TRANSPOWER

20 May 2025

Lodestone Energy Limited

c\- Mitchell Daysh Limited

Via Email – [redacted]

Dear Ethan,

RE: LODESTONE ENERGY PROPOSED HALDON SOLAR FARM

This document and appendices form part of Transpower New Zealand Limited's (Transpower) review comments in relation to the proposed Lodestone Energy Limited Haldon Solar Farm development at Part Reserve 1358, which is held in Record of Title CB437/82 (**the Site**). The proposed solar farm is a listed project in Schedule 2 of the Fast-track Approvals Act 2024 (FTAA). The project seeks to construct and operate a solar farm across approximately 320 hectares and connect and supply electricity to the national grid. Transpower was provided the following application documents for review:

- "Haldon Solar Project - Application for Approvals under the Fast-Track Approvals Act 2024", prepared by Mitchell Daysh Limited, dated 22 April 2025, report status: Draft (**'Substantive Application'**); and
- Appendices:
  - Appendix 1 – Proposed Conditions of Consent
  - Appendix 4 – "Lodestone Haldon Geotechnical Desktop Study", prepared by Beca Limited, revision no. 0, dated 12 September 2024;
  - Appendix 5 – "Haldon Solar Farm Flood Risk Assessment", prepared by Beca Limited, revision no. 0, dated 13 September 2024;
  - Appendix 6 – "Haldon Solar Project Landscape Effects Assessment", prepared by Boffa Miskell Limited, dated 3 April 2025, Revision 1, Status: DRAFT (**'LEA'**);
    - "Haldon Solar Farm – Graphic Supplement", prepared by Boffa Miskell Limited, dated 02 April 2025, marked "DRAFT";
  - Appendix 7 – "Haldon Solar Project Ecological Impact Assessment", prepared by AgScience, dated 18 March 2025;
  - Appendix 8 – "Haldon Solar Farm Integrated Transport Assessment", prepared by Stantec, dated 12 March 2024;
- "Haldon Solar Farm – Planning Memorandum", Subject: Haldon Solar Farm - Substation and Lines Overview, prepared by Beca Limited, dated 23 December 2024;
- "Grid Injection Point for Haldon Solar Farm Flood Risk Assessment", prepared by Beca Limited, dated 18 October 2024; and
- Drawing titled "PV Plan Layout", prepared by Lodestone Energy, dated 2025-03-04, sheets 1/2 and 2/2. (**'site layout'**)

Lodestone Energy is seeking approval under the FTAA for resource consent to construct, operate and maintain a solar farm and battery energy storage system (BESS), consisting of approximately 360,000 solar panels and associated electrical infrastructure (including power conversion and storage blocks, inverters, transformers, an on-site switching station and internal cabling) set across the 320-ha site. The solar farm will also include an operation and maintenance building and ancillary infrastructure (access roads, site fencing etc). The solar farm will connect into a proposed 33 kV – 220 kV substation to facilitate connection to the National Grid transmission line which traverses the site, with a localised upgrade to the National Grid line to establish the connection. The proposed activity is described in further detail in Section 4 of the Substantive Application.

1. National Grid Assets

As shown on the attached Asset map (Appendix A), the Benmore to Islington (BEN-ISL-A) 220kV National Grid transmission line traverses the northern half of the proposed solar farm site. Multiple single circuit steel tower National Grid support structures are also located on site (BEN-ISL-A0070, BEN-ISL-A0071, BEN-ISL-A0072 and BEN-ISL-A0073).

Accordingly, the part of the site traversed by the transmission lines is subject to the National Grid Yard (NGY). The NGY is a 12-metre setback either side of the centreline of the transmission line spans supported by towers, and 12 metres from the closest visible edge of all support structures. Please note that the 12-metre setback from the closest visible edge of the support structure foundations is not in Appendix A and will need to be physically measured on site.

