks of a hydro scheme are designed, operated and maintained to the standard required for that structure's PIC. 'Downstream' mitigation works and measures are inconsistent with dam safety practice and would be impractical in the context of the risk being managed.

¹⁵ Evidence of William Veale Likelihood versus Consequence paragraphs 83-86

¹⁶ Evidence of James Walker Downstream Mitigation paragraphs 39-45

58. It is also worth noting that the Pūkaki High Dam and the associated canal network have been in place since the 1970s. Subsequent and ongoing development in and around the WPS is the source of the current pressure being applied to further mitigate the effects of this development. This, in my view, only highlights the types of reverse sensitivity risks that development poses to nationally significant infrastructure such as the WPS.

COMMENT ON THE S 42A REPORT

59. I have read the section 42A reporting on Plan Changes 28 and 30. Both reports recognise the issues which I have described above, but in the case of Plan Change 30 do not adequately address and respond to those issues.

60. In her planning evidence, Ms Ruston has identified several areas where the policy and rule framework particularly in the case of Plan Change 30 can be improved to manage the impacts of reverse sensitivity and the potential risk of harm to people. Meridian supports the amendments recommended by Ms Ruston.

MERIDIAN'S POSITION ON NOISE -P2 AND NOISE-R17

61. Meridian has considered the s42A Report's assessment and recommendations concerning NOISE-P2 and NOISE-R17. Meridian no longer wishes to pursue its relief sought for these provisions.

CONCLUSIONS

62. The WPS is nationally important and critical infrastructure in the context of the New Zealand electricity system. The importance of the WPS has been recognised under Plan Change 13 through introducing and mapping the areas of the Mackenzie District that are subject to potential inundation from a low likelihood (but potentially high consequence) event of a dam or canal failure.

63. Plan Change 13 protected the WPS from reverse sensitivity effects and managed the risk to people arising from land use development in the Rural Zone, within identified flow paths from dam failure scenarios. This proposition is further embedded into the District Plan via Proposed Plan Changes 28 and 30 (subject to the amendment Meridian seeks to Plan Change 30 in particular).
64. Meridian considers it is appropriate that the Hydro Inundation Hazard Overlay is extended to cover the areas of Lyford Lane, Pūkaki Airport and Flanagan Lane as proposed under Proposed Plan Changes 28 and 30.
65. Additionally, Meridian considers that land use should be managed in a way that is consistent with the outcomes of Plan Change 13, and with the directions from the higher order documents, and the strategic objectives of the Plan. Meridian considers Plan Change 28 achieves this outcome whereas Plan Change 30 in its current form does not.
66. Meridian is not pursuing submission points on NOISE-P2 and NOISE-R17.

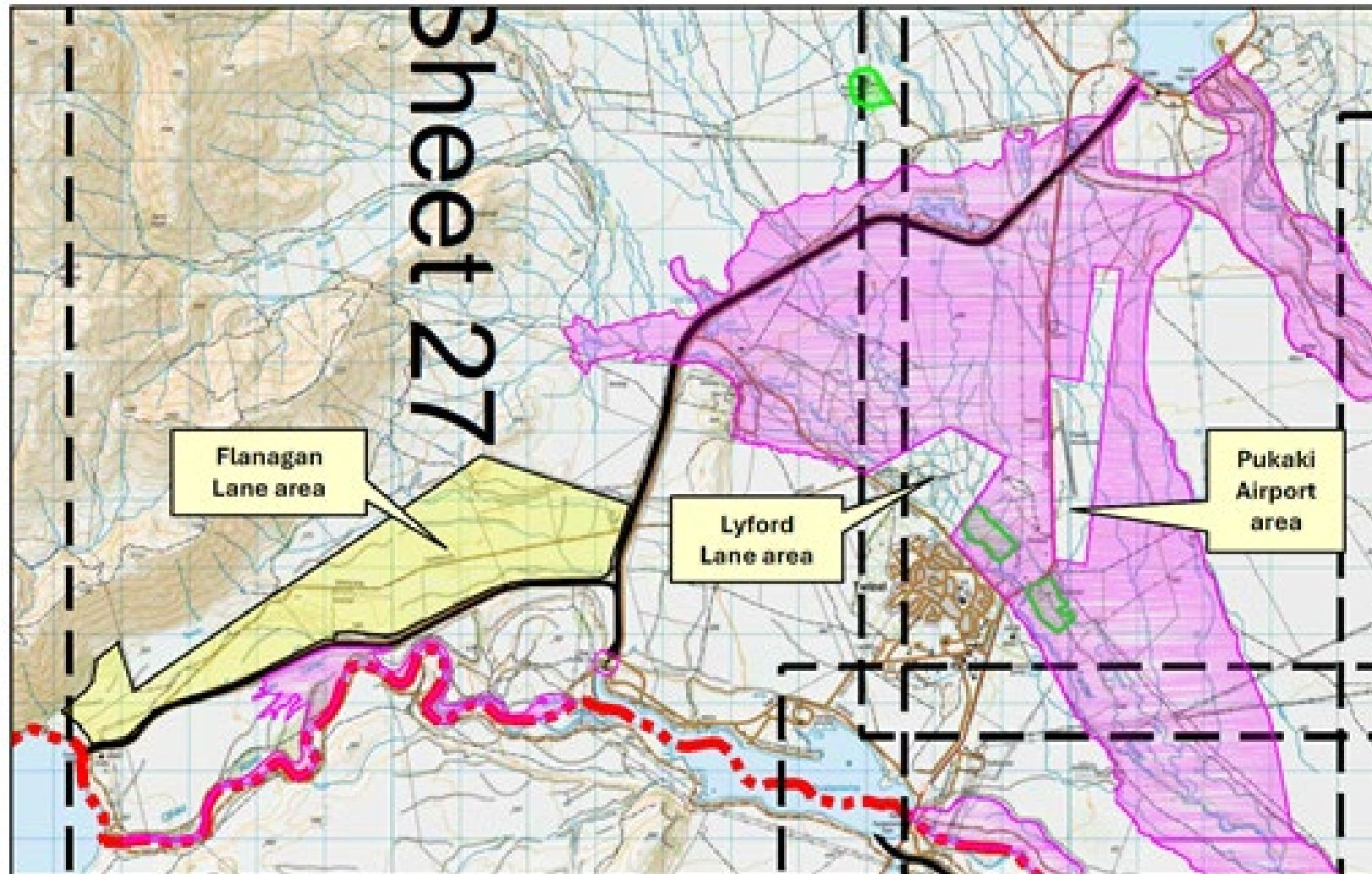


Andrew Feierabend

9 May 2025

Appendix 1: Hydro Inundation Hazard Overlay – Depiction of New Areas Captured by Plan Change 28 & Plan Change 30 Inclusive of Those Areas

Defined by Plan Change 13 to the Mackenzie District Plan



Source: Opus Drawing 6/3434/1/6504 (Rev R4) Sheet No. 21