

TO Kath Coombes – Acting Manager, Planning – Regional, North, West and Islands

FROM Sarah Wong – Senior Policy Planner, Planning – Regional, North, West and Islands

DATE 7 November 2025



SUBJECT **Update requested to the Auckland Unitary Plan (Operative in Part 2016) (AUP)**

I request an update to the AUP as outlined below:

Reason for update	Designation confirmed
Chapter(s)	Chapter K Schedules and Designations Transpower New Zealand Ltd AUP GIS Viewer
Designation only	
Designation #8535	Glorit Substation Requiring Authority: Transpower New Zealand Limited
Location:	2791 Kaipara Coast Highway, Glorit 0984
Lapse Date	This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.
Purpose	Electricity Transmission – (Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland).
Changes to text (shown in underline and strikethrough)	New designation text and condition in Transpower New Zealand Limited schedule and designations. Refer to Attachment 2.
Changes to diagrams	N/A
Changes to spatial data	Removal of Proposed Modification – Notice of Requirement layer in GIS Viewer. Replace with designation boundary and notation (same extent as above) – refer to Attachment 4.

	New designation as per shapefile provided by Transpower and shown below: 
Attachments	Attachment 1: Decision on NOR by the EPA Attachment 2: Updated Transpower New Zealand Limited Schedule and new designation conditions 8535 Glorit Substation (underscored) Attachment 3: Updated Transpower New Zealand Limited Schedule and new designation conditions 8535 Glorit Substation (clean) Attachment 4: Designation 8535 Glorit Substation in the AUP GIS viewer (Before/After)
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Signature: 	Signature: 
Prepared by: Sarah Wong Senior Policy Planner Planning – Regional, North, West and Islands	Reviewed by: Peter Vari Team Leader Planning – Regional, North, West and Islands
Signature: 	Signature: 
Authorised by: Kath Coombes Acting Manager Planning – Regional, North, West and Islands	
Signature: 	

Attachment 1
EPA Decision

BEFORE AN EXPERT CONSENTING PANEL
CONCERNING THE GLORIT SOLAR FARM PROJECT

IN THE MATTER of the Natural and Built Environment Act 2023 and the deliberations and final decision of the Expert Consenting Panel appointed under Clause 24 of Schedule 10 to that Act to consider applications for resource consents and a notice of requirement to construct and operate a solar farm and an associated substation at Glorit, North Auckland

Applicants: Glorit Solar P LP
Transpower New Zealand Limited

Expert Consenting Panel: Catherine Somerville-Frost (Chair)
David Mead (Member)
Tiumalu Peter Fa'afiu (Member)

**Submissions received
under Clause 26 of
Schedule 10 to the NBEA:** 26 March 2025

**Details of any hearing
under Clauses 28 and 29 of
Schedule 10 to the NBEA:** Hearing held in relation to avifauna matters 22 and 25-27 August 2025

Date of Decision: 15 October 2025

Date of Issue: 15 October 2025

**RECORD OF DECISION OF THE EXPERT CONSENTING PANEL
FOR THE GLORIT SOLAR FARM PROJECT
UNDER CLAUSE 36 OF SCHEDULE 10 TO THE
NATURAL AND BUILT ENVIRONMENT ACT 2023**

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PART A: EXECUTIVE SUMMARY

- 1 This decision report responds to fast-track applications under the Natural and Built Environment Act 2023 (**NBEA**) for district and regional resource consents, and a notice of requirement, lodged by the applicants Glorit Solar P LP (**Glorit Solar**)¹ and Transpower New Zealand Limited (**Transpower**) to construct and operate a solar farm and associated substation adjacent to State Highway 16 / Kaipara Coast Highway at Glorit, North Auckland (**Glorit Solar Scheme / Proposal**).
- 2 Glorit Solar and Transpower (together **the applicants**) elected to seek referral from the Minister for the Environment to an expert consenting panel under the NBEA. The Minister accepted the referral application for the Proposal by way of her decision dated 25 August 2024.
- 3 Following that acceptance the applicants lodged the substantive resource consent applications and notice of requirement for a designation (**NOR**) for the Glorit Solar Scheme on 22 November 2024. On 28 January 2025 this expert consenting panel was appointed to hear and determine the applications and NOR (**Panel**).
- 4 The application material was lodged in two parts, one relating to the solar farm, the other to the associated substation. Both the solar farm and the substation require district and regional consents, while the substation is also sought to be authorised by way of designation with Transpower as the requiring authority.
- 5 The Glorit Solar Scheme has two components:
 - 5.1 The Glorit Solar Farm, an approximately 179MW photovoltaic (**PV**) solar farm with energy storage and associated 33kV transmission line. Approximately 290,000 solar panels are proposed, with 22 power conversion units (**PCUs**) and adjacent battery storage modules. (**Glorit Solar Farm / Solar Farm**)
 - 5.2 The Glorit Substation, being a 33kV / 220kV substation which provides the Solar Farm with the necessary National Grid injection point, being into Transpower's existing 220kV transmission line. (**Glorit Substation / Substation**)
- 6 The principal issues in contention and our main findings and reasons are outlined in Part D of this decision report. Briefly, the principal issues fell into two categories:
 - 6.1 Adverse effects on avifauna arising from the Solar Farm, being the risk of collision with solar panels (and in particular what impacts that might have on taonga bird species, including Tara iti, the New Zealand Fairy Tern), and effects arising from loss of habitat. These issues are addressed, along with our main findings and reasons, in Part D1 of this decision report.
 - 6.2 Landscape, visual, amenity and character effects of the Solar Farm and, to a lesser extent, the Substation. These effects included glint and / or glare from solar panels at the Solar Farm. These issues are addressed, again with our main findings and reasons, in Part D2 of this decision report.

¹ Glorit Solar P LP is a 50:50 joint venture between Lightsource bp Renewable Energy Investments Limited (Lightsource bp) and Contact Energy Limited.

- 7 The Panel's decision and reasons are outlined in Parts D through to I of this decision report. By way of summary, the Panel has assessed the Proposal as required by the NBEA and the linked provisions of the Resource Management Act 1991 (**RMA**). The Panel has determined that the resource consents sought by Glorit Solar and Transpower should be granted, and the NOR sought by Transpower confirmed, to enable the Glorit Solar Scheme, on the conditions we have included as Schedule One to this decision report.
- 8 The Panel's 'headline' reasons are:
- 8.1 As utility-scale renewable energy generation infrastructure, the Glorit Solar Scheme provides a number of important positive effects. These include:
- (a) Generation of a significant volume (approximately 179MW) of new, renewable, energy and transmission of that energy into the National Grid;
 - (b) Diversification of energy sources, reducing reliance on others. This includes, during dry years, assisting with reduced generation from New Zealand's hydro-electricity infrastructure. This supports energy resilience and security;
 - (c) An increase in generation close to a, if not the, major consumer of electricity (being Auckland), reducing transmission losses; and
 - (d) A contribution to New Zealand's efforts to mitigate climate change and transition to a low emissions economy.
- 8.2 Actual and potential adverse effects on the environment arising from the construction and operation of the Proposal are appropriately avoided, remedied and mitigated, and can be managed through the inclusion of conditions on the resource consents and designation.
- 8.3 In particular, actual and potential effects on avifauna are appropriately addressed, including through conditions on the Solar Farm resource consent.
- 8.4 The Panel has taken the additional step of convening a public hearing to enquire into the avifauna matters raised by parties, including particularly the Director-General of Conservation. Importantly, following that hearing the Panel has determined that:
- (a) While there will be a loss of habitat at the Solar Farm, particularly roosting and foraging habitat, the Panel is satisfied that this loss, properly described, is acceptable and appropriately responded to via conditions.
 - (b) The risk of possible collisions by birds with solar panels is remote to unlikely for the species of concern, and not of a nature or scale that requires further response by the Panel. For example, it is not a section 3(f) effect of low probability but high potential impact, nor does it require that we take a precautionary approach. Notwithstanding this, Glorit Solar has volunteered conditions to address potential collision risk, which the Panel has accepted.
- 8.5 The landscape, visual, amenity and character effects of the Proposal, including glint and / or glare effects from the solar panels, are acceptable, and are also appropriately addressed by conditions.

- 9 Some preliminary matters also ought to be outlined, particularly as the NBEA fast-track consenting process has been repealed. Clause 2 of Schedule 1 to the Fast-track Approvals Act 2024 provides that relevant NBEA fast-track projects, including the Proposal, continue to be processed and determined under the Resource Management (Natural and Built Environment and Spatial Planning Repeal and Interim Fast-track Consenting) Act 2023 (**RMIFTCA**), despite the NBEA's repeal. Clause 8(2) of Schedule 1 to RMIFTCA provides that Part 2 of Schedule 10 to the NBEA continues in force. Part 2 contains the mechanical and other provisions for expert consenting panels such as this Panel.
- 10 Clause 8(3) of Schedule 1 to RMIFTCA then outlines specific amendments to Part 2 of Schedule 10 to the NBEA. These include important amendments to the processing of NBEA fast-track projects, and to the Panel's consideration of the applications and NOR before us. Most relevantly:
- 10.1 Clause 33 of Schedule 10 is amended to direct that, for resource consent applications, section 149P(2) of the RMA applies, and for notices of requirement section 149P(4) applies, as if this Panel were a board of inquiry.
- 10.2 Clause 8(4) of Schedule 1 to RMIFTCA provides that Part 2 of Schedule 10 of the NBEA "*must be treated as if it were subject to Part 2 of the [RMA], with any necessary modifications*".
- 11 Clause 36 of Schedule 10 to the NBEA is not amended. That clause provides that we must issue a written decision, within the statutory timeframe, stating the decision made and reasons for that decision, and including a statement of the principal issues that were in contention and our main findings on those issues.

PART B: INTRODUCTION AND PROCEDURE

Introduction

The sites and surrounding environment

- 12 The Panel would like to first acknowledge the interests and associations held by mana whenua within whose rohe (territory) the Glorit Solar Scheme is located. In this regard we note the assistance provided to us by the cultural values assessment titled *Puatahi Marae Trust Cultural Values Assessment for the Ōmaumau Solar Farm and Glorit Substation*, dated 22 May 2025 (**CVA**), which we address further in Part E of this decision report.
- 13 The context, surrounding locality and features of the sites affected are comprehensively described in section 2 of both the *Assessment of Effects on the Environment for the Solar Farm*² (**Solar Farm AEE**) and the *Assessment of Effects on the Environment for the Substation*³ (**Substation AEE**).⁴ We describe here only the key features that have been of particular relevance to our decision-making on the principal issues in contention.

² *Assessment of Effects on the Environment Glorit Solar Scheme: Glorit Solar Farm*, prepared by Beca Limited and dated 13 November 2024; and including the Assessment of Effects on an additional lot at 3266 Kaipara Coast Highway provided in a letter from Beca Limited dated 6 December 2024.

³ *Glorit Solar Scheme: Glorit Substation – Notice of Requirement and Application for Resource Consent Assessment of Effects on the Environment*, prepared by Beca Limited and dated 19 November 2024.

⁴ Together the Solar Farm AEE and the Substation AEE are termed "**the AEEs**".

Solar Farm Site

- 14 The Solar Farm Site covers approximately 300ha and is located across five land parcels in Glorit, approximately 50km northwest of central Auckland. 146 Omaumau Road, and 3353 and 2791 State Highway 16 / Kaipara Coast Highway (**SH16 / KCH**) are the key address locations, with access provided from SH16 via Omaumau Road. The full property information for the Solar Farm is described in section 2.1 and shown on Figure 2-1 of the Solar Farm AEE (**Solar Farm Site**).
- 15 The Solar Farm will be predominantly located on an established dairy farm, which at the time of our last site visit (May 2025) was being used for beef grazing. The southern portion of the Solar Farm (including its transmission line) are located on part of a dry stock beef and sheep farm.
- 16 The Solar Farm Site sits on the edge of the Kaipara Harbour, and is reasonably flat, with much of its extent having been reclaimed in the 1930's. The coastal (western) edge is protected by a constructed stopbank of varying heights which, through the operation of four culverts, can restrict high tide ingress. The stopbank is vegetated through most of its length. The Kaipara Harbour side of this stopbank contains broad intertidal mudflats, with dense mangroves established and extending several hundred meters out in some locations.
- 17 The majority of the Solar Farm Site contains pasture, drainage channels and modified streams, farm fencing and sparse vegetation. There are the usual farm buildings, yards, sheds, storage, stockpiles, stock effluent treatment infrastructure and ancillary built form present. At the time of the Panel's site visits there were stock across a number of the paddocks (with evidence of past use in all of the other paddocks we were able to view). Various common shore and water birds were seen, including groups of Oystercatchers, some common Seagulls and occasional White-Faced Heron. Our May visit, which followed a period of heavy rainfall, included some larger groups of Oystercatchers, with fewer birds present during our February visit.
- 18 The transmission line area, and parts of the southern Solar Farm, comprise pasture with wetlands and streams present, and patches of denser wetland vegetation. The transmission line area has undulating to rolling slopes which rise toward SH16 and the Substation's site.
- 19 The area surrounding the Solar Farm Site is largely rural in nature, with scattered patches of dense bush. Glorit Knoll / Hoopers Bush, a prominent vegetated knoll and fragment of indigenous forest, is located immediately to the east, while the Atuanui (Mount Auckland) Forest Recreation Area is located in the hills further to the east. The Omaumau River Scientific Reserve is north of the Solar Farm Site. There are scattered rural and lifestyle properties to the east and south of the Site, including several farms, and elevated properties in the rolling hills east of the Site.
- 20 Section 2.3 of the Solar Farm AEE describes, in useful tabular form and accompanying figures, the otherwise rather complex mix of zones, overlays, controls and designations relevant to the Solar Farm Site and surrounds under the Auckland Unitary Plan: Operative in Part (**AUP:OP**). These include:
 - 20.1 The majority of the Solar Farm Site is zoned Rural – Rural Coastal Zone Kaipara South Head and Harbour coastal area (**Rural Coastal Zone**), with the transmission line area being Rural – Rural Production Zone and parts of the stopbank being zoned Open Space – Conservation Zone.

- 20.2 Some works (relating to the stopbank) also impact on a Significant Ecological Area (**SEA**), being SEA Terrestrial, SEA_T_2699.⁵
- 20.3 There are other controls and natural hazards applying, in relation to coastal inundation, flood plain, overland flow path, and areas susceptible to coastal instability and erosion. The macroinvertebrate community index (both native and rural) also applies to the Site.
- 20.4 Outside of the Solar Farm Site:
- (a) Both Glorit Knoll, and a similarly vegetated (bush) area to the south of the Knoll, adjoin the Site and are SEA - Terrestrial.
 - (b) The adjoining coastal area is all identified as SEA – Marine 1 or 2, and the Omaumau River Scientific Reserve to the north is also SEA.
 - (c) The Mataia Headland, to the south, and Glorit Knoll, are identified as both Outstanding Natural Landscapes (**ONLs**) and High Natural Character (**HNC**) areas.

Substation Site

- 21 The Glorit Substation will be located at 2791 SH16, Glorit (**Substation Site**). The project area takes up around 2.3ha with the NOR seeking to designate 28,510m².
- 22 The Substation Site is accessed from SH16 and located on the same drystock beef farm as the southern end of the Solar Farm. It is roughly 2km inland from the Kaipara Harbour, which lies to its west. The Site is best described as rolling, with slopes of 10-17 degrees (southeast to northwest). Vegetation within the substation area is all pasture, and stock were present in other parts of the farm at the time of our site visits. The area to be designated is surrounded on three sides by streams with wetland margins.
- 23 Located immediately to the west of where the Substation will be built are Transpower's own transmission structures (steel towers supporting overhead power lines) for the National Grid, being the Henderson to Maungatapere A (HEN-MPE) 0128 and Henderson to Marsden A (HEN-MDN) 0132 transmission structures. The associated 110kV and 220kV Transpower National Grid transmission lines (the latter of which the Substation will feed into), run overhead to the west.
- 24 The area surrounding the Substation Site is largely rural, with scattered patches of dense bush and occasional shelterbelts (some of which appeared to be of *Macrocarpa* type and reasonably aged). Glorit Knoll is located to the north-west and the Atuanui Forest Recreation Area is located to the east of this Site. A small number of rural residential properties are present to the north, east and south of the Site and these are also accessed from SH16.
- 25 Section 2.3 of the Substation AEE contains the same tabulation of AUP:OP zones and overlays, though for a much less complex site. These include:

⁵ See page 3 of Appendix A to the Solar Farm AEE, being a plan entitled *Stopbank Bund Layout with ecological areas* 4211074-CE-1002 for details.

- 25.1 Zoning comprising of Rural – Rural Production Zone and Road Reserve (un-zoned).
- 25.2 Overlays for the National Grid, being both the Corridor Overlay – National Grid Yard uncompromised and the Corridor - Subdivision Corridor.
- 25.3 Designation 6766 for SH16 – Hobsonville to Wellsford where the requiring authority is the New Zealand Transport Agency. This road is also controlled as an Arterial Road.
- 25.4 Hydrological notations relating to open watercourse, flood plain and overland flow paths.

Proposed development

- 26 The Proposal is fully described in section 3 of both the Solar Farm AEE and the Substation AEE, and in the numerous appendices to those AEEs. The appendices included (i) the expected technical reports and assessments, and (ii) for the Solar Farm, comprehensive drawing sets (including detailed designs, layouts, sections, plans, schedules and palettes) and for the Substation, indicative design drawings as appropriate for an NOR.