2. National Grid Yard and NZECP34: 2001 Comments

Transpower's Operational Engineers and Planners have reviewed the application documents outlined above as they relate to the National Grid and provide the following comments with respect to the NGY and the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP34:2001):

2.1 National Grid Yard

Transpower seeks to keep the NGY free of activities which may impact the National Grid, in particular activities sensitive to the National Grid, and provide for the operation and maintenance of the National Grid.

Based on the site layout plan, the solar panels will be setback at least 12 metres from the National Grid transmission lines. Section 4.2.3 of the Substantive Application notes that 48 power units will be required for the solar farm. The power units will include battery storage units co-located with the inverters and transformers, with Figure 12 of the Substantive Application showing the Inverter / Battery Energy Storage System (BESS) Co-location. Transpower require all BESS to be located more than 50 metres from the National Grid transmission lines.

As a general comment on the site layout plan, it would be helpful for future revisions of the site layout plan to provide greater colour differentiation between the key solar farm infrastructure to allow the location on site to be easily identified from the plan. It would also be useful for the site plan to show the existing National Grid assets.

2.2 Access to National Grid Assets

Transpower has a right to access its existing assets under section 23 of the Electricity Act 1992. Any development / land use activities must not preclude or obstruct this right of access. Access to the National Grid transmission lines and support structures shall be maintained to ensure maintenance can be undertaken at all reasonable times and emergency works can be undertaken at all times.

Section 4 of the Substantive Application states that internal access roads will be 4 metres wide with a compacted metal surface. Transpower require internal accessways that provide access to the National Grid assets to have a clear physical space 6 metres in width to allow for access by large mobile plant (such as a crane) as required for National Grid support structure operation and maintenance activities. Accordingly, a 4 metre accessway formation width is acceptable provided there is at least 1 metre either side of the formation width to provide a physical width of 6 metres. Any fences or gates proposed at the site shall not impede Transpower's access to the National Grid assets. Where gates provide access to National Grid assets, they shall be at least 6 metres wide to allow access for large mobile plant.

2.3 New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP34:2001) Requirements

All development near the National Grid must comply with the mandatory clearance requirements of NZECP34:2001, as outlined below.

Building/structure to conductor clearance

Activities undertaken in proximity to the National Grid must comply with the building / structure to conductor separation distances set out in Section 3 of NZECP34:2001. It is understood that as the location of the solar panels and other supporting infrastructure is yet to be finalised the applicant has not undertaken a detailed clearance assessment to determine compliance with the requirements of NZECP34:2001. This assessment this will be undertaken as part of the detailed design process / subsequent Transpower Investigation Phase for the solar farm connection to the National Grid. Transpower request that the clearance assessment is provided to Transpower for review.

Transpower's Engineer notes that based on an initial assessment of the site layout, the conductor blowout extent (the area where the conductors (wires) are physically present as the lines can swing out this far in high wind conditions) is up to 25 metres each side of the centreline. Any buildings or tall structures located between 12-25 metres of the centreline of the National Grid transmission lines may be subject to building height restrictions in order to comply with the NZECP34:2001 requirements. Transpower recommend that Lodestone Energy are mindful of conductor blowout in the siting of construction compounds or any future buildings near the National Grid transmission lines. Given the lower heights of the proposed solar panels (at approximately 2.9 metres), the panels will not be impacted by the conductor blowout.

Ground to conductor clearance

The proposal will involve earthworks for the establishment of the proposed access and entrance tracks that will extend beneath National Grid transmission lines, which can reduce the ground level beneath the lines and reduce the conductor to ground separation distances required by NZECP34: 2001.

In order to comply with NZECP34:2001 conductor to ground clearances, no fill or material shall be stockpiled or deposited so that the conductor to ground clearance is reduced to less than 8 metres (7.5 metres in accordance with Table 4 of NZECP34:2001 plus 0.5 metre tolerance as required by Transpower). Transpower's Engineer notes that based on an initial assessment of the site layout, the minimum ground clearance appears to be less than the 7.5 metre clearance required by NZECP34:2001 in the transmission line span between towers BEN-ISL-A0072 and BEN-ISL-A0073, and marginal along the other transmission line spans that extend across the site. Conductor to ground clearance will require further assessment during the detailed design phase of the project.