Glorit Solar Farm

- 27 The Solar Farm will be owned, operated and maintained by Glorit Solar. The key elements of the Solar Farm are (see also Figure 1, below):
 - 27.1 Generation infrastructure which includes:
 - (a) Approximately 290,000 panels, the solar arrays, mounting structures (including tracking system), and poles.
 - (b) Approximately 22 PCUs across the Solar Farm Site. Each PCU contains one or two inverters (totalling up to 40) and one medium voltage transformer.
 - 27.2 Storage infrastructure spread out across the Solar Farm Site, comprising eight containerised lithium-ion battery storage modules located adjacent to each PCU (totalling 176 batteries). This provides approximately 200MWh (100MW for two hours) of storage.
 - 27.3 A building which houses the 33kV switch gear, located at the southern end of the Site. This will collect the electricity from each PCU before it enters the transmission line.
 - 27.4 An approximately 1.5km 33kV overhead transmission line from the Solar Farm's switch gear building to the Substation. The 33kV line will be supported by pole structures up to 25m in height.
 - 27.5 Raising of approximately 675m of the existing stopbank on the southern boundary of the Solar Farm Site – known as the southern stopbank upgrade. The stopbank will be raised to a height of 3.5m and, post settlement, will have a final height of 3.2m. This involves increases in height of approximately 0m - 1.6m, depending on the existing height.

27.6 Ancillary infrastructure, including:

- (a) A series of internal tracks to provide access to the solar panels. This includes new culverts and upgrades to existing culverts where tracks cross drainage channels.
- (b) Upgraded site access off Omaumau Road.
- (c) A centralised operations and maintenance facility, with amenities building and employee parking.
- (d) Stock exclusion and security fencing around the perimeter, including access gates.

27.7 Retention of a 5.3ha area of bird roosting habitat at the western edge of the Solar Farm, retention of a 4.3ha area of grassed potential roosting habitat to the north-east, and retention of a 4.3ha grassed strip along the coastal edge.

27.8 Landscape planting and fencing of ecological areas as detailed in the landscape plans, and ecological and landscape enhancement elements.

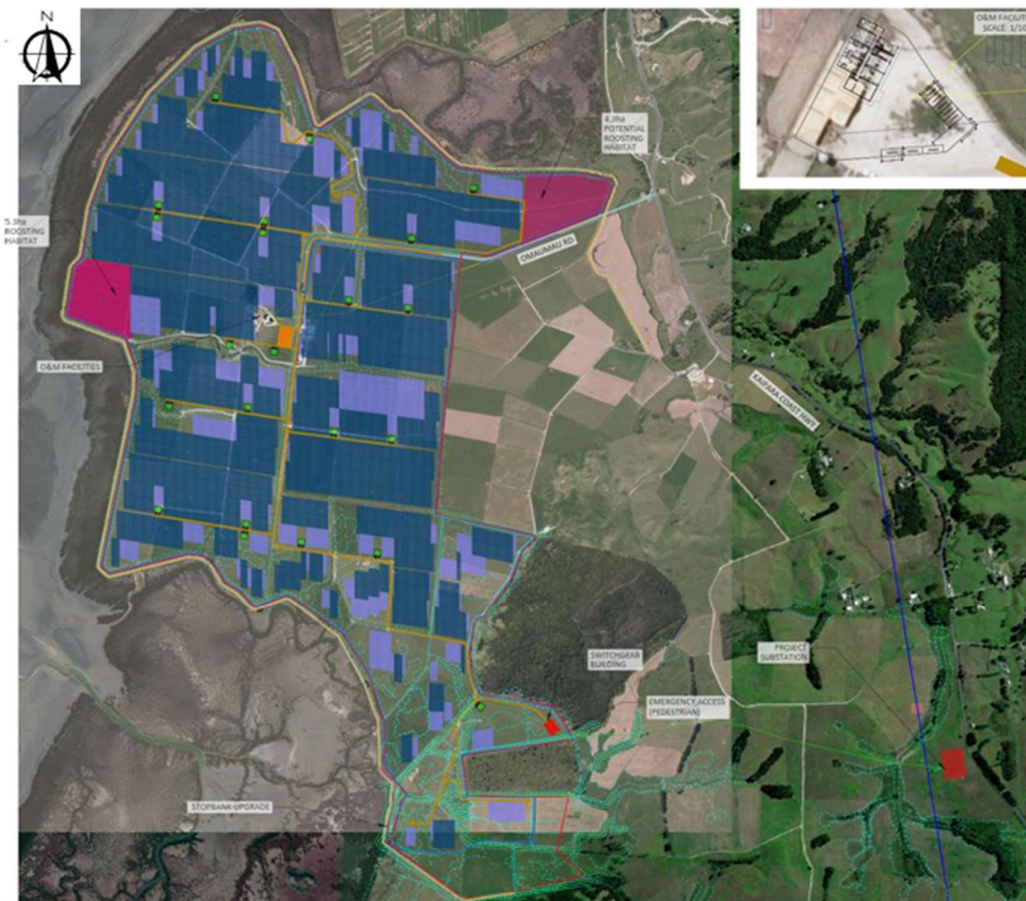


Figure 1 – Indicative Solar Farm layout (Source: Figure 3-1 Solar Farm AEE).

Glorit Substation

- 28 The Substation will be owned, operated and maintained by Transpower. As detailed further below, Glorit Solar will lease part of the Substation for their components.
- 29 The key Transpower components of the Substation, as it relates to the Glorit Solar Scheme, includes (see also Figure 2, below):
- 29.1 The substation platform, 220kV infrastructure and a National Grid connection.
 - 29.2 One transformer bay allowing for one 225MVA transformer and associated auxiliary and earthing transformers.
 - 29.3 A control room, facilities room and associated parking and other general substation infrastructure, including lightning masts, lighting and stormwater infrastructure.
- 30 Glorit Solar will lease the eastern portion of the substation platform for their following key components (see Figure 2, below):
- 30.1 33kV equipment which receives the power infeed from the Solar Farm.
 - 30.2 One transformer bay, with a 225MVA transformer and associated auxiliary and earthing transformers.
 - 30.3 A switch and control room and associated parking area.

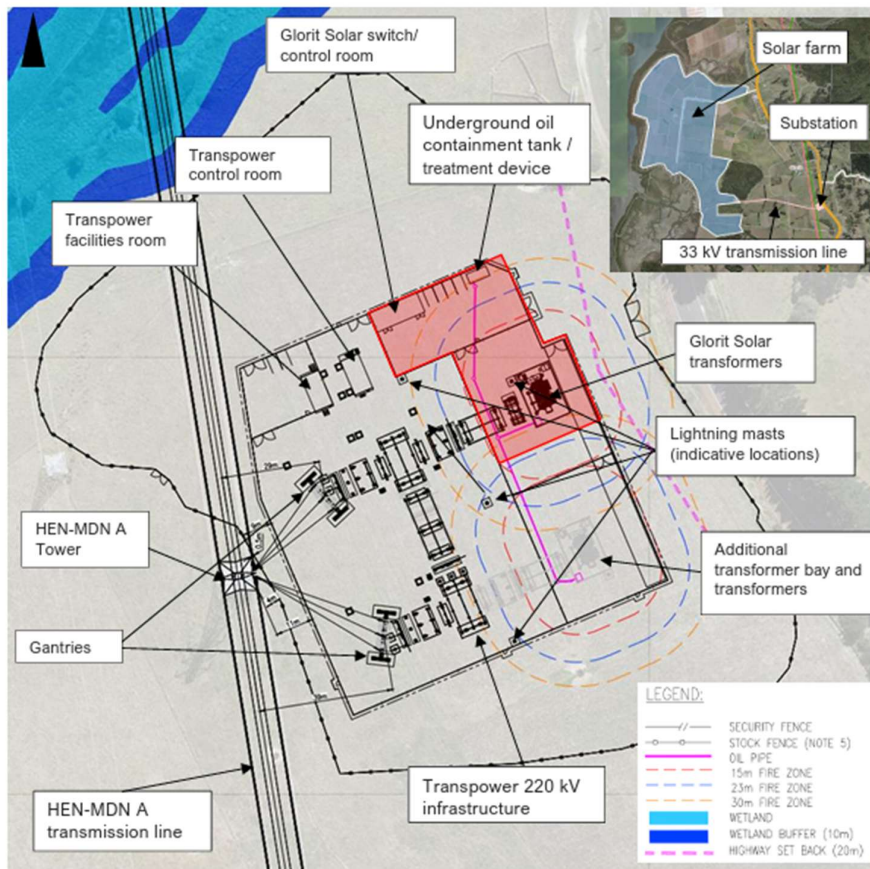


Figure 2 – Proposed Substation Key Features (Source: Figure 1-1 Substation AEE).

Resource consents and activity status

Solar Farm

- 31 Various district and regional consents and approvals are required by Glorit Solar for the Solar Farm, in particular under the National Environmental Standards for Freshwater Regulations 2020 (**NES:FR**); the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (**NES:Soil**); and the AUP:OP (under the latter, pursuant to sections 9(2), 13, 14 and 15 of the RMA).
- 32 These approval requirements are outlined in detail in section 5 of the Solar Farm AEE, along with an assessment of associated permitted activities and a detailed rules assessment (provided in Appendix I to that AEE). They are too numerous to list in this decision report.
- 33 Overall, the Solar Farm has been assessed as a discretionary activity.

Substation

- 34 The Substation will be authorised by way of resource consents and a designation.
- 35 As for the Solar Farm, the required approvals are described in detail in the Substation AEE.⁶ In terms of the resource consents, these are:
- 35.1 Regional consents that Transpower will hold for construction and operation of the Substation, described in section 5.2 of the Substation AEE. Overall, these have been assessed as restricted discretionary activities.
- 35.2 District consents that Glorit Solar will hold for their elements of the Substation, as described in section 5.3 of the Substation AEE. Overall, these have also been assessed as restricted discretionary activities.

Notice of requirement

- 36 The NOR is identified as being for “*Electricity Transmission – Glorit Substation*”. The NOR seeks to designate, within the AUP:OP, 28,510m² of land contained in Lot 6 DP 127940 at 2791 Kaipara Coast Highway, Glorit, for the construction, operation, maintenance, and upgrade of the Substation. The Designation Plan, showing the designation boundary and land requirement was included as Appendix B to the Substation AEE.
- 37 Transpower is the requiring authority for the Substation, with their stated objectives being:
- 37.1 To provide a secure connection between the Glorit Solar Farm and the National Grid in the vicinity of Glorit.
- 37.2 To provide for the development, operation and maintenance of a secure facility which enables the transformation and transmission of electricity within Auckland and beyond.
- 37.3 To provide operational flexibility of the facility to expand to meet increased generation of electricity in the future.

⁶ See Substation AEE, section 5.

Procedure

- 38 The following matters of procedure are relevant for this decision report, noting that the Panel has issued various minutes recording these steps.

Meetings and site visits

- 39 The Panel undertook a full visit to the Solar Farm Site, Substation Site and surrounding areas on 11 February 2025. A second visit was undertaken to several submitter properties, the Solar Farm Site, and areas surrounding the Solar Farm Site and Substation Site, on 27 May 2025.⁷
- 40 The Panel undertook key virtual meetings on 3 February, 1 and 29 April, 9 and 12 May, 5 June, 1, 22 and 30 July, 20 and 29 August, 12 September, and 7 and 10 October 2025.
- 41 Further Panel correspondence, deliberations and decision-making occurred via email and teleconference following review, drafting and commenting on drafts of this decision report.

Invitations to submit

- 42 The Panel invited submissions as described in Minute 1. This included the parties required to be invited to submit under clause 26(2)(a) of Schedule 10 to the NBEA, and other persons and groups the Panel considered represented a relevant aspect of the public interest or for whom the activity was relevant.
- 43 Following our first site visit, we included several properties for whom we considered landscape and visual effects may be of relevant concern, including properties that had been specifically addressed in the landscape and visual material accompanying the Solar Farm AEE.
- 44 Submissions were received from a number of persons and organisations. Two late submissions were also accepted by the Panel, as recorded in Minute 5.
- 45 Two submissions recorded a concern about late notice of the submission period, following an apparent postal failure.⁸ The Panel directed EPA staff to make enquiries of these submitters as to whether there was anything further they wished to put before the Panel, and if so what time might be needed, as also recorded in Minute 5. No additional time was sought by the submitters.
- 46 Broadly summarised, and specifically noting that many of the submissions were detailed and included draft suggested conditions, the submissions raised the following subject areas:
- 46.1 Visual, landscape, natural character, rural character, and amenity effects. This category of effects included effects arising from glint and / or glare from the solar panel arrays. Effects on views from private property were also raised.
- 46.2 Effects on ecology and ecological values, including effects on wetlands, waterways and the coastal environment / coastal marine area, all being habitats for valued flora and fauna.

⁷ The Panel specifically visited properties relevant to the submissions by Mynott, Porteous, Taylor, Rehfield & Evans, Stewart and Drinnan.

⁸ Submissions by A Mynott and M Mynott.

- 46.3 Ecological effects, more specifically, on avifauna. A focus was placed on shorebirds, as well as on particular species such as Kiwi, Matuku-hūrepo (Australasian Bittern), Mātātā (Fernbird), Kāki (Black Stilt), Kōtuku (White Heron) and Tara iti (New Zealand Fairy Tern).
- 46.4 Concern regarding the use of farming / agricultural / highly productive land for non-agricultural uses.
- 46.5 Effects on flooding and hydrology (Solar Farm), and groundwater effects (Substation).
- 46.6 Effects on SH16, Omaumau Road, and the SH16 / Omaumau Road intersection.
- 46.7 Noise and vibration effects, both during construction and operationally (for example, noise from the Solar Farm battery unit cooling and inverters, particularly at night, and noise from the operation of the Substation).
- 46.8 Construction effects, including arising from construction traffic, and more particularly arising from the Solar Farm given the longer construction period. This included concerns regarding the timing of construction traffic with school bus routes on SH16, and the potential for heavy construction traffic to cause a decline in road surfaces.
- 46.9 Potential impacts on property values.
- 46.10 Lack of local community benefit.
- 46.11 Concerns regarding the adequacy of consultation by the applicants, and the impact of the fast-track approval process on the community's ability to fully express their concerns.
- 46.12 Adequacy of the assessment of alternative sites, particularly in relation to the Substation.
- 46.13 General support for the proposal, including in relation to the provision of a renewable energy resource.
- 47 The Auckland Council submission, at 104 pages, was comprehensive and included the full text of various specialist reviews. The submission included comments from the Rodney Local Board. Auckland Council's overall position in its submission was support for the grant of the approvals sought, with some concerns to be addressed and relating to regional earthworks and terrestrial ecology. The Council's submission included detailed comments on conditions, and was based on specialist reviews in the following areas:
 - 47.1 Planning
 - 47.2 Groundwater
 - 47.3 Noise and vibration
 - 47.4 Contamination
 - 47.5 Earthworks and freshwater
 - 47.6 Terrestrial ecology

- 47.7 Landscape and visual
- 47.8 Hazardous substances
- 47.9 Heritage
- 47.10 Stormwater
- 47.11 Soil science
- 47.12 Development engineering
- 47.13 Environmental monitoring
- 47.14 Healthy Waters and flood resilience
- 47.15 Growth and development / network compliance
- 48 The Panel expresses our gratitude to all submitters for their contributions, many of which were comprehensive. They have been of great assistance to the Panel.
- 49 The applicants received copies of the submissions and responded in writing on 9 April 2025. Following directions sought by the applicants, and granted by way of Minute 6, the applicants responded to the ecology and avifauna matters raised in submissions on 17 April 2025.
- Technical advisers**
- 50 In Minute 2 the Panel advised that it had appointed Mr Nicholas Goldwater, a Senior Principal Ecologist, under clause 30(1)(b) of Schedule 10 to the NBEA. Mr Goldwater subsequently provided an Ecological Impact Assessment review, specific to avifauna, dated March 2025.⁹ The report was made available to parties via Minute 5.
- 51 Minutes 5 and 6 addressed the process for the applicants to respond to the matters raised in Mr Goldwater's report. Key for the Panel was ensuring, to the extent possible, a collated and comprehensive response to the avifauna matters raised in both the submissions and Mr Goldwater's report. The applicants' response was received on 17 April 2025.
- Further information requests**
- 52 The Panel requested further information from the applicants in Minute 2. The applicants responded on 19 March 2025. Further information was again requested from the applicants, and two other parties, in Minute 10, with responses being received between 26 to 28 May 2025.
- Suspension of the application**
- 53 The application was suspended on six occasions, as recorded in Minutes 7, 11, 14, 15, 22 and 24, for a total of 50 working days. While suspension has no 'upper limit' in terms of the NBEA provisions (there having been no regulations promulgated to address suspension), we considered it appropriate to have regard to the other fast-track legislation which does cap suspension.

⁹ *Glorit Solar Farm Ecological Impact Review – Avifauna Contract Report No. 7517, March 2025.*

- 54 As the Panel recorded in Minute 24, the length of suspensions was regrettable in the context of a fast-tracked project lodged in November 2024 with this Panel commencing on 28 January 2025. However, the suspensions were necessary, including to address the avifauna matters that were raised (principally by the Director-General of Conservation Tumuaki Ahurei (**Director-General**) and supported by the Royal Forest & Bird Protection Society of New Zealand Incorporated (**RFBPS**)). This required additional time for discussions between the parties, expert conferencing, the hearing in relation to avifauna matters (including evidence exchange and scheduling to accommodate witness availability), a second conditions comments process, and lastly the Panel's consideration and response to those comments.