Additionally, Transpower does not support the stockpiling of materials within 12 metres of the BEN-ISL-A National Grid transmission lines or within 12 metres of any National Grid support structure.

Disturbance of land around National Grid support structures

The appropriate management of any land disturbance around Transpower's National Grid support structures is critical for security of supply to the National Grid and providing for the health and safety of those undertaking the works. Such activities undertaken in proximity to the National Grid support structures must comply with the safe separation distances for excavation within 12 metres of the outer edge of tower foundations as set out in Section 2.2.3 of NZECP34:2001. Specifically, no excavation shall:

a. exceed a depth greater than 300 mm within 6 metres of the outer edge of the visible foundations of the tower; or

b. exceed a depth greater than 3 metres between 6 metres and 12 metres of the outer edge of the visible foundation of the tower; or

c. create an unstable batter.

Mobile plant operation

Section 5 of NZECP34:2001 sets out the minimum safe clearance requirements for mobile plant operation in proximity to the National Grid (being a minimum clearance distance of 4 metres from the conductors of the National Grid transmission lines at all times). Given the position of the transmission line at maximum operating temperature, it is likely that mobile plant height will be limited to approximately 2.5-3.5 metres in height within 12 metres of the transmission lines; however, this will need to be confirmed as part of the clearance assessment to be undertaken during the detailed design phase.

Additionally, for any construction works in proximity to the National Grid, workers must comply with NZECP34:2001 minimum approach distance limits (Section 9.2 of NZECP34: 2001) and remain 6 metres away from the lines at all times.

Transpower recommends visible flags/bunting are installed across parts of the site that will be traversable by mobile plant to alert drivers / operators to the National Grid transmission lines. The flags/bunting can also serve to remind drivers / operators to lower truck decks or mobile plant heights before driving under the transmission lines.

Fencing

Transpower does not support the installation of long lengths of conductive fencing parallel to transmission lines for electrical safety reasons. Fencing should be designed to be non-conductive or well-earthed. In accordance with Section 2.3 of NZECP 34: 2001, no conductive fencing shall be installed within 5 metres of a National Grid support structure.

3. Vegetation

Section 4.2.3 of the Substantive Application notes that "*No landscape planting is required or proposed to integrate the power stations into their surroundings as they will be screened from view from public areas.*"

Should vegetation be planted around the site perimeter to screen the site, vegetation within the NGY must not exceed 2 metres in height at full maturity and must comply with the Electricity (Hazards from Trees) Regulations 2003, or any subsequent revision of the regulations. Vegetation planted outside of 12 metres either side of the centreline of the transmission line must be setback sufficiently to ensure that trees cannot fall within 4 metres of the transmission lines.

In addition to the above planting requirements, any planting in proximity of National Grid Support Structures must be setback by at least 2 metres, with at least one side of National Grid Support Structure kept free from trees or vegetation in order to provide Transpower with access for operation and maintenance activities.

Should any planting around the perimeter of the site that extends into the NGY be proposed during consideration of the resource consent application by the Expert Consenting Panel, Transpower request the above advice forms a consent condition.

4. Construction Management Plan

Given the proximity of the proposed works associated with construction of the solar farm to the BEN-ISL-A National Grid transmission line and support structures, works will need to be carefully managed to avoid any impacts on the National Grid and minimise risk to people and plant during the construction of the solar farm. Appendix 1 of the Substantive Application outlines the applicant's proposed conditions. Conditions 3-5 of the Proposed Conditions for Mackenzie District Council requires the preparation of a Construction Management Plan (CMP). We note that the condition as worded does not include how the solar farm and substation construction will comply with NZECP34:2001 minimum approach distances (i.e., minimum required distance between wires / conductors and large construction plant), and how land disturbance around National Grid

support structures will be appropriately managed. We request that Conditions 3-5 be amended to include details covering the relevant NZECP34:2001 matters. Transpower's standard CMP condition is provided in Section 9 of this letter for reference.