Expert conferencing

- 55 Facilitated expert conferencing was held in relation to avifauna matters, with experts in ecology (avifauna) attending on behalf of the applicants, Auckland Council and the Director-General. This resulted in the *Joint Statement of Experts - Ecology (Avifauna)*, dated 21 May 2025 (**Avifauna JWS**).
- 56 Minute 12 requested that, should the applicants, Auckland Council or the Director-General wish to take a different position to that of their respective experts in the Avifauna JWS, they advise the Panel of this. The Director-General responded by way of memorandum dated 29 May 2025, and Auckland Council provided a planning assessment of the Avifauna JWS dated 3 June 2025.
- 57 The Director-General's response to Minute 12 was direct, submitting that:¹⁰
- 57.1 The applications for consent should be declined and the NOR rejected. This was in contrast to the Director-General's submission on the Proposal, which had not directly sought that approval be declined.
- 57.2 There was adequate information before the Panel (at that stage) to support a decline but there was inadequate information to support an approval.
- 57.3 If the above submissions were not accepted, the Director-General requested the opportunity to file written evidence and legal submissions supporting that position.
- 57.4 An oral hearing should take place on avifauna issues, whereby the Panel would have the opportunity to question expert witnesses and counsel.

Hearing in relation to avifauna matters

- 58 Minute 15 recorded the suspension of the applications to enable engagement and discussions between Glorit Solar and the Director-General regarding the avifauna issues that remained in dispute between them, but also set out preparatory matters for a hearing in the event one was required.
- 59 Following various memoranda Minute 16 confirmed the Panel's decision regarding the need for a hearing. That Minute recorded our decision under clause 28(3) of Schedule 10 to the NBEA that:

¹⁰ Paragraph [3] *Position Statement for the Director-General of Conservation Tumuaki Ahurei* in response to Minute 12 dated 29 May 2025.

- 59.1 A hearing was appropriate to address avifauna matters, in relation to the Solar Farm.
- 59.2 Evidence was required to be provided in writing in advance of that hearing (clause 28(3)(b) of Schedule 10).
- 59.3 A hearing was not required in relation to the Substation.
- 60 Aside from the avifauna matters raised in relation to the Solar Farm, the Panel considered that we were otherwise able to adequately consider all of the relevant matters relating to the Solar Farm and Substation under the NBEA, and linked RMA provisions, based on the information before the Panel and our site visits.
- 61 The information available included the applications and AEEs (each with detailed appendices, some being appropriately updated following our requests for further information), submissions and responses to submissions, the report from Mr Goldwater, and the further information provided. The material issues involved were comprehensively addressed in that documentation, leaving the issues for this decision report (avifauna issues excepted) relatively clear.
- 62 Timetabling for the hearing on avifauna matters was discussed in memoranda from the parties, and ultimately set out in our directions within Minute 16. In accordance with Minute 16 a joint memorandum was filed by the parties intending to attend the hearing, dated 7 July 2025, setting out the topics to be addressed in evidence.
- 63 A further teleconference to address practical arrangements for the hearing was held on 1 August 2025, with Minute 19 recording the outcome of that teleconference.
- 64 The public hearing in relation to avifauna matters and the Solar Farm was held in Auckland Council's Council Chambers, on Friday 22 August and Monday 25 to Wednesday 27 August 2025 (**avifauna hearing**). The evidence, cross examination and legal submissions are addressed in Part D1 of this decision report.

Affected party written approvals

- 65 Written approvals were provided from:
- 65.1 1 and 146 Omaumau Road, Glorit;
- 65.2 2791, 3310, 3353, 3354 and 3356 Kaipara Coast Highway, Glorit.
- 66 Each written approval form outlined the specific matters which were before the party granting written approval, with the approvals relating to the Solar Farm aspects of the Proposal. In accordance with section 104(3)(a)(ii) of the RMA (applicable here under clause 33 of Schedule 10 to the NBEA), when considering the application(s), the Panel was not to have regard to any effect on a person who had given their written approval.

Conditions

- 67 The Panel received a series of updated conditions from the applicants,¹¹ including sets that accompanied their response to submissions, to ecology and avifauna matters specifically, and to the CVA. Sets of amended conditions were also provided following

¹¹ For example, the sets of updated and amended proposed conditions dated 24 March; 9, 17 and 24 April, 28 May, 4 July and 18 August 2025.

a detailed cross-check to ensure that all of the applicants' expert recommendations were specifically incorporated.

- 68 It was appropriate that the conditions evolved in this way, and the Panel is grateful for the work that was put into updating and amending the condition sets for the Solar Farm and the Substation.
- 69 The NBEA process does not specially provide for the parties, including applicants, to comment on draft conditions prior to the grant of any approvals sought. This is however an important process in the Panel's view, and one that we considered necessary in the event of grant. The Panel had advised the parties, in very early minutes issued, that we would circulate draft conditions in the event we were minded to grant the approvals.
- 70 The fast-track nature of these proceedings however ultimately required a two-step process for comments on conditions.
- 71 The applicants, by way of memorandum dated 23 July 2025, noted the lack of working days available to undertake a comments process post the anticipated close of the avifauna hearing, or for consideration and decision-writing. They proposed that the Panel circulate draft conditions before the avifauna hearing, excluding conditions that would be affected by that hearing, notwithstanding that we had not made (and could not at that time have made) our decision on whether to grant the approvals.
- 72 The Panel had, we understand in common with other fast-track panels, sets of conditions under review for both the Solar Farm and the Substation as 'work(s) in progress'. This was so that we had conditions ready, in the event a decision to grant was made.
- 73 In Minute 19 the Panel outlined our reasons for agreeing to circulate draft conditions, and the basis on which that was done. Circulation of the draft proposed conditions was not in any way indicative (nor indeed determinative) of the Panel's overall decision on the applications, and conditions clearly relevant to and affected by the avifauna hearing were 'blackened out' with comments not sought in respect of them.
- 74 Draft conditions for the Solar Farm and Substation were circulated on this basis on 1 August 2025 (under the cover of Minute 19), with comments due by 18 August 2025. Comments were received from the applicants, Auckland Council, Auckland Transport, the Director-General, and RFBPS. On 22 September 2025 the applicants also filed a memorandum and accompanying table outlining where agreement had been able to be reached between Auckland Council and the applicants in relation to the Council's requested changes.
- 75 Conditions relating to avifauna matters were updated through the avifauna hearing process, including proposed conditions attached to counsel's legal submissions.¹² Following the avifauna hearing, and our reaching the decision that approval ought to be granted, the Panel circulated draft avifauna related conditions on 19 September 2025. Comments were due by 3 October 2025 and were received from the applicants, the Director-General, the RFBPS and Auckland Council.

¹² See the submissions of counsel for Glorit Solar (opening submissions, Appendix C) and the submissions for the Director-General (conditions and table attached).

- 76 Key amendments to the conditions following the above 'comments on draft conditions' processes are addressed in Part H of this decision report.

PART C: LEGAL FRAMEWORK

Legal framework under Schedule 10 to the NBEA

- 77 Clauses 36(5)(c) and (d) of Schedule 10 to the NBEA direct that the Panel must, in this written decision report, include a statement of the principal issues that were in contention and our main findings on those issues.
- 78 Clause 22 of Schedule 10 to the NBEA directs that applications and notices of requirement must:
- 78.1 Include any matters specified by the Minister in her decision. The Minister did specify matters that must be submitted to the Panel, listed as (a) to (d) on page 2 of her decision dated 25 August 2024. The applicants provided this material in the AEEs submitted with the substantive applications.
 - 78.2 Comply with section 88 of the RMA for resource consent applications, and section 168 for notices of requirement. These include the need for assessments of effects on the environment, and the assessment of alternative sites, routes and methods for the works to be designated, and so on. The Panel is satisfied that these matters were appropriately addressed by the substantive applications, including within the AEEs submitted.
- 79 Further, our consideration of the resource consent applications and notice of requirement is of course not limited to the principal issues we have outlined in this decision report, but instead governed by sections 149P(2) and 149P(4) of the RMA (see clause 33 of Schedule 10 to the NBEA), which direct that:
- 79.1 For the resource consent applications the Panel must apply sections 104 to 104D, 105 to 112, and 138A (the latter section is not relevant to this Proposal) as if we were a consent authority; and
 - 79.2 For the NOR the Panel must have regard to the matters set out in section 171(1) and comply with section 171(1A) (again, the latter section was not raised in relation to this Proposal) as if we were a territorial authority.
- 80 We address relevant matters raised by the above provisions in Parts D through to H of this decision report.
- ### **Volume of material and contents of decision report**
- 81 It is important to record that the Panel has received a significant volume of material, which has come before us through a number of avenues available to the parties. The Panel has reviewed and considered all of this information in our decision-making.
- 82 We have also undertaken a review of the submissions and further information provided, prior to finalising this decision report, to make sure that nothing has been missed given the adjournments and passage of time since their provision to the Panel.
- 83 Unfortunately, not all of the material before the Panel is (or could ever be) directly referenced in this decision report. In particular, it is not possible for us to address every point raised in the application material, through submissions and the applicants' response, or during the requests for further information. This is a fast-track process

and, as noted earlier in this decision report, we are directed under the NBEA to address the principal issues in contention and our main findings on those.

- 84 For similar reasons, it is unfeasible, despite the length of Part D1 of this decision report, to respond to each issue and matter raised by the parties at the avifauna hearing. The parties did invest significant effort towards identifying the issues that may be relevant for the Panel, and in responding to issues identified by opposing parties. We acknowledge, with gratitude, their efforts in that regard. In preparing this decision report however the Panel has, of necessity, focussed on the principal issues in contention.

PART D: PRINCIPAL ISSUES AND MAIN FINDINGS

- 85 The Panel identified two broad categories of principal issues in contention. These were the actual and potential adverse effects on the environment that required the Panel's most detailed focus and consideration:

85.1 Part D1: Adverse effects on avifauna arising from the Solar Farm, being the risk of collision with solar panels, and effects arising from loss of habitat.

85.2 Part D2: Landscape, visual, amenity and character effects of the Solar Farm and, to a lesser extent, the Substation. These included glint and / or glare effects from solar panels at the Solar Farm.

- 86 Our main findings and reasons for these principal issues are set out in the following sections:

D1: Effects on avifauna from the Solar Farm

- 87 The two sub-sets of principal issues of contention under this heading were:

Risk of collision:

87.1 Effects on birds arising from potential collision risk with the solar panels, in particular, but also (to a lesser degree) with other solar farm infrastructure.

87.2 While this was a concern held in relation to birds generally, a greater level of concern was expressed in relation to Threatened and At Risk (TAR)¹³ avifauna species, and most particularly in relation to Tara iti (New Zealand Fairy Tern). Tara iti are New Zealand's rarest endemic breeding bird, where the loss of even one individual could have significant population implications given its rarity.

87.3 For the Panel's findings and reasons in relation to the risk of collision refer to paragraphs 180 to 203 of this decision report, below.

Habitat loss:

87.4 Effects arising from loss of habitat for TAR avifauna species (for roosting and foraging), largely flowing from the scale of the Solar Farm (being across 283ha).

¹³ The New Zealand Threat Classification System, administered by the Department of Conservation, classifies TAR species, with four categories for 'Threatened' (Nationally Critical / Nationally Endangered / Nationally Vulnerable / Nationally Increasing) and three for 'At Risk' (Declining / Uncommon / Recovering), for visual aid see Wiles, EIC page 5. For species relevant to the Solar Farm Site see O'Donnell, EIC Table 2, page 64.

87.5 For the Panel's findings and reasons in relation to loss of habitat effects refer to paragraphs 231 to 240 of this decision report, below.

- 88 Other effects on avifauna were also raised. Not many, if any, stones were left unturned. This included for example in relation to construction activities (e.g. habitat loss and disturbance, potential injury and / or mortality, displacement of birds or reductions in fitness associated with construction activities); and potential disruption to avifauna activity due to operational noise and / or lighting. Effects on Fernbird habitat, and on Kiwi in relation to fencing, were also raised. For all of these other avifauna effects matters the Panel has accepted the analysis and conclusions of the applicants' experts.¹⁴

Avifauna hearing

- 89 The avifauna hearing in late August 2025 involved Glorit Solar, the Director-General and RFBPS as parties, providing us with 17 statements of evidence from 10 witnesses and legal submissions.

- 90 The hearing material in many ways superseded, though did not replace, the earlier information provided to us. Accordingly, we do not in this Part D1 traverse the earlier material, except to record that it was received and has been considered by the Panel. This has included review post the hearing, to ensure that no matters had been overlooked inadvertently by virtue of being 'outshone' by those front and centre at the hearing.

- 91 We set out below a summary of the key evidence, being that material particularly relevant to the principal issues in contention.

Legal submissions and evidence

- 92 The Director-General opposed the Solar Farm and the grant of consent at the hearing, predominantly because it was located within an area that was core habitat for the critically threatened Tara iti and Bittern, and multiple other TAR avifauna species. The Solar Farm was considered to pose a real threat of collision risk to all of those species, for its operational life. Further, the Solar Farm would remove circa 283ha of significant habitat for TAR avifauna, indigenous shorebirds and migratory birds, without any (or any adequate) offsetting or compensation. The Director-General submitted that the planning framework did not support a consenting pathway for the Proposal.¹⁵

- 93 For similar reasons, though with a particular focus on Tara iti, the position of the RFBPS was also that consent should be declined.¹⁶

- 94 We heard evidence from a diverse range of experts on the two principal issues of contention. There can be little to no doubt that we had available to us many of the most qualified and experienced experts on the topics of concern, particularly we understand in relation to Tara iti expertise. We set out in Schedule 2 to this decision report a short summary of the experience and qualifications of the witnesses, being:

¹⁴ As expressed in the Solar Farm and Substation AEE, and attached documents, and in the evidence presented on the applicant's behalf at the avifauna hearing.

¹⁵ Legal Submissions for the Director-General, dated 25 August 2025. This summary, taken from the Introduction only of the 58pp plus 15pp of legal submissions, significantly simplifies the detailed submissions received from counsel.

¹⁶ Legal Submissions on behalf of RFBPS, dated 27 August 2025, again, (even more) significantly shortened from the detailed submissions provided to us.

- 94.1 For Glorit Solar: Mr Brendan Clarke, Ms Claire Webb, Dr Leigh Bull and Ms Lesley Hopkins.
- 94.2 For the Director-General: Dr Colin O'Donnell, Dr Antony Beauchamp, Dr Ilse Corkery, Ms Ayla Wiles, Associate Professor Kristal Cain, and Mr Murray Brass.
- 95 The expert technical advice we received was detailed and we were impressed with the considered and honest expert views given. While the Panel has had to determine its path through that material, based on the evidence before us and applying the legal tests we are bound to, we do not give nor intend any criticism towards any individual witness. The Panel was acutely aware of the honestly held concerns of the Department of Conservation (**DOC**) witnesses, and of the efforts that many of them had personally made (and, we understand, continue to make) towards the Tara iti Recovery Programme.
- 96 Not unexpectedly, given their calibre, no witness resiled from their pre-circulated written evidence in any manner significant to the Panel's decision-making. Matters of detail were clarified, and further explanations provided. A number of exhibits were also introduced which we have reviewed, including the witnesses responses to questions regarding them.
- 97 The Panel expresses our gratitude to all legal counsel for their thoughtful and comprehensive legal submissions. The evidence was lengthy and the statutory and planning provisions to be applied numerous. The legal submissions gave the Panel a very 'clear steer' on the matters to be worked through in our decision-making.
- 98 We similarly express our gratitude to the planners, Ms Hopkins and Mr Brass. Both provided us with clear and considered planning evidence, working through a very long list of relevant documents and provisions. The Panel has no doubt that all applicable provisions were identified, and their application to the expert evidence was carefully discussed and considered in the planning evidence.
- 99 This decision report simply cannot do justice to the detail provided in the legal submissions and evidence, particularly the planning evidence.
- Key legal and planning matters*
- 100 We briefly set out the key legal matters the Panel has turned our minds to when assessing these two principal issues of contention for avifauna matters:
- 100.1 Section 3(f) of the RMA includes, as an effect to be considered in decision-making, "*any potential effect of low probability which has a high potential impact.*" We must consider both the likelihood of an event occurring (for example, in the case of collision) and its consequence.
- 100.2 There needs to be an appropriate evidential foundation for potential future effects claimed to be relevant under section 3(f).
- 100.3 Guidance is provided by the *Shirley Primary School* decision. Scientifically plausible effects need to be satisfactorily established:¹⁷

¹⁷ *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66 (EC) at [147], and noting the important preceding comments of the Court at for example [142] and [144]. As is well known, this decision related to health effects from cellular technology and not effects on avifauna.

“... To fall within section 3(f) of the Act as a potential effect of low probability and high potential impact an effect must not be simply an hypothesis: there must be some evidence supporting the hypothesis. This evidence may consist of at least one of:

(1) consistent sound statistical studies of a human population; or

(2) general expert acceptance of the hypothesis; or

(3) persuasive animal studies or other bio-mechanistic evidence accompanied by an explanation as to why there is no epidemiological evidence of actual effects in the real world; or

(4) (possibly) a very persuasive expert opinion.

...