5. Earth Potential Rise

Due to the close proximity of the panels and related infrastructure to transmission line support structures, any development within the site may be subject to potential Earth Potential Rise (EPR). EPR is the potential for towers or poles to transfer high voltage and dangerous currents into the ground during a lightning strike or fault on the transmission line. This can affect, among other things, all new installed services such as pipelines, communication cables, fences, streetlights and housing placed in close proximity to transmission towers.

Transpower recommend an EPR assessment be prepared, and recommended mitigation measures are included in the detailed design of the project.

6. Substation and National Grid connection

The Substantive Application proposes a connection to the National Grid via a new 33 kV – 220 kV substation linking to the BEN-ISL-A transmission line. The proposed substation will serve as a new 220 kV Grid Injection Point (GIP). An indicative location for the substation is included in the site layout with the intention of Lodestone Energy being to locate the substation between towers 71 and 72 of the existing BEN-ISL-A transmission line. While the precise substation configuration is to be determined at the detailed design stage, the indicative location appears to be located outside of the NGY. Details of the GIP will be determined once the project enters the Transpower Investigation Phase and a connection design is confirmed.

The substation design and configuration shall comply with Transpower's substation design specifications, which will assessed during the subsequent Transpower Investigation Phase. It is noted that Section 4.2.5 of the Application states that the elevation of the substation platform has been determined considering a 450-year flood return period with an additional 300 mm of freeboard, in line with Transpower's design standards.

7. Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009 (NESETA) consents

To enable the connection to the proposed substation, the BEN-ISL-A transmission line will be upgraded with a new double circuit junction tower (71A) proposed to be installed approximately midway between existing towers BEN-ISL-A0071 and BEN-ISL-A0072. The exact location of the new structure (Tower 71A) is to be confirmed during detailed design, with two options provided in the Substantive Application. A resource consent under NESETA for the new support structure 71A to facilitate the connection is being sought as part of the Substantive Application. Transpower agrees that the precise location for the Tower 71A will be determined once the project enters the Transpower Investigation phase and a connection design is confirmed.

8. Operational phase stormwater discharge consents

As part of the Substantive Application, a number of resource consents are being sought for the operational aspects of the solar farm and substation. Operational phase stormwater discharges from the proposed tracks, hardstand areas, site office, and the runoff from the solar panels will be discharged into the ground. The Substantive Application notes that resource consent is required under Rule 5.97 of the Canterbury Land and Water Regional Plan (CLWRP). Transpower understands that this would also cover the operational stormwater discharge from the proposed substation. As the final location of the substation is uncertain, Transpower understands that a site wide stormwater discharge will be sought. Should consent be granted, Transpower understands that part of the discharge permit that applies to the substation will be transferred to Transpower in accordance with section 137 of the Resource Management Act at an appropriate time in the future.

9. Consent Conditions

Transpower has reviewed the set of consent conditions proposed by Lodestone Energy in Appendix 1 of the Substantive Application. Transpower requests the following conditions are included in the Application.