100.4 The Court in *Shirley* further elaborated that “*there need not be sound statistical evidence of a hypothetical effect if there is general expert (scientific) acceptance that it will occur*”,¹⁸ and in relation to item (4) (regarding persuasive expert opinions), that:¹⁹

“*In exceptional cases a very persuasive expert opinion might sufficiently support an hypothesis. This is unlikely to occur in respect of health issues such as we are considering here, but not all potential environmental effects have the same research lavished on them as human health effects. In such cases it might be appropriate to trust an expert notwithstanding lack of statistical evidence, although in such a case one would likely want there to be general acceptance of the methodology used within the scientific discipline involved.*”

100.5 While the burden of proof standard under the RMA is generally the balance of probabilities, section 3(f) potential effects are not required, for obvious reasons, to meet that standard.²⁰ A decision-maker may adopt a likelihood scale for assessing the probabilities of future risks (*Davidson Trust*).²¹

100.6 The assessment of potential effects depends on an evaluation of all of the evidence available, but does not for example depend on proving that the potential effect will more likely than not occur. What probability of occurrence should suffice will depend on the context (*Clifford Bay*).²²

100.7 As the High Court noted in *Clearwater Mussels*:²³

“*The assessment of risk of future events is difficult generally. In this case the adverse effects are uncertain, but they may result in a significant loss to an endangered species. The Environment Court is required to take the evidence, expert and otherwise, and reach a*

¹⁸ Ibid at [149].

¹⁹ Ibid at [151].

²⁰ Ibid at [146].

²¹ *R J Davidson Trust v Marlborough District Council* [2017] NZHC 52 at [131] and [132].

²² *Clifford Bay Farms Limited v Marlborough District Council* C131/2003 NZ EnvC.

²³ *Clearwater Mussels Limited v Marlborough District Council* [2019] NZHC 961 at [85].

view on possible adverse effects and determine how best to deal with them within the requirements of the Act and planning documents.”

100.8 Policy 3 of the New Zealand Coastal Policy Statement (**NZCPS**) directs decision makers to “[a]dopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.”

100.9 In making decisions around the need, or not, to apply the precautionary approach (or precautionary principle) we have been guided by the Supreme Court’s direction in *Sustain our Sounds* that there are two triggers - “*uncertainty and potentially significant adverse effects*”.²⁴

100.10 Further, a precautionary approach may require that consent be declined. That may occur, as an example, where “*urgent measures are needed to avert imminent potential threats, where the potential damage is likely to be irreversible and where particularly vulnerable species or ecosystems are concerned*.”²⁵

100.11 Conflicting expert evidence, or the presence of competing or contrary scientific hypotheses, do not automatically trigger application of the precautionary approach.²⁶

100.12 In terms of the threshold for finding an ‘adverse effect’ relevant to a policy requirement to avoid that effect (for example, the NZCPS ‘avoid’ policies), we have adopted the “*material harm*” standard set out by the Supreme Court in the *Port Otago* and *Trans-Tasman Resources* decisions.²⁷

100.13 That is, that the word “*avoid*” may be interpreted to mean “*avoid material harm*”.²⁸ What will constitute material harm is not necessarily a mathematical calculation, but instead depends on the factual context.²⁹

100.14 In some circumstances, the death of an individual bird might amount to material harm.³⁰ If there was a species where that context for material harm might come into play, the Panel recognises that Tara iti would have to be one of the most likely candidates.

²⁴ *Sustain Our Sounds Incorporated v The New Zealand King Salmon Company Limited & Ors* [2014] NZSC 40 at [101].

²⁵ *Ibid* at [111], with the Supreme Court referencing the International Union for Conservation of Nature ‘*Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management*’, guideline 10.

²⁶ See for example *Aquamarine Limited v Southland Regional Council* NZEnvC, Christchurch C126/97 at page 147; and *Clearwater Mussels Limited v Marlborough District Council* [2018] NZEnvC 88.

²⁷ *Port Otago Limited v Environmental Defence Society* [2023] NZSC 112 (particularly [64] to [66]) and *Trans-Tasman Resources Limited v Taranaki Whanganui Conservation Board* [2021] NZSC 127, noting, as the Supreme Court in *Port Otago* did, that the latter decision related to a different context but was nonetheless applicable to the NZCPS.

²⁸ In addition to *Port Otago* and *Trans-Tasman Resources*, *ibid*, see also the *Waste Management* decision, *Te Runanga o Ngati Whatua v Auckland Council* [2024] NZHC 3794 at [114].

²⁹ See for example the approaches taken in *Port Otago* (supra footnote 27) and *Te Runanga o Ngati Whatua & Ors v Auckland Council* [2023] NZEnvC 277 at [886-888].

³⁰ *Te Runanga o Ngati Whatua & Ors v Auckland Council* [2023] NZEnvC 277 at [886-888].

100.15 We agree with the comments of the Environment Court in *McCallum Bros*,³¹ a case that also assessed effects on Tara iti amongst other effects of concern. The Court noted that “[b]ecause of the rarity and particular precarious nature of the species, we conclude the effects of the loss of one bird due to the activity could be a matter of concern. It would be fair to say that this has governed our extremely precautionary approach to the question of effects. ...”³²

100.16 The assessment of whether there is material harm has qualitative, temporal, quantitative and spatial aspects that must be weighed, and the assessment of whether the projected harm crosses the threshold of materiality requires that the Panel undertake a factual inquiry.³³

101 The statutory and planning provisions at front of mind for the Panel included:³⁴

101.1 Within the RMA:

- (a) Section 3(f) definition of effect, discussed above; and
- (b) Part 2, in particular section 5, and section 6(c) to recognise and provide for the following matter of national importance – “*the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna*”.

101.2 From the NZCPS:

- (a) Policy 3(1), noted earlier, “*Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.*”
- (b) Policy 11(a) “*To protect indigenous biodiversity in the coastal environment: avoid adverse effects on:*
 - (i) *indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists; ...*
 - (iv) *habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare;*”
- (c) Policy 11(b) “*To protect indigenous biodiversity in the coastal environment: avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on: ...*

³¹ *McCallum Bros Limited v Auckland Council* [2024] NZEnvC 075 at [101]. This case involved a different factual matrix, relating to proposed sandmining with the potential for effects on Tara iti nesting habitat (due to coastal erosion), on foraging areas / oceanic foraging ability, and in relation to potential oil spills (see [494] to [504]). We note that at that time the Tara iti population may have also been slightly smaller. The Panel understands that this decision may be subject to appeal.

³² Ibid at [101].

³³ *Trans Tasman Resources*, supra footnote 27, at [255] and [310-311].

³⁴ Note that the provisions relating to use and development, the provision of infrastructure and renewable energy, etc, are addressed elsewhere in this decision report and not repeated here.

- (ii) *habitats in the coastal environment that are important during the vulnerable life stages of indigenous species; ...*
- (v) *habitats, including areas and routes, important to migratory species;”*

101.3 In terms of the AUP:OP, the Panel concurs with the planners that this broadly reflects the higher order documents, including the NZCPS.³⁵ Relevant RPS sections include B7.2 (Indigenous biodiversity) and B8.3 (Subdivision, use and development in the coastal environment).³⁶ In terms of the RCP, the key section is E15 (Vegetation management and biodiversity). Of particular relevance, if the Panel were obliged to choose one, is policy E15.3(9):

“Avoid activities in the coastal environment where they will result in any of the following:

(a) non-transitory or more than minor adverse effects on:

(i) threatened or at risk indigenous species (including Maui’s Dolphin and Bryde’s Whale);

(ii) the habitats of indigenous species that are at the limit of their natural range or which are naturally rare;...

(b) any regular or sustained disturbance of migratory bird roosting, nesting and feeding areas that is likely to noticeably reduce the level of use of an area for these purposes;...”

Risk of collision

102 This principal issue in contention related to a potential collision risk for birds, particularly in relation to the solar panels, but also other solar farm infrastructure though to a much lesser degree.

103 While concerns were held in relation to collisions by birds generally, a greater level of concern was held for TAR avifauna species, and most especially for Tara iti. Australasian Bittern were also identified for particular assessment.

The case for Glorit Solar

104 The main evidence for Glorit Solar³⁷ was that of Ms Webb and Dr Bull, supported by Mr Clarke and Ms Hopkins. That evidence was tested through the hearing, via cross examination and questions from the Panel. Also relevant (though in some parts superseded) was the *Ecological Impact Assessment: Glorit Solar Farm* prepared by Beca Limited and dated 13 November 2024 (**EclA**), and the *Avifauna Response to Submissions: Glorit Solar Farm* also by Beca Limited and dated 17 April 2025 (**Avifauna Response Report**).

³⁵ The Panel notes the ‘gap’ in the AUP:OP referred to in Brass, EIC [142] to [144]. We agree with his conclusion at [144].

³⁶ See in particular B3.2.2(8), B7.2, B8.3.2(4) and (5).

³⁷ We note that in this section of our decision report we refer to Glorit Solar as the “applicant”. This is because the NOR and consents for the Substation, being approvals sought by Transpower, were not the subject of the hearing.

- 105 We broadly summarise the relevant parts of the case for Glorit Solar as follows.
- 106 There is limited, if any, bird fatality monitoring data from operational New Zealand solar farms. The possibility of birds colliding with solar panels and solar farm infrastructure does not arise from any reported New Zealand experience of this phenomenon, but instead arises predominantly as a result of a series of international studies coming out of the southwestern United States (**US**). Ms Webb's evidence described those international studies for us, as did others.
- 107 Drawing on the studies referenced in both her evidence and the Avifauna Response Report, Ms Webb considered that, while we do not have reliable New Zealand data available, the international solar-specific studies, other avian collision studies, site-specific observations, and species behaviour provide sufficient information to determine risks and overall population effects for TAR species at the Site.³⁸
- 108 Dr Bull for her part acknowledged specifically that large-scale solar farms are relatively new in New Zealand, and that there are no specific studies available on the interaction between solar farms and Tara iti. However, she considered that *"the likelihood of collision can be assessed and identified through the application of expert skill and judgment and appropriate conclusions reached. There is a small measure of uncertainty, but no more than many other expert ecological assessments of potential effects"*.³⁹
- 109 The international literature largely focuses on general avian fatalities at solar farms (rather than solar panel collisions specifically), and demonstrates that there is a range of fatality rates across different locations and types of solar facilities. The studies offer some insight into plausible reasons why birds might collide with solar panels (for example, birds mistaking them for desert water bodies, or the 'lake effect'). They also demonstrate that collision-attributed fatalities form a minor subset of total avian fatalities recorded.
- 110 Research reporting higher fatality rates is generally biased towards large (greater than 1000ha, with Glorit being 283ha) solar farms in xeric (desert or arid) landscapes in the southwestern US and northwestern South Africa.
- 111 There is limited evidence to suggest that collision risk is a significant issue at solar farms outside of the arid, desert sites in the US and emerging evidence from the US is showing that collisions are rare.
- 112 Most waterbird collisions in the literature apply to sites where migratory waterbirds may be drawn to solar farms in search of open water bodies.⁴⁰ Further, many studies are conducted on solar farms that use different or older technology (for example, Concentrated Solar Power (CSP) or fixed tilt systems, or panels without anti-reflective coating).
- 113 Lower fatality rates were typically associated with PV solar panels (such as proposed at Glorit), and those found within agricultural settings. However, even in the desert contexts, the high-end fatality rate estimates are still significantly lower than that

³⁸ Webb, EIC [7.8] to [7.22]

³⁹ Bull, EIC [7.14].

⁴⁰ Webb, rebuttal [8.59] and Appendix 3.

associated with other anthropogenic structures such as communication towers, wind turbines and road mortality (in particular, vehicle collisions).

- 114 Further, along with records of mortality, there are numerous records of birds regularly interacting with solar panels or solar farms without harm, and/or flying over such facilities without interacting with them.⁴¹ At least one study shows mortality rates in line with reference site mortality (i.e. no increased rate of mortality at a solar farm site compared to another control site).⁴²
- 115 The relevance of the US-based studies was seriously challenged, including the degree to which they ought (not) to be applied to New Zealand and Glorit in particular. Ms Webb's evidence was that the contexts of the studies are significantly different to New Zealand and that they should not be applied here.⁴³
- 116 Many of the studies themselves specifically stated that they should not be applied more widely. The Panel considers this point to be an important one, having reviewed a number of the studies ourselves. The following riders were for example given by study authors:⁴⁴

"Given that mortality risk is not well understood in different habitat contexts, we do not recommend extrapolating the average annual fatality estimates we calculated out to the current and projected buildout of the U.S., or to other BCRs with markedly different habitats...An important limitation of our study and interpretation of the broad scale patterns of water-obligate bird occurrence is that our results are not predictive outside of the vicinity of the sites included. Our statements should not be interpreted as evidence there will be water-obligate bird mortality at PV USSE facilities developed in areas with concentrations of migrating or overwintering water obligates because the causal mechanism for fatality risk is unknown" (Kosciuch et al., 2020)

"...it is unknown how other landscape contexts outside of our study region and the availability of natural waterbodies will influence aquatic habitat bird behavior at PV USSE facilities." (Kosciuch et al., 2021)

"...it would be misleading and statistically inappropriate to apply inferential statistics to the cumulative dataset of fatality estimates or likewise to directly interpret data patterns across facilities for data of varying rigor." (Conkling et al., 2023b)

- 117 Ms Webb further cautioned as follows:⁴⁵

117.1 Many of the studies investigate avian fatalities at the same study sites within the Sonan and Mojave deserts of California, or review or make use of this data in fatality extrapolations for the same regions.

117.2 The US studies were initiated by concerns raised specifically at those Californian sites where avian fatalities were first observed, leading to many of the

⁴¹ Avifauna Response Report, page 8.

⁴² Webb, rebuttal [8.55].

⁴³ Webb, rebuttal [1.11].

⁴⁴ Collated in Webb, EIC [8.54], and see reference list at page 51 for cited studies. See also Transcript Day 4 page 391 onwards.

⁴⁵ Throughout her evidence but see in particular [8.5 – 8.10] and referenced appendix.

hypotheses regarding possible causes of avian deaths and the calculation and extrapolation of fatality rates.

- 117.3 Broader literature review studies recognise avian fatalities reported at those sites and note that there is an environmental bias in the current understanding of impacts that might not be able to be extrapolated to other contexts like farmland. One set of authors concluded that “[e]ven though Asia and Europe head the list of regions with the highest PV installed capacity (59% and 22%, respectively), a large portion of the existing knowledge is drawn from North American environmental contexts (48% of the studies), specifically from deserts (41%)”.
- 117.4 The study sites informing most of the discussion regarding collision risk for the Director-General’s experts were carefully assessed. Only two studies were considered to lie outside ‘desert’ areas. One had examined solar farms in Alberta, Canada within a grassland region characterised as a semi-arid climate with a pronounced moisture deficit during the latter part of the growing season. The second study was in the northern Cape in South Africa which fell within the savannah biome.
- 117.5 Lastly, the statistics provided in the reports needed to be carefully assessed, rather than being applied to different contexts. For example, mortality figures could relate to all found mortality, and not necessarily to attributed mortality from collision.⁴⁶
- 117.6 The application of fatality estimates from the US solar sites to inform collision risk for the Glorit Solar Farm, such as that undertaken by the experts for the Director-General, was particularly challenged by Ms Webb:⁴⁷
- (a) The first challenge was in respect of the ‘matching’ process, where overseas species were matched to similar New Zealand species. In her view this did not consider the way these species interact with the habitat within and surrounding the Solar Farm, and the role of site-specific characteristics (including location, site management, disturbance, environmental condition and predator pressures).
 - (b) The second related to the extrapolation of fatality rates whereby ‘per MW’ fatality rates were generated, including for individual species. Raw data was adjusted (upwards) to account for biases from detection efficiency and carcass persistence, and to address differences in fatality monitoring methods across the study sites. Assumptions had also been applied within the data used, for example, that the solar farms had caused all of the fatalities found through monitoring, when that was not factually correct.
 - (c) A related challenge was to the method of deriving fatality estimates for species groups by adding (summing) species-specific estimates to calculate a total combined fatality estimate, and using one studies’ extrapolated Californian fatality estimates. This was considered by Ms Webb to be “*an incorrect and highly inaccurate way to determine fatality estimates for species groups*”. Fatality rates would be ‘skewed’ by the number of species in each group i.e. the greater number of species in each group, the greater the rate of fatality predicted. This would over-

⁴⁶ Webb, rebuttal [8.11 to 8.20].

⁴⁷ Webb, rebuttal, including page 33 onwards.

estimate the species-group fatality rate and, if applied to individual species (as had been done for Tara iti and Australasian Bittern),⁴⁸ would provide an overestimation.

- (d) Last was the challenge (related to the concerns addressed above) that the particular study relied on was confined to US desert solar farms that were not comparable to the Glorit Solar Farm Site.

117.7 In Ms Webb's view it was inappropriate to base conclusions about collision risk at the Glorit Solar Farm solely on the Californian studies alone. While the studies were considered to offer some insight into potential causes of bird fatalities and underlying mechanisms, their findings should be considered in a broader context – *"[a]n assessment of overall risk should also draw on a broader range of literature available, including unpublished reports and grey literature, as well as professional judgment and site- and species- specific knowledge."*

- 118 In the Panel's view none of the above matters were resiled from, or otherwise contradicted, as a result of cross examination.
- 119 Different avian species were likely to be affected differently by solar developments. This was considered to be dependent on the habitat within and around the development, the spatial requirements of a given species and their foraging behaviour. Solar panel collision risk was assessed to be highest for large-bodied birds like geese, ducks and swans, which have high wing loading and typically land on water bodies at high speeds as they are less manoeuvrable in flight.
- 120 Songbirds (passeriformes), and pigeons and doves (columbiformes) have been documented as having the highest fatality rates in the US.⁴⁹ Passeriformes species native to New Zealand are predominantly associated with forested areas which are only found only on the landward side of where solar panels will be installed at Glorit, rather than within the areas of open pasture. Further, due to their non-threatened status, potential collision would not result in more than a minor effect on the local populations.⁵⁰
- 121 The species of primary concern at Glorit are water and shore bird species. While the US studies have also found waterbirds to be susceptible to collision in some contexts, it has been hypothesized that collision risk for waterbirds is likely highest for fast flying and large-bodied birds that typically land on water bodies at high speeds as these species are less manoeuvrable in flight. Should this hypothesis be accepted, species present at the Site at greatest risk would include ducks, swans and geese.
- 122 The species of conservation concern at the Site typically have lower wing loading making them manoeuvrable (i.e. Tara iti, Caspian tern), or like the Australasian Bittern, discussed further below, have behavioural characteristics such as typically slowing for landing and landing feet first in shallow water, making them unlikely to be at risk of injury or mortality even if they were to perceive solar panels as water.
- 123 Current research underway by the Argonne National Laboratory, based in the US, was described by Ms Webb and Dr Bull following in person discussions with the authors.

⁴⁸ See also Webb, rebuttal at [8.72] onwards for Bittern, and [8.68] onwards for Tara iti.

⁴⁹ Bull, EIC [7.13].

⁵⁰ Avifauna Response Report, page 9.

124 The Argonne National Laboratory is utilising cameras and AI technology, coupled with ground-based fatality monitoring and acoustic data, to monitor avian behaviour at solar farms in seven regional sites in the US. Preliminary data included up to 100,000 camera tracks, with 70,000 hours of video, and ground-based fatality monitoring. Preliminary analysis was stated to report no diurnal avian collisions with solar panels. Further, avian fatalities at the study sites were minimal at locations in the US northeast compared with the earlier studies based on Pacific southwest desert sites. At these sites, affected species were typically common passerine species with no observations of water birds.⁵¹

125 Emerging anecdotal and operational evidence, including from sites in New Zealand and described in the evidence of Mr Clarke, were stated to indicate that avian collisions with solar panels are a very rare occurrence.

126 Ms Webb stated in evidence that she:⁵²

"[did] not expect the likelihood of possible collisions at the Site, situated in a temperate, non-arid climate and surrounded by a mosaic of habitat features, to be equivalent to desert sites where open water bodies and other substantive landscape features are absent.

Furthermore, the TAR shorebird species at the Site do not fall into the category of birds most frequently observed in fatality studies. The species of primary concern for risk of collision with panels at the Site are shorebirds and Australasian Bittern as well as Tara iti, as raised by DOC. These species differ to the common passerine (perching birds) and waterfowl (at desert sites only) found in the earlier US data on older solar sites."

127 The Avifauna Response Report helpfully framed the issue before us in this manner:⁵³

"... There are three key factors that must be considered as part of the assessment based on the knowledge available:

1) Will there be a collision risk as a result of the development?

2) What are the species of concern and how susceptible are they to collision with panels?

3) If there is high likelihood of collision, would this then also lead to an effect at a population level for that species?"

128 Turning to assess the "*species of concern*", in respect of shorebirds⁵⁴ Ms Webb stated that she considered it unlikely that shorebirds would collide, based on their physical and behavioural characteristics (including their method of and approach for landing) and current use of the Site.

129 Ms Webb noted that the retained roosting habitat had sufficient spatial extent for shorebirds to safely approach and depart, and that shorebirds are observed to habituate to man-made structures in their environment. Lastly, Ms Webb referenced the consequence of collision for shorebirds at the Site being minimal, as many fatal

⁵¹ Noting that these comments were all in the form of *pers comms* with the researchers.

⁵² Webb, EIC [7.21 – 7.22].

⁵³ Including as addressed in the Avifauna Response Report at 2.1.

⁵⁴ Webb, EIC [7.23 – 7.29]. See also rebuttal [8.21-8.24].

collisions would need to occur before a population-level effect was detected (i.e. that would affect the resilience of the national population).

- 130 For waterbirds, Ms Webb stated that her interpretation of the studies was that proximity to waterbodies was not proven to be correlated with waterbird collision fatalities, noting that all TAR species at Glorit are water-associates and that the only water-obligate species present are Mallards, Paradise Shelducks and Black Swans, none of which are threatened or identified as species of concern.⁵⁵
- 131 Based on actual surveys of the Solar Farm Site (including supplementary nocturnal surveys), Ms Webb concluded that the Solar Farm Site provides nighttime roosting for non-threatened waterfowl (ducks, swans) and resident Pukeko, and possible but limited nighttime use by shorebirds. As such, her view on the relative risk of nocturnal TAR species collisions was that it was no greater than the daytime risk and therefore, with mitigations in place, a low level of effect.
- 132 White Heron and Black Stilt collision risk, both TAR avifauna species that are rare in the Kaipara Harbour and have only been identified in the vicinity of the Solar Farm Site, was also addressed, with Ms Webb concluding that effects on these populations would be negligible.
- 133 At this point it may be helpful to record that a diagrammatic summary (of some data from some of the international studies) was provided in Figure 5 of the rebuttal evidence of Ms Webb. We note the Panel's understanding that Australasian Bittern are within the bird group "herons/bitterns" and so within the class "Ardeidae" shown on her Figure 5 while Tara iti are within the class "Laridae". This Figure was also the subject of comment from the Director-General's witnesses.⁵⁶
- 133.1 For Australasian Bittern,⁵⁷ Ms Webb noted their higher susceptibility to collision than shorebirds, with vehicle, fence and transmission lines being noted as causes. Noting that Bittern behaviour was still not well understood, reference was made to their use of a network of coastal and inland wetlands and suitable farm dams / drains, and that they can travel long distances but are generally faithful to breeding sites. A single Australasian Bittern was observed during field surveys. The Bittern was observed to land in pasture and then crossed into the vegetated margins of the permanent watercourse that runs through the centre of the Site. That watercourse will be retained and enhanced via riparian and wetland margin restoration.⁵⁸
- 133.2 Bittern were noted to be visual foragers that stalk their prey in densely vegetated wetlands and within farm drains in agricultural land. They are slow to land, feet first, in shallow water and would typically travel above the height of the panels. Their preference for vegetated features and edges of ponds and waterways, rather than exposed open estuarine waters or freshwater habitat, was also noted.

⁵⁵ See Webb, rebuttal pages 29 and 30.

⁵⁶ The Panel specifically notes in relation to Figure 5 that Dr O'Donnell considered that there ought to be amendments made to it to include further TAR species, as noted by him at the hearing, see details provided in Transcript Day 4 page 366.

⁵⁷ Webb, EIC [7.36 – 7.46].

⁵⁸ Webb, EIC [6.4].

- 133.3 Characteristics of the Site and Proposal that minimised collision risk for Bittern were noted to include:
- 133.4 The retention of planted wetlands and riparian green corridors of at least 5m widths, with Bittern being more likely to be attracted to the enhanced wetland and riparian corridors that provide open access and low levels of disturbance.
- 133.5 The presence of the stopbank creating a micro-topographical feature that, along with the presence of planted trees required by the landscaping plan, mitigate the risk of low-flying Bittern colliding with the panels.
- 133.6 The installation of dynamic flappers on the transmission line (required by conditions of consent), as wire markers had been found to reduce avian collisions by 70%.
- 134 Ms Webb concluded that the risk of Bittern collision with solar panels was unlikely, with minimal population effects.⁵⁹
- 135 For Tara iti,⁶⁰ Ms Webb noted that this species had not been observed at the Site to date, but acknowledged that they may fly overhead the Site. Dr Bull concurred,⁶¹ and advised that the closest Tara iti roost site to the Solar Farm is approximately 7km to the north (Tauhoa) while the closest breeding site is approximately 20km to the northwest (Papakanui Spit).⁶² Tara iti had been excluded from the preliminary desktop species records reviews for the EclA, as known locations were outside the 3km radius typically used for screening. The applicant has however responded to the issues relating to Tara iti, following the Director-General's submission.⁶³
- 136 Dr Bull provided key Tara iti species information, including advice (accepted by all of the experts) that the Solar Farm Site does not provide any breeding, roosting or foraging habitat for Tara iti.⁶⁴ The importance of the Kaipara Harbour generally for Tara iti was acknowledged.
- 137 Key threats for Tara iti were noted to include:⁶⁵
- 137.1 Habitat depletion (i.e. degradation and loss of sand dune habitat, reduction / loss of safe habitat for breeding and roosting, impacts on food availability);
- 137.2 Predation (mammalian and avian, e.g. cat predation of female adults at night on nests);
- 137.3 Environmental events (e.g. storms destroying nests, including in some seasons the increase in intensity and duration of storms);
- 137.4 Death of embryos (largely due to exposure); and

⁵⁹ Webb, EIC [7.44].

⁶⁰ Webb, EIC [7.30 – 7.35].

⁶¹ Bull, EIC [6.24].

⁶² Bull, EIC [1.5].

⁶³ Webb, EIC [6.3].

⁶⁴ Bull, EIC [1.7].

⁶⁵ Bull, rebuttal [8.1], see also Beauchamp, EIC [61] to [74].

137.5 Human recreational activities.

- 138 Dr Bull, with input from others, made a careful assessment of tracking data that had been made available by the Department of Conservation (**DOC**) in relation to three tagged Tara iti juveniles (for the period 2 December 2024 – 2 July 2025). This material was referenced in the Director-General's submission on the applications, but had not been publicly available before that. This tracking data showed a focus of data points around the Papakanui Spit (at the top of the South Kaipara Head) and Manukapua Island (opposite the Harbour Mouth), with other points across the entire Harbour, see Figure 8 from Dr Bull's evidence in chief, reproduced below.⁶⁶ There were limited data points on or in proximity to the Site (outlined in red in the figure below):⁶⁷

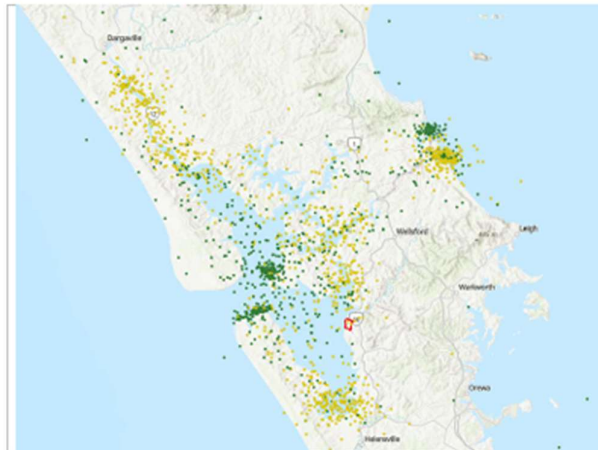


Figure 8: Satellite data points of three captive-reared Tara iti recorded between 5 December 2024 and 2 July 2025 during the day (yellow dots) and night (green dots). Glorit site boundary is shown by the red outline.

- 139 Ms Webb proposed that there needed to be a number of steps for collision to occur:
- 139.1 Tara iti must first be attracted to the solar panels at the Site whilst flying overhead. There is very limited evidence in the literature that supports that solar farms, even in arid areas, divert commuting birds from their flight paths.
 - 139.2 Birds would then need to interact with the panels in a detrimental way, such as a foraging attempt. Tara iti forage by hovering 5-15m above the surface and dip dive only when prey is sighted.
 - 139.3 For a foraging dive to occur the bird would need to continue to mistake the panels for water and mistakenly identify a prey at this flight height regardless of the lack of other sensory cues.
- 140 Dr Bull summarised it in this way, that for any bird to collide with solar panels they would need to:⁶⁸
- 140.1 Perceive the solar panels as water;

⁶⁶ Bull, EIC Figure 8 page 26.

⁶⁷ Bull, EIC [6.24] and see also Figure 9 page 26.

⁶⁸ Bull, EIC [7.6].

- 140.2 Be attracted to this perceived water;
- 140.3 Not experience any changes in perception as they near panels; and
- 140.4 Fail to slow near the panel surface / collide at a speed likely to cause injury / mortality.
- 141 For a collision to then detrimentally affect the Tara iti population several other factors would need to be considered, including whether the individual was a breeding female, whether injury or fatality occurred, and current population numbers. In Ms Webb's view this *"further diminishes the likelihood of a species or population level effect when considering all the factors that need to align before a fatal collision of a particular tara iti bird would give rise to a significantly detrimental outcome."*⁶⁹
- 142 Dr Bull also did not agree that *any* fatality of Tara iti would have a catastrophic effect on the species. Rather, she considered that the consequence of a single death on the Tara iti population would be dependent on the sex and breeding status of the bird.⁷⁰ While the Tara iti population remains at critical threatened numbers and should, in Dr Bull's opinion, be protected from genuine threats, its numbers have fluctuated over time meaning that attributing an extinction level effect to any one Tara iti fatality is unrealistic. Many other factors would be relevant (such as an increase in nest predations or failure).
- 143 Ms Webb concluded in relation to Tara iti that *"[g]iven that it is highly unlikely that tara iti will collide with the panels, it is my opinion that there will be negligible effects on the population."*
- 144 Dr Bull's opinion was that the likelihood of Tara iti colliding with the Glorit Solar Farm infrastructure was *"remote"*. This was based on the following:⁷¹
- 144.1 There is no evidence that tern species are attracted to solar panels.⁷²
- 144.2 The habitat requirements of Tara iti, none of which are present at the Site.
- 144.3 Known Tara iti behavioural characteristics. (i.e. a visual forager that feeds on fish, that flies >5m above ground level, and able to navigate landscapes with existing structures, including at night). Tara iti are selective in obtaining their food, not diving indiscriminately at the water at high speed. Rather, they hover over the water surface, locate their prey and then lower themselves to feed within the top 5-8cm of the water, generally not totally immersing their body.
- 144.4 When considering whether the solar panels might mimic the flat surface of a 'boil' of prey active under the surface of the water, which terns might then use for foraging cues, Dr Bull advised that the tern species thought to use those signals for foraging cues fed on shoaling fish species, while Tara iti's key prey (gobies and flounder) are not shoaling species.⁷³

⁶⁹ Webb, EIC [7.34].

⁷⁰ Bull, EIC [7.17-7.19].

⁷¹ Bull, EIC [1.7], [7.8], [7.9], [7.12].

⁷² Bull, rebuttal [5.10].

⁷³ Bull, rebuttal [5.9].

- 144.5 The probability of a Tara iti colliding with solar panels was not considered to increase the more times, or more birds, traverse the Site if the conditions were not conducive to attracting a bird to interact with the infrastructure.
- 144.6 The presumed lack of collisions with the solar panels associated with the Tara iti aviary located between the Te Arai stream mouth and dune lakes. This was considered to be indicative of the likely response, as the mechanism of attraction to solar panels would be present irrespective of the number of panels present.
- 144.7 The very limited number of tern deaths (n=2, partial remains)⁷⁴ recorded in fatality monitoring at the US solar energy projects, for which the cause of death (i.e. whether it was caused by collision at all, let alone collision with a solar panel) could not be determined in either case.
- 144.8 Furthermore, the two tern records needed, in Dr Bull's opinion, to be put into the context of the data sets in which they were collected. The fatality referenced in the Smallwood 2022 paper involved a review of wildlife mortalities (including avifauna) from fatality monitoring between 1982 to 2018 at 14 utility-scale solar projects. The partial find involved a tern skull, found at a project with 700,000 panels in a very arid landscape. Dr Bull acknowledged that the monitoring varied in duration and level of sampling etc. Nevertheless, only a single partial tern skull was reported from those 14 sites.⁷⁵
- 144.9 Figure 6 from Dr Bull's rebuttal evidence was of assistance, noting that Tara iti belong to the family Laridae (gulls and terns), outlined in green in that figure, with the most relevant data series being the third row 'Solar PV'.⁷⁶
- 144.10 The implementation of the proposed mitigation measures, for example the integrated site design and latest panel technology.
- 145 When pressed on her use of the word "*remote*", Dr Bull clarified that she was using this term to mean "*unlikely to occur*", rather than "*not credible*" or "*not completely fanciful*".⁷⁷
- 146 Measures to further manage the risk of collision, for all species, were recommended by Ms Webb (and supported by Dr Bull and Ms Hopkins), including to align with the effects management hierarchy. These included:⁷⁸
- 146.1 Anti reflective coatings for the solar panels to reduce reflectivity and polarisation.
- 146.2 The proposed Solar Farm layout and panel arrangement, including the solar panel piles being 5m apart with panels approximately 3m apart when fully horizontal and daily tracking to break up the (continuous) visual profile. This would minimise the appearance of a continuous surface or body of water.

⁷⁴ Bull, rebuttal [6.3].

⁷⁵ Bull, rebuttal [6.5].

⁷⁶ The Panel again specifically notes in relation to Figure 6, also set out in Ms Webb's rebuttal evidence as Figure 5 and including reference to TAR shorebirds, that Dr O'Donnell considered there ought to be amendments made to include further TAR species, as noted by him at the hearing. See Transcript Day 4 page 366.

⁷⁷ Transcript Day 2 page 157.

⁷⁸ Webb, EIC [7.53 – 7.63]; Bull, EIC [7.20].

- 146.3 Site design including landscaping,⁷⁹ and retained and enhanced habitat areas, with unobstructed paths to enable birds to access these areas, and green corridors of at least 5m width along retained drains and wetlands.
- 146.4 In addition to the above design measures, and in recognition of the conservation status of avifauna, collision monitoring and tailored contingency measures were offered (by way of conditions) to address any unforeseen, emerging circumstances, and allowing further management measures to be implemented in response.
- 146.5 Proposed fatality monitoring and triggers for intervention were also set out in the proposed conditions offered. This included, when appropriately triggered, the requirement to prepare an Avifauna Collision Contingency Plan. The importance of flexibility was noted, along with mechanisms to update monitoring methods should new technology become available. The thresholds were stated to be commensurate with potential consequences of fatalities, providing a low threshold for Nationally Critical, Endangered and Vulnerable species, compared with species of a lesser conservation status.
- 146.6 Potential contingency measures were detailed, as 'without limitation' matters only, including additional visual, acoustic or chemical deterrents, removal or reconfiguration of solar farm infrastructure, and wider steps more in the form of offset or compensation (such as predator control, funding of conservation research and the like).