Notification of works

Transpower request notification prior to the commencement of construction works for the solar farm and propose the following condition-

- *The consent holder shall provide Transpower NZ Ltd 10 working days notice in writing prior to commencing the proposed works. Note: notification can be sent to* [redacted]

Access

Transpower proposes the following condition to ensure access to National Grid Transmission Assets is maintained –

- *All buildings, structures and vegetation must be located to ensure existing vehicle access is maintained to the BEN-ISL-A National Grid transmission lines and National Grid support structures BEN-ISL-A0070, BEN-ISL-A0071, BEN-ISL-A0072 and BEN-ISL-A0073, for maintenance at all reasonable times, and emergency works at all times.*

NZECP34:2001 Compliance

Transpower proposes the following condition regarding compliance with the clearance requirements set out in NZECP34:2001 –

- *All land use activities, including the construction of new buildings/structures, earthworks, fences, any operation of mobile plant and/or persons working near exposed line parts shall comply with the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001) or any subsequent revision of the code.*

Construction Management Plan

Transpower proposes the following CMP conditions to manage construction activities occurring near the National Grid assets –

- *Prior to the commencement of construction works, the consent holder shall prepare a Construction Management Plan (CMP). The CMP shall be submitted to the Council for information 10 working days prior to the commencement of construction works.*

  The CMP shall be provided to Transpower NZ Ltd for comment at least 10 working days prior to being submitted to Council. The CMP shall be provided to Transpower via Patai Form 5 'Submit a Management Plan' - https://transpower.patai.co.nz/

- *The purpose of the CMP is to outline the construction methods and management procedures to be implemented on site so that works near the National Grid are undertaken safely and potential adverse effects on the National Grid assets are appropriately managed.*

- *The CMP must include the following (but is not limited to):*

a) *The name, experience and qualifications of the person/s nominated by the consent holder to supervise the implementation of, and adherence to, the CMP.*

b) *Construction drawings, plans, procedures, methods and measures to demonstrate that all construction activities undertaken on the site will meet the safe distances within the New Zealand Electrical Code of Practice for Electrical Safe Distances 2001 (NZECP 34: 2001) or any subsequent revision of the code, including (but not limited to) those relating to:*
   i. *Excavation and Construction near Towers (Section 2);*
   ii. *Building to conductor clearances (Section 3);*
   iii. *Ground to conductor clearances (Section 4);*
   iv. *Mobile Plant to conductor clearances (Section 5); and*
   v. *People to conductor clearances (Section 9).*

c) *Details of any areas that are "out of bounds" during construction and/or areas within which additional management measures are required, such as fencing off, entry and exit hurdles, maximum height limits, or where a safety observer may be required (a safety observer will be at the consent holder's cost.*
d) *Demonstrate how the existing transmission lines and support structures will remain accessible during and after construction activities;*
e) *Demonstrate how the effects of dust (including any other material potentially resulting from construction activities able to cause material damage beyond normal wear and tear) on the transmission lines will be managed;*
f) *Demonstrate how changes to the drainage patterns, runoff characteristics and stormwater will avoid adverse effects on the foundations of any support structure;*
g) *Demonstrate how construction activities that could result in ground vibrations and/or ground instability will be managed to avoid causing damage to the transmission lines, including support structures; and*
h) *Details of proposed contractor training for those working near the transmission lines.*

- *All construction activities near the National Grid shall be undertaken in accordance with the CMP.*

Please contact me on [redacted] should you wish to discuss this letter. Thank you again for contacting Transpower.