The case for the Director-General

- 147 The main evidence for the Director-General was that of Dr O'Donnell, Dr Beauchamp, Dr Corkery, Associate Professor Cain and Ms Wiles, supported by Mr Brass. That evidence was tested through the hearing, via cross examination and questions from the Panel. RFBPS supported the Director-General's case, and made their own legal submissions, but did not present evidence. Also relevant (though again, in some parts superseded) were the submissions lodged by the Director-General⁸⁰ and RFBPS (under clause 26 of Schedule 10 to the NBEA).
- 148 We broadly summarise relevant parts of the case for the Director-General as follows.
- 149 It was the Director-General's submission that raised, for both the applicant and the Panel, the potential for effects on Tara iti, referencing for the first time the tracking data that was available to DOC (but not otherwise publicly available). This was accompanied by concern for effects particularly on Australasian Bittern, Black Stilt and White Heron (those species, together with Tara iti, all being Nationally Critical – the highest level available), and (to a lesser degree) effects on Fernbirds.
- 150 Dr Beauchamp and Ms Wiles set out detailed evidence in relation to Tara iti, including in response to requests from the Panel (as Dr Bull also had). This included material regarding their conservation status, population statistics, core habitat, behaviour, threats and threat management, and details regarding the captive rearing programme

⁷⁹ The Panel notes that lighting of the Solar Farm will consist solely of motion activated security lighting around buildings (section 6.5.2.5 Solar Farm AEE).

⁸⁰ Noting that the Director General's submission did not expressly seek, at that time, that approvals be declined.

currently being trialled. This evidence was not disputed in any significant way, the main elements comprising:

150.1 That Tara iti are a small tern species of around 70g, and New Zealand's rarest endemic breeding bird with an estimated population of 50.

150.2 Tara iti are a Nationally Critical species under the New Zealand Threat Classification System.⁸¹ As noted above, there is no higher category.

150.3 Tara iti have prioritised management in DOC's conservation planning system. Significant efforts (time, money and work) have been invested, since at least 1987, in the Tara iti Recovery Programme.⁸² The current approach for DOC (and partners) includes:⁸³

- (a) Full management of current Tara iti breeding sites.
- (b) Over-winter management of Tara iti (when Tara iti are resident in the Kaipara Harbour).
- (c) Establishment of new suitable Tara iti breeding sites (including, potentially, in the Kaipara Harbour).
- (d) Development of a captive rearing programme for maximising Tara iti productivity.
- (e) Considering removal of infertile males.

150.4 Population modelling was stated to show that adult survivorship is the most important attribute for maintaining the population, and that to grow the population requires increased egg hatching and healthy young Tara iti that then survive to adulthood for breeding. The captive rearing programme aims to achieve this goal. Key areas for effort were identified as (i) improving adult survivorship; (ii) improving the rate of successful wild breeding by reducing the impact of infertility, and (iii) implementing a successful captive breeding programme.⁸⁴

150.5 A reduction in the annual average survivorship of the adult population by 5% would reduce the probability that the population will persist in 50 years from 59% to less than 20%. All premature deaths reduce the probability of persistence.⁸⁵

150.6 Core habitat includes the estuaries between Waipu and Pakiri, and the Kaipara Harbour. The species is highly mobile. The Kaipara Harbour is the principal habitat for the entire population of Tara iti in winter, and all areas of the Harbour are used. Known and well-used over-wintering roosting sites in the Kaipara Harbour include Manukapua Island (a name meaning 'a cloud of birds'), Bird Island and Papakānui Spit which have annual population surveys during February – April. Other significant roost sites such as the Tauhoa River and Port

⁸¹ See Wiles, EIC page 5.

⁸² This programme has had various names, further details are provided in Wiles, EIC. Details of the financial expenditure (DOC investment) is described in Wiles, EIC page 11.

⁸³ Wiles, EIC [21].

⁸⁴ Beauchamp, EIC [31].

⁸⁵ See (for example only) Beauchamp, rebuttal [13-15], Wiles, EIC [12] and [45], O'Donnell, EIC [126].

Albert are intermittently monitored for Tara iti presence as well. Further work is planned to identify other roost sites in the Kaipara Harbour for protection. This will involve boat surveys, satellite tagging of adult birds and additional tracking studies.

150.7 It was agreed that the Solar Farm Site itself does not provide nesting, roosting or foraging habitat for Tara iti. However, the surrounding Harbour may. This included the potential that female Tara iti may rest on the water at high tide and use water to wash and preen, and that adults may also feed newly fledged young on the water to supplement their fishing. Tara iti may also forage along the outer edges of the mangroves located off the seaward margin of the Site.

150.8 Tara iti are visual foragers that feed during daylight, and usually forage by “contact dipping” (diving and then pulling out of the dive to partly immerse their bodies in the water and reaching for fish), or by “dipping” where the head and bill are immersed. Tara iti also feed on the surface of the water, occasionally plunge diving where the body is immersed in water.

150.9 Exact causes of individual deaths are largely unknown. Known mortality causes include cat predation, egg loss through other birds pecking at eggs, trampling of chicks, harrier predation of fledglings, avian malaria infections and septicaemia, and collision (assumed, through evidence of a broken upper bill).

150.10 Tara iti face substantial threats already, including predation; the loss of safe habitat for breeding and roosting; impacts on food availability due to the damming of estuaries and impacts on spawning from mangrove removal; and in some seasons, the increase in intensity and duration of storms. In short, *“Tara iti already cope with many threats and should the farm pose a collision risk, it will add to those threats”*.⁸⁶

150.11 DOC was noted to be seeking funding via the New Zealand Nature Fund to support four areas: creating habitat for breeding and nesting; controlling predators and monitoring; surveying the Kaipara Harbour during winter; and raising awareness about the need to protect Tara iti and its coastal ecosystems. The most substantial long term funding would be required for captive rearing, habitat enhancement and securing breeding sites for a growing population.⁸⁷ Given the limited room to significantly improve population persistence relying on adult survivorship alone, DOC is now following a management strategy that also attempts to increase the rate of reproduction, including through the experimental captive rearing programme.⁸⁸

150.12 Dr Beauchamp also noted the potential that Tara iti may tend to investigate new things in their environment, and that standing water on the Site (in flooding circumstances) in association with the solar panels might potentially increase polarised light reflectance.

⁸⁶ Beauchamp, EIC [22].

⁸⁷ Beauchamp, EIC [79].

⁸⁸ Beauchamp, EIC [33], [35].

- 151 Australasian Bittern were described in the evidence of Dr O'Donnell (and others). As noted above, they are also a Nationally Critical species, like Tara iti. A further two Nationally Critical species have been recorded in the vicinity of the Site, albeit rarely, being White Heron and Black Stilt.
- 152 Numbers remaining for Australasian Bittern are unknown. They are extremely difficult to see and very secretive, staying hidden in wetland vegetation for most of the time. Northland is a well-known 'hotspot' for this species, and they are frequently recorded in wetlands and wet areas around the Kaipara Harbour and Glorit. They also often fly at night, between dusk and dawn. On the Solar Farm Site a Bittern was recorded by the applicant's advisors in one of the central drains, and they have also been recorded by BirdsNZ and by DOC (2001-2009).⁸⁹
- 153 A species considered to be similar to Australasian Bittern, the Great Blue Heron, was amongst the water-associated species found deceased at PV solar farm facilities in two of the available data sets.⁹⁰
- 154 Collision risks with solar panels were raised as well as with the transmission line, with the recommendation that all wiring and transmission lines should be placed underground to avoid this risk completely.⁹¹
- 155 The Director-General's case essentially reached a different expert view on the applicability of the available international studies.
- 156 Dr O'Donnell concluded that the *"potential adverse effects in relation to collision risk are both plausible and potentially significant for Threatened and At-Risk species and therefore need to be avoided."*⁹² He considered that there were *"plausible, detrimental risks to Threatened species using the Glorit site"*,⁹³ and considered the Solar Farm Site to be *"the riskiest site that I have been asked to assess the effects of solar infrastructure at."*⁹⁴ Dr O'Donnell stated:⁹⁵

"Mortality of birds associated with the infrastructure and operation of PV solar farms is a recognised issue globally ...Mortality appears to be largely associated with collisions with both the PV panels themselves and other infrastructure, such as wiring/transmission lines and fences. However, there is debate and uncertainty about the mechanisms that cause birds to collide with solar infrastructure and how different species' populations may be disproportionately impacted. The literature on bird mortality at PV solar farms is generally piecemeal, anecdotal or difficult to find, reflecting low reporting rates from fatality monitoring programmes.

I am unaware of any comprehensive reviews of the potential risks of bird collisions with solar infrastructure in New Zealand beyond short snippets of information such as those provided by the applicant's advisors, which did not include quantitative analysis."

⁸⁹ O'Donnell, EIC [79].

⁹⁰ See O'Donnell EIC, Table 3, with reference to the Smallwood 2022 and Conkling et al 2023 datasets.

⁹¹ O'Donnell, EIC [167-168].

⁹² O'Donnell, EIC [36].

⁹³ O'Donnell, EIC [37].

⁹⁴ O'Donnell, EIC [158], see also Transcript Day 4 page 405.

⁹⁵ O'Donnell, EIC [96-97].

- 157 Dr O'Donnell assessed the available information in the international studies regarding collisions, the types of species injured or killed (relating these to similar New Zealand species),⁹⁶ the manner of injury or death and the numbers so affected. He did however agree, under cross examination, that the Glorit Site is quite different to the overseas sites (though there are also similarities) and that some caution needed to be applied in comparing them.⁹⁷
- 158 Studies that had attempted to estimate the number of deaths were also assessed, with varying calculations for average annual fatalities per MW per year resulting. The variability in numbers found was considered to reflect both ecological and site-based factors such as bird behaviour, habitat type, geographic location and proximity to water, and also solar farm particulars such as age, size, configuration and generation type. In Dr O'Donnell's view, regardless of the precise mortality numbers in both temperate, desert and non-desert habitats, the statistics were "*sufficiently concerning to indicate that collision risk should be taken seriously*".⁹⁸
- 159 This was particularly so, in Dr O'Donnell's opinion, when the Glorit Site is "*part of a major coastal wetland complex supporting thousands of waterbirds that interact with the Site on a daily basis*".⁹⁹ However, his evidence also noted (with an important rider relating to the presence of rare and threatened species at Glorit) that the number of waterbird fatalities (in the international studies) appeared low at the solar farms close to other water bodies, relative to the numbers of waterbirds that could potentially collide.¹⁰⁰
- 160 Although the mortality numbers for Bittern and Terns in California were low in comparison to other species, their numbers were stated to appear notable given the threat status of Tara iti and Australasian Bittern. Extrapolated figures were used to form hypotheses as to the potential fatality rates for New Zealand species at the Site, including:¹⁰¹
- 160.1 If Terns and Bittern died at the Glorit solar farm at similar rates to those recorded in California, these could plausibly equate to 4.1 terns and 3.0 Bittern per year (179 MW x 0.023 and 0.017 respectively).
- 160.2 In addition to that mortality Bittern mortality also occurred through collision with transmission and other wiring at a rate of 0.482/km/yr, and Terns with fences at a rate of 0.045/km/yr.
- 161 While expressly accepting that fatality rates at Glorit and California were unlikely to be directly interchangeable, in Dr O'Donnell's opinion the statistics highlighted that potential impacts on threatened species were real, and that they could have population-scale effects. Further, the rates would, in his view, likely be higher at Glorit when considering two further factors: (1) the very high traffic rates of water birds, and (2) that the estimates used were underestimated for sites close to significant water

⁹⁶ O'Donnell, EIC Figure 8, page 39 onwards.

⁹⁷ Transcript Day 4 page 385. The Panel notes Dr O'Donnell's comments that while the Site is quite different to the US sites, there are also some significant similarities. "[W]e certainly have to be cautious about what we infer from that to the Glorit situation...".

⁹⁸ O'Donnell, EIC [120-121].

⁹⁹ O'Donnell, EIC [128].

¹⁰⁰ O'Donnell, EIC [136].

¹⁰¹ O'Donnell, EIC [141] onwards and Table 4.

bodies because the overall average statistics also included solar farms situated away from waterbodies that had very low fatalities of water birds.

162 Dr O'Donnell conceded, under cross examination regarding the inappropriateness of applying the overseas rates to the New Zealand context (particularly where the studies themselves expressly addressed this), only that the fatality rates were unlikely to be the same.¹⁰²

163 While Dr Beauchamp noted that he was not aware of the reasons why “birds are attracted to solar farms and why they collide with solar farm infrastructure and panels”, he also did not know of any effective ways of preventing this. Further “[n]one of the mitigations suggested by the applicant are known to reduce the risk of collision by birds”.¹⁰³ Dr Beauchamp stated:¹⁰⁴

“In my opinion, it is not possible to quantify the collision risk for tara iti, but due to the proposed solar farm being beside the Kaipara Harbour, coupled with tara iti behaviour and movements, the risk of collision is a real one.”

164 Dr Corkery found similarly, and stated:¹⁰⁵

“Given the limited local data and the difficulty in predicting avifauna responses to solar infrastructure, it is not currently possible to quantify the level of effect with confidence. Assigning a “Low” rating gives a false sense of certainty. A more appropriate assessment might be to classify the magnitude as “Unknown” or “Potentially Moderate to High,” pending further evidence.

...

Understanding the actual risk of bird collisions with solar infrastructure is crucial, especially in ecologically sensitive areas. However, in the New Zealand context, this information is currently lacking. While the applicant may conclude that the risk is minimal, I differ in opinion and suggest that such a position is speculative rather than evidence-based. The reality is that there is a plausible risk of collision, but the quantification of this risk remains unknown. I base this view on Dr. O'Donnell's evidence, which highlights recorded bird fatalities, including terns, associated with solar farms overseas. Dr O'Donnell outlines the potential threats from solar farms in his evidence, and I support his evidence as being consistent with my own reading of the published literature.”

165 Associate Professor Cain stated her opinion that the Solar Farm does pose a risk of collisions to birds and that “the converging factors suggest this is probable rather than possible.”¹⁰⁶ She later concluded:¹⁰⁷

“Taken together, I am unable to estimate the level of risk of fatalities from the proposed solar farm for avifauna. But given the frequency with which similar species fatally collide with similar solar panels in other regions, and the higher number and variety of vulnerable birds in the

¹⁰² Transcript Day 4 pages 390-392.

¹⁰³ Beauchamp, EIC [23].

¹⁰⁴ Beauchamp, EIC [102].

¹⁰⁵ Corkery, EIC [120] and [153].

¹⁰⁶ Cain, EIC [174].

¹⁰⁷ Cain, EIC [241].

immediate area, my opinion is that it is highly likely that there will be a measurable level of collisions and mortalities.”

- 166 The Panel was particularly interested in the evidence of Associate Professor Cain, which provided very detailed analysis regarding how birds see, how that differs from human vision, and vision differences as between bird species (particularly in relation to their field of view and ‘blindspots’). Important factors here were the relevance of movement, the ability to perceive magnetic fields and to see a wider colour / UV range, and the possibility of perception and use by birds of polarised light. It was noted that, despite impressive visual abilities birds regularly collide with anthropogenic structures, and sometimes natural structures.¹⁰⁸
- 167 Associate Professor Cain noted possible Tara iti vision limitations or, more appropriately, that their vision prioritised some visual aspects leading to reductions in others. This was while explicitly recognising that there has been no research on the sensory abilities of Tara iti and that accordingly there was a need to rely instead on closely related species.
- 168 Polarisation was a relevant factor also discussed. Water and solar panels have a similar Brewster angle, with water at 53° and solar panels (at least those that have been assessed) at 56°. This means that, with sunlight hitting water and / or a solar panel at 53° and 56° respectively, maximum polarisation occurs, with all or a majority of the light being polarised (i.e. alignment of lightwaves). Polarised light forms a well-defined pattern across the sky, with the sun in the centre, which animals can use for orientation and navigation. Solar panels can polarise light almost completely (around 100%), while water varies (30-70%). Dr O'Donnell's evidence also recorded the potential relevance of polarised light.¹⁰⁹
- 169 Associate Professor Cain described for the Panel the ‘Lake Effect Hypothesis’, confirming its status as a hypothesis,¹¹⁰ with her evidence noting:¹¹¹
- 169.1 That the theory known as the Lake Effect Hypothesis essentially refers to the concept that birds mistake solar panels for water, colliding with them or grounding themselves. As solar panels create large areas of dark reflective space, and waterbirds are the among the more common groups found deceased at solar farms, it is hypothesised that birds try to land on the water-like panels and either collide or are grounded and unable to take off again.
- 169.2 The proposed mechanism is that solar panels polarise light in a manner similar to, or even greater than, natural water bodies. This includes polarising light in the UV spectrum – light that birds can see and humans cannot.
- 169.3 Solar panels may become a ‘super stimulus’ (and ultimately also potentially a sensory trap) for birds and insects – an exaggerated version of a typical stimulus that also elicits a stronger behavioural physiological reaction than towards a natural one.

¹⁰⁸ Cain, EIC [114].

¹⁰⁹ O'Donnell, EIC page 48.

¹¹⁰ Cain, EIC [180].

¹¹¹ Cain, EIC page 18 onwards.