Yours faithfully,

Andy Eccleshall

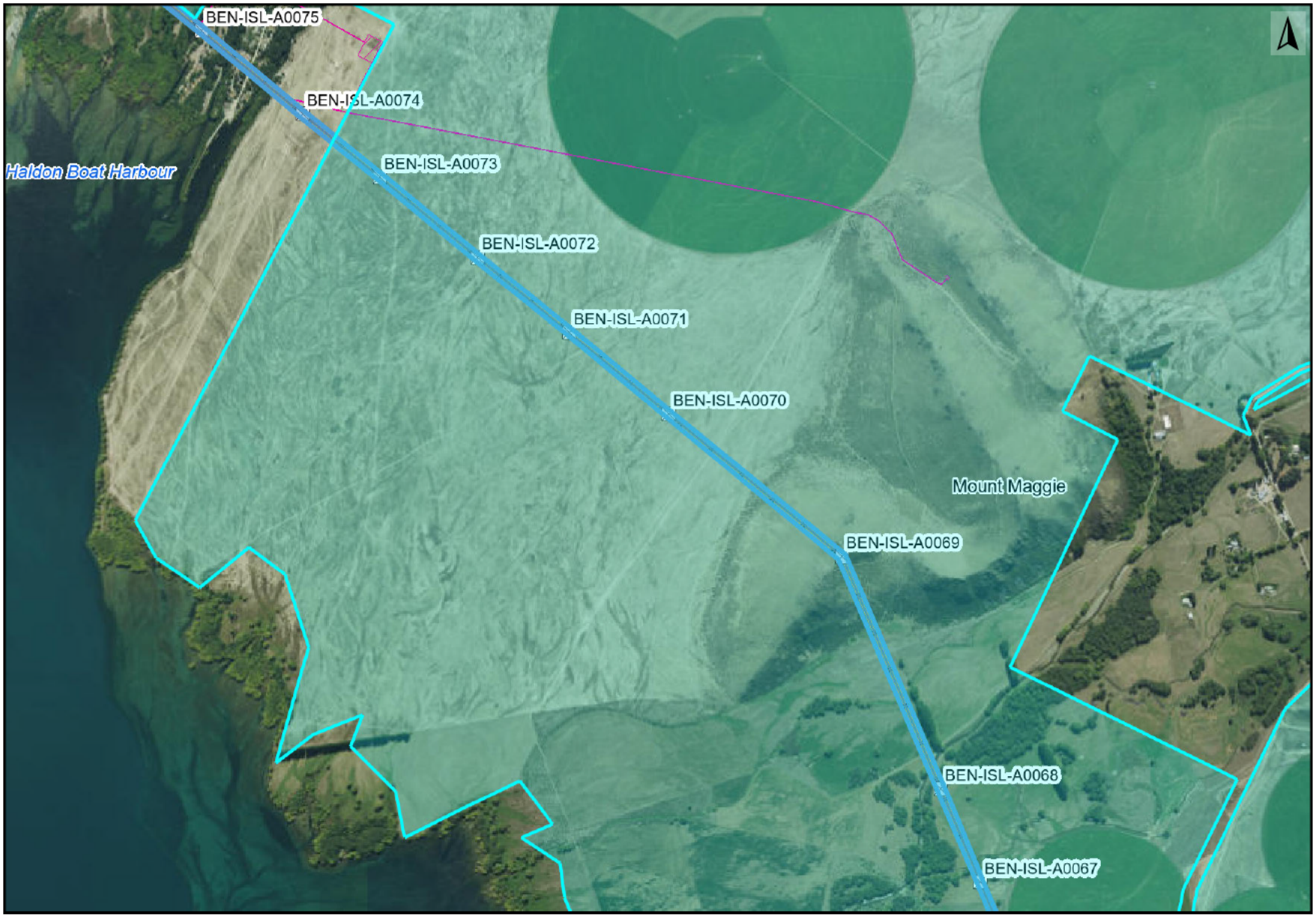
Technical Lead – Land Development Enquiries

TRANSPOWER NZ LTD

***Please note**: Transpower reserves its right to revisit the abovementioned assessment should the proposal change or should a substantial amount of time pass following this assessment. This email cannot be relied upon if any site details and/or the nature of the development changes from that indicated in this correspondence. Please note that this email is not intended to be, and does not constitute, legal advice in relation to your legal obligations under New Zealand legislation, including under the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP34:2001).*

Appendix A Transpower Asset Map

TRANSPOWER | Haldon Solar Farm Site Asset Map



Legend

Maximo Assets

Structure

Single Circuit Steel Tower

Earthwire

Span

220 kV

Land and Property

Easement Area

0 0.5 1 km

30-Apr-2025 Scale 1: 18056 Plan size: A4L

THIS MAP IS NOT TO BE USED FOR NAVIGATION