169.4 The Lake Effect Hypothesis is supported by considerable evidence in relation to insects.

169.5 However, evidence for the hypothesis in birds comes from correlational and anecdotal reports.

169.6 Ultimately, the literature is equivocal on the Lake Effect Hypothesis and there is a high degree of uncertainty about the mechanisms causing mortality.

170 Dr O'Donnell agreed, noting that *"the literature is equivocal on this hypothesis and many questions create uncertainty about the mechanisms causing mortality. Most authors acknowledge that the evidence for the lake effect hypothesis is somewhat tenuous and likely context specific, and that more research is needed to reduce the uncertainty around causal mechanisms behind bird mortality."*¹¹²

171 A number of other possible causes for collisions with solar panels and solar farm infrastructure were identified and discussed by Associate Professor Cain and Dr O'Donnell, including:

171.1 Disorientation. Polarised light can be used to aid navigation or orientation, and may be especially useful on overcast days and during migration. The polarised light from solar panels is usually as strong, if not stronger, than the polarised light from water and could disrupt these processes. This would be especially likely on overcast days and during dawn and dusk when sunlight is weakest.¹¹³

171.2 Associate Professor Cain stated that:¹¹⁴

"[f]or the bulk of NZ species, we know little about movement and migration routes, and even less about manoeuvrability, flight altitude in various weather conditions and how much they move overnight versus in the day Collisions may be driven by several key factors, but they are likely to be the result of a confluence of these different factors, i.e. the species' biology and sensory ecology interacting with:

a. internal factors like the condition and experience of the individual bird; and

b. environmental factors like cloud cover, wind, seasonal changes, storms, predator pressure and social context."

171.3 Environmental factors tending to increase the risk of collision included the time of day, height of structures and the presence of reflective surfaces. The presence or absence of fog was also noted.

171.4 Bird-specific factors included the particular vision evolution of the species (i.e. including whether panoramic views had been prioritised to improve detection of predators at the expense of forward binocular vision), residency, age, size and flight style, and whether the flight was startled or panicked. Species were noted to vary considerably in their vulnerability to collisions, which was assumed to be due to a combination of flight style, vision differences, habitat, migration patterns and foraging style.

¹¹² O'Donnell, EIC [146].

¹¹³ Cain, EIC [97-98].

¹¹⁴ Cain, EIC [117].

171.5 Possible scenarios leading to collisions were also described, as examples:¹¹⁵

- (a) A young resident bird that has no experience with human made reflective surfaces and is flying in a storm collides because it does not understand that the structures are not water and is blown into a solar panel.
- (b) A flock of Godwits approaches the area they have used in the past (e.g. the Site) and are attracted to the new extra strong stimulus of the solar panels and go to land after their 7+ day flight. Most may avoid colliding when they approach noticing that things look different – but some will be exhausted and attempt to land regardless – colliding in the process.
- (c) A small group of Oystercatchers are in the area foraging and are spooked by a Hawk / Kāhu and burst into flight – due to poor frontal vision they miss that the tilt of the solar panel means it is in a new location relative to when they landed and they collide.

172 Dr O'Donnell noted further causes as follows:¹¹⁶

“There are some obvious causes that contribute to deaths at solar farms, such as: birds randomly colliding with infrastructure in high traffic rate areas when they arrive at, or leave, the site or if they are disturbed; or if birds are attracted to lighting at night and colliding; or birds being electrocuted on uninsulated wiring. The latter two effects can easily be mitigated by have no lighting or low, downward facing lighting, and by insulating electrical wiring and placing cables underground.

However, it is unknown why birds are attracted to PV panels and collide with them, which is a subject of debate and uncertainty.”

173 Associate Professor Cain ultimately expressed the opinion that:¹¹⁷

173.1 It is likely that the mechanisms that lead to collisions (whatever they may be) are not constant, meaning they vary in time, space, across species and among individuals, and in complex ways.

173.2 Species also differ in their visual abilities and foraging ecology, and in their abundance, social behaviour, vulnerability to predators and cognitive abilities. Within species, individuals also vary in terms of age, condition (nutritional state, health, reproductive state), cognitive function, and perhaps most importantly, degree of experience with the structure.

173.3 *“... based on the available data, that the probability of a collision is highest when multiple factors interact. The appearance of structures – especially reflective structures – depends heavily on time of day, cloud cover, season and angle of approach”.* Moment to moment these conditions can change rapidly and unpredictably – the presence of perceived threats (predators), weather conditions, noise, conspecifics (e.g. being distracted by a dominant individual, potential mate or competition). Each of these likely alters the probability or chance of collision.

¹¹⁵ Cain, EIC [158].

¹¹⁶ O'Donnell, EIC [143-144].

¹¹⁷ Cain, EIC [153] – [157].

- 174 Dr O'Donnell expressed a similar view in relation to the wide range of unstudied factors that might explain variability in mortality rates.
- 175 Factors known to affect activity and behaviour included temporal variables such as time of day, time of year and year; and environmental factors such as weather, moon phase, moon light, cloud cover, rainfall, wind speed, temperature, water levels, tidal stage and salinity content. Factors might also relate to population demographics, including for example the sex of the bird, its reproductive status / stage, migratory behaviour and population density.¹¹⁸
- 176 Particular criticism was levelled at the applicant's:
- 176.1 Assessment of collision effects, including particularly the EclA;
- 176.2 Description of the 'four steps' towards collision; and the
- 176.3 Proposed conditions of consent.
- 177 The applicant's assessment of collision effects, particularly with regards to the contents of the EclA that had accompanied the substantive application, was strongly criticised, including through cross-examination.¹¹⁹ This included for example in relation to:
- 177.1 The absence (an "*unexplainable omission*") of any reference to Tara iti in the EclA, with the Kaipara Harbour being noted to be a "*stronghold*" for Tara iti, and having been documented in the Harbour since the 1940s.¹²⁰
- 177.2 The absence of reference to numerous shorebird counts available for the Site, and a failure to review existing information and literature comprehensively. This had led to underestimation of both the number of different species using the Site (including TAR avifauna species), and the numbers (population sizes) using the Site,¹²¹ with the importance of the Site as a significant roosting area for shorebirds having been known for over 75 years.¹²²
- (a) There were "*easily discoverable*" references to birds using the area occurring in the published literature, including the published Classified Summarised Notes of the Ornithological Society Of New Zealand (referred to as "BirdsNZ").
- (b) In addition, BirdsNZ were stated to have undertaken formal counts of waders at the Site as part of the National Wader Count, since 1994. These would have been available on request from BirdsNZ.¹²³

¹¹⁸ O'Donnell, EIC [152].

¹¹⁹ See Transcript Day 1, cross examination of Ms Webb and Dr Bull (Transcript Day 2).

¹²⁰ Beauchamp, EIC [31], O'Donnell, EIC [52].

¹²¹ O'Donnell, EIC, [49-50].

¹²² O'Donnell, EIC, particularly [53] and [54]. See also Table 2 and Appendix 2.

¹²³ These are included as Appendix 2 to O'Donnell, EIC.

- (c) Lastly, there were also 31 recent checklists from a relevant 'eBird Hotspot'.¹²⁴ These are lists of bird species seen since 2012 in the eBird online database, where observers recorded 58 bird species.

177.3 Use of only four shorebird counts across 10 months.¹²⁵

177.4 Failure to undertake flight path mapping for the Site, leading to a high level of uncertainty with respect to the range of bird species and the number of individuals traversing the coast and Site (either as part of their annual migration routes, or as local habitat for resident species) and how this varies across and between years.¹²⁶

177.5 Use of the Environment Institute of Australia and New Zealand (EIANZ) Ecological Impact Assessment Guidelines. These Guidelines were considered to have demonstrated limitations in accurately assessing ecological effects in the New Zealand context, with over-reliance on matrix tools "*oversimplifying*" complex ecological contexts with the result that ecological significance was underestimated.¹²⁷

177.6 Failure to adhere appropriately to the "*effects management hierarchy ("EMH")*", including through site selection and then in relation to the 'within-site' avoidance measures.¹²⁸

177.7 The absence of an adaptive management framework to address potential bird collisions,¹²⁹ and concerns regarding the proposed effects management package, including:¹³⁰

- (a) A lack of evidence to inform every step of developing the effects management package and to estimate anticipated outcomes (e.g., scale of ecological effects, monitoring / assessment of site values, assessment of risk, effectiveness of mitigation, scale and consequence of residual adverse effects, anticipated gains from proposed actions);
- (b) Reliance on mitigation techniques that have not been proven to be successful;
- (c) The 'short-cut' to compensation (increasing risk for biodiversity outcomes) without adequate effort to provide offsets first;
- (d) Lack of explicit accounting for species such as Tara iti and Bittern; and
- (e) Inconsistent description of effects and management, such as no net loss of habitat and proposed compensation, which miscommunicated both

¹²⁴ The Panel understands this reference to be to the Cornell University website eBird.org, which is able to record birds observed against locations which are then searchable. An example is provided in Figure 1 of Webb, rebuttal page 13.

¹²⁵ O'Donnell, EIC [50].

¹²⁶ Corkery, EIC [109].

¹²⁷ Corkery, EIC [82].

¹²⁸ Corkery, EIC pages 27-28.

¹²⁹ Corkery, EIC page 31.

¹³⁰ Corkery, EIC [152].

estimated impacts on avifauna and the level of certainty able to be placed in those estimations.

- 178 The applicant's description of the 'four steps' towards collision were criticised, including by Associate Professor Cain and Dr O'Donnell. In their opinion it included a number of assumptions about how and why birds would be interacting with the solar panels, and might not be reflective of real-world scenarios.¹³¹ Further, these assumptions might not hold true for terrestrial land birds that were unlikely to be cued into the features of a solar farm that waterbirds might respond to.
- 179 Lastly, detailed criticism was provided in relation to the proposed conditions offered by the applicant. One of the most significant criticisms was that the measures put forward to address collision risk, including in relation to the proposed contingency measures, were "*experimental*"¹³², "*untested*",¹³³ "*untried*" and / or "*unproven*" ("*there are no proven mitigation measures that effectively reduce the risk of avian collisions with solar infrastructure*"¹³⁴). These criticisms for example applied to contingency measures that would require changing the orientation of the solar panels, or using visual / acoustic / chemical deterrents.

Panel Reasons and Findings – Risk of Collision

- 180 Ultimately the Panel was faced with a fundamental difference in expert views.
- 181 The core difference between the parties rested on the level of risk ascribed to the potential for collisions to occur at the Solar Farm, and the probability of any such potential collisions then causing injury to or fatality of TAR avifauna species to the extent that a population level effect occurred for that species.
- 182 There was then a resulting, and unavoidable, difference in the response that risk was opined to be entitled to (or, demanded) in terms of the Panel's decision-making.
- 183 While all parties agreed that causative factors for collision risk were currently only hypotheses or possibilities, and there was general consensus about which international studies were relevant or potentially so, the parties disagreed about the level of risk resulting. While the Panel was provided with significant assessment and discussion of the international studies, we also requested copies of what appeared to be the core papers referenced in the evidence.¹³⁵ The Panel has reviewed those papers.
- 184 The Panel concurs with the conclusions reached in the evidence for the applicant Glorit Solar, particularly those of Dr Bull and Ms Webb. Based on the evidence before us the Panel's findings are that:

184.1 There is no sufficient scientific or proper factual or evidential foundation that the Glorit Solar Farm creates any particular collision risk for TAR avifauna species.

¹³¹ Cain, EIC [175], O'Donnell, EIC [154].

¹³² Cain, EIC [238].

¹³³ Cain, EIC [31].

¹³⁴ Corkery, EIC [28], see also [156].

¹³⁵ See Minute 21 for a list of the papers requested.

- 184.2 Collision risk at the Solar Farm is a possible potential risk which, if it eventuated, would potentially affect Tara iti, Bittern, or other TAR avifauna species that use the Site or wider Kaipara Harbour.
- 184.3 There is a “*remote*” to “*unlikely*” level of probability of collision occurring for the TAR avifauna species identified as being of concern. In particular:
- (a) There is only a remote possibility that collision effects would occur for Tara iti, albeit those effects would have the potential to be significantly adverse for that population.
 - (b) For all other TAR avifauna species, including Australasian Bittern, collision effects are unlikely, but would have a lower degree of adverse effect.
- 184.4 Despite much effort by the witnesses (including detailed research, conferencing, and consideration of the international studies), the existence and potential causation for collision risk for TAR avifauna species at the Solar Farm was (and is) not sufficiently identified such that it warrants a decision-making ‘reaction’ by this Panel under the RMA.
- 184.5 The nature and scale of collision risk at the Glorit Solar Farm, properly described as we have above at paragraphs 184.3(a) and (b), is not a “*potential effect of low probability*” (section 3(f) RMA), nor does it render the Solar Farm an activity “*whose effects on the coastal environment are uncertain, unknown, or little understood ...*” (Policy 3 NZCPS).
- 184.6 Section 3(f) of the RMA and Policies 3 and 11 of the NZCPS in particular are therefore not engaged. There is a very small degree of uncertainty for the Panel, unavoidably, but that uncertainty is not of sufficient tenor to trigger these parts of the RMA decision-making framework into play.
- 185 The Panel did not necessarily agree with every matter that the experts for Glorit Solar expressed as tending to support their opinions, nor the particular weight given in each particular context. We agree however with the overall conclusions relating to collision risk expressed in their written evidence, as confirmed at the avifauna hearing.
- 186 The Panel specifically records for example that:
- 186.1 While of interest, and tending to confirm the known importance of the Kaipara Harbour (particularly the identified areas discussed above), there are significant limitations with the Tara iti tracking information. These limitations include the limited number of individuals tagged (three only), their age (all juveniles), the short duration (seven months, and only 2082 data points across that time), the absence of height, speed and behavioural information (i.e. whether stationary, roosting or flying, etc), and the data location accuracy (which varied from <150m to within 1,500m).¹³⁶
- 186.2 We have not placed much, if any weight, on the proximity or otherwise of the tracking information to other, smaller, solar farms, the Gibbs Farm sculpture park, other windfarm infrastructure, and transit through Auckland’s CBD. The

¹³⁶ Corkery, EIC pages 7-10.

sample size (n=3) and time period is simply too small, and the causes of the majority of Tara iti deaths (recent and historic) are unknown.

186.3 Nor did we place much weight on the absence of attraction to, or collisions with, the very small number of residentially-scaled solar panels present at the Tara iti captive breeding aviary.

186.4 We accept that the Argonne National Laboratory references in the evidence for Glorit Solar are based on currently incomplete and unreported research, that has not been subject to peer review. It provides some comfort. However, the weight given cannot be as high as for peer reviewed and formally reported study outcomes.¹³⁷

186.5 The same is true, to an even greater degree, for self-reported absence of avian mortality at the solar farms referenced in the evidence of Mr Clarke, including the letter attached to that evidence which related to another operator's New Zealand experience.¹³⁸ Given our understanding of likely carcass persistence (a matter of days), and the understood absence of formal monitoring and survey obligations, we cannot place undue weight on the absence of incidental findings.

186.6 We accept that the two recorded Tern deaths (both of unknown causation) within the international literature (addressed above at paragraphs 144.7 and 144.8) need to be treated with a degree of caution. While resulting from fatality monitoring over a long period, and at a number of large (utility scale) solar projects, a range of factors can influence whether or not bird mortality is accurately identified.¹³⁹

186.7 The Panel was not concerned about the precedent effect that may have been caused in the event of a decline, or any chilling effect on investment, particularly in Northland. The site context is a specific one. Further, as the first assessment of a coastal environment solar farm (at least that this Panel is aware of), we understood that we were grappling with consideration of overseas literature that had not frequently been applied to the New Zealand context.

186.8 We agree that the 'four step' collision process, expressed by Ms Webb and Dr Bull, may not apply for all potential collision causations. However, some steps may apply to some collisions, and the analysis made has some merit.¹⁴⁰

186.9 The Panel was not swayed to any significant degree by the evidence and submissions relating to relative risk. We consider it would not have been appropriate to discount a real collision risk simply because other risks leading to mortality were larger. This would have particularly been the case if we had been satisfied, on the evidence, that there was some, appropriately proven, 'special'

¹³⁷ We note also the matters raised in Cain, rebuttal from [36].

¹³⁸ Clarke, EIC Appendix 2 letter from Lodestone Energy Chief Operating Officer, dated 7 July 2025.

¹³⁹ This includes whether or not carcasses are actively being looked for (as opposed to being found incidentally); whether the entire solar farm is 'searched', or only representative samples; how often it is being searched; whether a carcass persists long enough to be found, for example through the rate of decay, predation, or loss to wind / rain events; whether the species can be accurately identified based on what remains (for example, through the use of eDNA); whether the cause of death can be identified (including whether efforts are made to attribute a cause); and whether a finding is reported and made available to researchers.

¹⁴⁰ See for example the Panel questions to Dr Beauchamp, Transcript Day 3 page 279, and Dr Bull's cross examination Transcript Day 2 page 148 onwards.

collision risk inherently and unavoidably associated with the Glorit Solar Farm. We agree with Dr O'Donnell that simply because other causes of decline are also potentially significant, that does not mean that mortality associated with a solar farm would be unimportant, especially when considering TAR avifauna species with small population sizes and low reproductive rates that are less able to cope with *additional* mortality.¹⁴¹

- 187 The Panel is satisfied that we have appropriate and sufficient information to make the findings we have set out above, including specifically in relation to section 104(6) of the RMA. Further, we do not consider that there was a need for the applicant to have undertaken an assessment of alternative sites, for example arising through clause 6(1)(a) of Schedule 4 to the RMA. These findings apply equally to our decision in relation to habitat loss, discussed below at paragraphs 231 to 240.
- 188 Importantly, while there may have been more pre-application assessment work that could have been done, and which would have added to the EclA, that will always be the case.
- 189 The Panel is satisfied that the EclA was appropriate, and (perhaps more importantly) that the applicant has responded to the particular avifauna matters raised through the Panel's consenting process appropriately. The absence of any reference to Tara iti in the EclA was regrettable, and some ecologists, such as Dr Bull¹⁴² and no doubt the DOC ecologists, would have included reference to them. Certainly the applicant could not have responded to the most up to date Tara iti information – being the tagging results – because those were not publicly available.
- 190 The applicant's use of the EIANZ guidelines in the circumstances of this application was also appropriate in the Panel's view. While the matrices may have simplified some matters there was ample qualitative and quantitative material provided when the applicant's EclA, and evidence provided, was assessed as a whole. As a Panel we were not obliged to accept the levels of effects conclusions outlined in the matrices in any event.
- 191 Further, in the particular circumstances of this fast-track consenting process, the Panel has been provided with more than ample material on which to make decisions relating to collision risk for TAR avifauna species.
- 192 The Panel considers that the Director-General's evidence did not, as a whole, apply the correct RMA requirements in relation to managing risk. We find that the evidence and submissions took an overly cautious approach to potential effects, on Tara iti especially, but also on the other TAR avifauna species.
- 193 Overall, we consider that the evidence for the Director-General, while genuinely and honestly given by the witnesses, demonstrated an almost zero tolerance for risk, and a desire to 'avoid' risk entirely because of the rarity of Tara iti (and, to a lesser degree, rarity of the other TAR avifauna species).
- 194 It may be completely understandable, and acceptable, for an individual expert to take that view and position.

¹⁴¹ O'Donnell, EIC [126].

¹⁴² Transcript Day 2 page 115.

- 195 However, it is not what the RMA requires or directs this Panel to do. The RMA is not a 'no risk' regime, and when possible future effects are required to be assessed it is (logically) impossible for this Panel to reach a 'zero risk' level of assurance.¹⁴³
- 196 To decline consent on the basis of the evidence the Panel has been provided would be to take a 'super-precautionary approach' to a possible, potential, risk. That is not directed by, nor available under, the statutory and planning provisions of application in these proceedings.
- 197 While the risk is not zero, and could never be proved to be, the Panel has determined on the evidence before us that the risk is not sufficiently present to nudge the needle into the zone of being an 'effect of low probability but high potential impact'. Something more than such possible remote and unlikely risks is needed, even though the impact (if that possible remote risk did eventuate) might be significant.
- 198 Lastly, we record our concern that the evidence for the Director-General highlighted a desire for the applicant to have undertaken not just what was required by the RMA (and consequently, the NBEA), but instead to have met a much higher bar.
- 199 This included for example criticism for not meeting "*established best practice in environmental planning and site selection*",¹⁴⁴ or obligations imposed by other non-statutory documents, such as the international benchmark Business and Biodiversity Offsets Programme,¹⁴⁵ two guidance documents issued by the International Union for Conservation of Nature that reference how to best site solar farms,¹⁴⁶ and a series of other international guidelines.¹⁴⁷
- 200 Avoidance was considered to be "*best practice globally*", and "... *should be the first consideration*".¹⁴⁸
- 201 This included evidence regarding an alleged failure to appropriately apply the effects management hierarchy (such as Maseyk et al, 2016), which prioritises actions in a specific order (first avoiding impacts, then minimising them, followed by remediation, before finally dealing with any residual effects).¹⁴⁹ While the terminology used there has some initial attraction because it is familiar from the RMA, the approach is not precisely aligned with the actual requirements of the RMA as applicable to these proceedings.¹⁵⁰ The RMA, through the hierarchy of planning documents, and under Part 2, in the Panel's view requires a more nuanced approach.
- 202 We address the conditions of consent for the Solar Farm in Part H of this decision report. It is important to record at this point however that the conditions relating to

¹⁴³ *Shirley Primary School*, supra footnote 17, a decision relating to the potential for health effects from cellular towers rather than avifauna / ecological risk matters.

¹⁴⁴ Corkery, EIC [22], and later explanatory sections of her evidence.

¹⁴⁵ Corkery, EIC [71-72].

¹⁴⁶ O'Donnell, EIC [161].

¹⁴⁷ O'Donnell, EIC [163].

¹⁴⁸ O'Donnell, EIC [157-160].

¹⁴⁹ Corkery, EIC page 16 onwards.

¹⁵⁰ In particular, where the NPS:IB is not to be applied.

collision risk were volunteered by the applicant,¹⁵¹ and have been accepted by the Panel on that basis. In the Panel's view, given our findings in relation to the risk of collision, the conditions would not otherwise have met the important, and well established, tests for conditions. Those tests for example include that conditions must be directly connected to an adverse effect of the activity on the environment (section 108AA RMA), reasonable, and for a resource management purpose and not an ulterior one.

- 203 In the applicant's 'basket' of volunteered conditions are those relating to the avifauna monitoring and research protocols (conditions 78 and 80), the contingency requirements for TAR avifauna species (and particular requirements for Threatened – Nationally Critical, Nationally Endangered or Nationally Vulnerable species) (conditions 81 and 82), and the conditions relating to the Avifauna Collision Contingency Plan (conditions 83 and 84). While the Panel has made some amendments to the offered conditions, and to the applicant's comments on the circulated avifauna conditions, we do not think that these vastly alter the proposal offered by the applicant.

Habitat loss

- 204 The Solar Farm Site provides roosting and foraging habitat for various indigenous and TAR avifauna species. Effects arising from the loss of that habitat were carefully assessed in the evidence and submissions presented at the avifauna hearing. The concerns largely flowed from the scale of the Solar Farm, being infrastructure located across an approximately 283ha area.

- 205 The Panel was again provided with a significant amount of information, including from the following sources:

205.1 The applicant's EclA. While subject to the criticisms we have outlined above, the EclA included in our view a fair and fulsome description of the ecological features present (including photographs) and their values, an assessment of ecological effects and effects management, an Ecological Impact Assessment (utilising EIANZ methodology), results of wetland investigations and vegetation plots, a list of avifauna species recorded within the Site and surrounds, and eDNA results from sampling undertaken on the Solar Farm and transmission line sites.

205.2 The submission lodged by the Director-General included reference to the TAR avifauna species observed or considered likely to be present within or near the Solar Farm Site. 28 TAR avifauna species were identified in the submission.¹⁵² The submission recorded the importance of both the Site and the Kaipara Harbour, with the latter being a migratory bird habitat of international significance (42 coastal bird species known to use the area, and potentially up to 50,000 birds, including large numbers of South Island Pied Oyster Catchers (**SIPO**)).

205.3 The evidence presented at the hearing in relation to avifauna matters. We had the benefit of detailed evidence on the habitat values of the Solar Farm Site and the actual and potential effects on those values, particularly (though not

¹⁵¹ See for example paragraph 1.7(e) of the applicant's opening legal submissions for the avifauna hearing, dated 18 August 2025, and the conditions set at Appendix C to those submissions.

¹⁵² The Panel notes that this number increased in the Director-General's evidence presented at the avifauna hearing (following a site visit), where 33 TAR avifauna species were identified.

exclusively) from Ms Webb and Dr O'Donnell. We discuss this evidence further below.

205.4 The Panel's own visits to the Site, undertaken in February and May 2025.

The case for Glorit Solar

206 The evidence in chief of Ms Webb described the avifauna values and habitat use of the Solar Farm Site. This included reference to the avian species present as follows:¹⁵³

206.1 Several TAR avifauna species have been observed at the Site including SIPO, Caspian Tern, Bar-Tailed Godwit, Banded Dotterel, Royal Spoonbills, Australasian Bittern, Fernbird, North Island Brown Kiwi, Red-Billed Gulls and Black Shag (flying overhead). None of these species were considered to be at the limit of their natural range at the Site.

206.2 No Tara iti had been observed flying overhead or roosting on the Solar Farm Site.

206.3 Kiwi and Ruru were noted to be present in forested habitat outside of (but adjacent to) the Site and that they may use the edges of the Site and farmland for foraging.

206.4 A variety of non-threatened native and introduced birds were also observed, including Black-Backed Gulls, Pied Stilt, Pukeko, Paradise Shelducks and Tui.

206.5 Comprehensive species lists were included in the EclA.¹⁵⁴ In response to criticism that there had been an under-counting of species and numbers present, a careful assessment was made comparing the available annual wader counts with the applicant's seasonal counts, providing some assurance that the numbers were not vastly different.¹⁵⁵

207 The habitat use and importance of the Site was described as follows:¹⁵⁶

207.1 The Solar Farm Site is a pastoral one, located on the coastal edge of the Kaipara Harbour. While not unique,¹⁵⁷ it is an important shorebird roost in the south Kaipara, forming part of a network of pastoral roosting and supplementary foraging sites for shorebirds. The stopbank along the western and southern edge of the Site was noted to provide shelter from prevailing south-westerlies making it favourable for winter roosting.

207.2 Shorebirds also forage at the Site particularly during the winter months when grazing by dairy herds, and more recently beef cattle, results in ground conditions suitable for supplementary foraging.

207.3 The Site was noted to form part of a wider pastoral habitat present on the edges of the Kaipara Harbour. Some 4,000ha of pastoral roosting habitat was

¹⁵³ Webb, EIC page 10.

¹⁵⁴ See for example Table 9 (avifauna species recorded on the Site), and Table 10 (eBird records within 3km of the Site for the past 10 years), both in Appendix 5 to the EclA.

¹⁵⁵ See Appendix 1 to Webb, rebuttal, and related figures (boxplots).

¹⁵⁶ Webb, EIC page 10 onwards.

¹⁵⁷ Webb, rebuttal [6.14].

identified, with close to 2,700ha understood or known to be utilised by shorebirds.¹⁵⁸

207.4 The paddocks at the Site are used year-round by shorebirds with peak use during autumn / winter. Summer surveys recorded fewer shorebirds; however, SIPO were still present in relatively large numbers during one of the survey dates shortly after a major storm event.

207.5 Shorebirds make use of the pasture as a roost and for supplementary foraging, primarily at mid to high tide but are observed to roost at low tide in inclement weather (particularly in strong winds or when there is ponding within the paddocks after heavy rain).

207.6 Ms Webb's observation was that the roost and supplementary foraging values of the Site were dependent on current land management and ground conditions. For example:

- (a) SIPO were observed to roost and forage in the paddocks that were actively grazed, with some species observed to 'follow the cows'.
- (b) A greater or lesser number of Pied Stilt and Royal Spoonbills were observed depending on heavy rains and whether water ponded in the paddocks and around drains.
- (c) Similarly, a greater or lesser number of shorebirds were observed to be roosting in response to changes in the level of disturbance caused by farming activities. Parts of the Site were considered to be far less suitable for roosting and supplementary foraging should grazing cease, or shift to a lower intensity, causing the grass and / or rushes and sedges to become longer and denser.
- (d) The location of the Site, at the eastern edge of south Kaipara, meant that it also fell within or under the flight path of commuting sea and shore birds moving between roosting and foraging areas. Based on observations, flights over the Site were extremely variable and dependent on weather, time of day, season and tidal cycle.
- (e) Limited nocturnal surveys were undertaken including dusk bird counts and two nights of acoustic data were recorded. During these surveys, Grey Warbler, Fantail, Kōtare, Harrier (flying overhead), Song Thrush Pukeko, Skylark, Blackbird, Paradise Shelduck, White-Faced Heron, Myna and Caspian Tern (travelling overhead) were recorded. It was assumed that use of the Site is similar overnight (i.e. that the Site is likely used for roosting and that birds travel overhead between the Harbour and the Site and other areas of suitable habitat).

207.7 While agreeing that the value of the Site was high,¹⁵⁹ Ms Webb disagreed that the loss of roosting and foraging habitat would result in a very high or severe

¹⁵⁸ See Figure 1, Webb EIC.

¹⁵⁹ Transcript Day 1 page 62.

effect on avifauna at Glorit, or that it would disrupt the ecological integrity of the system in the south Kaipara.¹⁶⁰

207.8 Ms Webb also disagreed that the Site is of international significance to shorebirds, or that the Site's values would justify its identification as a Ramsar wetland of international importance.¹⁶¹ Ms Webb considered that the values of the Site and the Kaipara Harbour had been used interchangeably to reach this view, over-valuing the Site and failing to take into account a number of critical contextual factors. She stated:¹⁶²

"I do not consider that the wet roosting and supplementary foraging habitat on farmland such as the Glorit site, meets this high bar of significance. If this were the case, then many of the coastal farms bordering all the major harbours in New Zealand could be eligible to become a Ramsar site.

I agree that in theory Ramsar status could be assigned to the Kaipara Harbour. However, coastal margins, particularly farmland along its edges, must be considered in context of their relative contribution to the ecological function and values of the Harbour to avoid the over-valuation of a single site.

Without this context, the significance of the Site can be misrepresented and, by Dr. O'Donnell's reasoning, all similar farms bordering the Kaipara Harbour that host roosting shorebirds are ecologically significant and those with higher bird abundances are internationally significant."

207.9 Important contextual factors included that, until recently, the Solar Farm Site was a working dairy farm. Presently it is used for cattle grazing. Under these activities, the farm currently provides, and has in the past provided, pastoral roosting and foraging for shorebirds. The roosting and supplementary foraging values of the Site were considered to be inextricably tied to the existing land modification and management as well as farming activities.¹⁶³ This included:

- (a) The stopbank and drainage of the Site having enabled shorebirds to roost and forage at the Site.
- (b) Grazing and pasture management having facilitated suitable roosting habitat by preventing the establishment of tall, woody vegetation, keeping it in short pasture and maintaining soft ground conditions. Pugging by stock has also added to the desirability of the Site.
- (c) The level of disturbance due to farming influences the use of the Site by shorebirds, with slightly lower abundance when in full dairy production, compared to the recent winter season with lower stocking rates for beef grazing.
- (d) Plausible permitted farming activities, including horticulture (and cropping for winter feed) and bird scaring to protect crops, could impact on its suitability for shorebird roost and foraging.

¹⁶⁰ Webb, rebuttal [7.1] onwards.

¹⁶¹ Webb, rebuttal [6.1].

¹⁶² Webb, rebuttal [6.3 – 6.5].

¹⁶³ Webb, rebuttal [6.10].

- 207.10 This type of pastoral use was noted to be wide-spread adjacent to all of the major harbours in New Zealand, including the South Kaipara.¹⁶⁴ Some sites host larger numbers of birds than others but in general they form a network of sites of similar quality and land use that enables shorebirds to roost and forage at high-tide when intertidal feeding grounds are inaccessible.
- 207.11 Lastly, the absence of Site-specific (RMA or other legal) habitat protection was recorded.¹⁶⁵ While the Site adjoins specific SEA areas that have been identified in the AUP:OP, both terrestrial and marine, the Solar Farm Site proper is not covered by that overlay.¹⁶⁶
- 208 For shorebirds the effects arising from the loss of habitat were identified as habitat modification, loss and displacement. This largely resulted from the loss of area available for shorebird roosting and supplementary foraging.
- 209 To determine the magnitude of shorebird habitat impacts the spatial extent of pasture occupied by roosting birds was determined from bird roost counts and roosting location observations. This was then considered in two contexts - the Site and the South Kaipara Harbour.
- 210 For the latter, South Kaipara Harbour, context a geospatial analysis of unoccupied suitable roosting habitat with characteristics deemed suitable for shorebird roosting was identified. This was considered to be a conservative approach to determining the available, unoccupied, roost area within the wider Harbour. The South Harbour scale was deemed an appropriate zone of influence for shorebird populations, to reflect species population's distribution and pattern. Species records were used from eBird.
- 211 The approach was also considered to be supported by the policy direction set out in AUP:OP Policy D9.3(12)(b), allowing adverse effects on significant ecological values to be assessed in the context of similar habitats within the same harbour or estuary.¹⁶⁷
- 212 From this geospatial study, Ms Webb concluded that the loss of approximately 6% of suitable south Kaipara roost habitat, resulted in a moderate adverse effect at the Site and a low adverse effect at the Harbour scale. More weight was placed on the 'harbour scale' because "*shorebirds are highly mobile and make use of vast areas of habitat*".¹⁶⁸
- 213 Effects management was considered to be required,¹⁶⁹ and best applied at the point of impact (the Site). Shorebirds were noted to have a high fidelity to high tide roosts, and providing for ongoing roosting at the Site was considered preferable (and more likely to be successful) than providing biodiversity offsetting elsewhere.

¹⁶⁴ See also Figure 1, page 13 Webb rebuttal, and Appendix 2 (individual species). Note that this information is based on land that can be accessed for survey and that a higher level or survey effort will have a comparatively greater amount of bird information.

¹⁶⁵ Webb, rebuttal [6.14].

¹⁶⁶ The Panel notes that some works in relation to the stopbank are affected by an SEA terrestrial overlay, as addressed above. This SEA does not extend into the Solar Farm proper Site.

¹⁶⁷ See also applicant's opening legal submissions at [3.47(f)].

¹⁶⁸ Webb, rebuttal [7.3].

¹⁶⁹ Webb, EIC page 28 onwards.

214 Ms Webb's recommendation informed the Site layout, including retention of 13.9ha of roost habitat on the Site, as depicted on the Landscaping Plans. The 13.9ha was considered to be sufficient in size and location to accommodate the number and type of shorebirds at the Site,¹⁷⁰ and was comprised of:

214.1 Two key areas, of 5.3ha and 4.3ha, of managed grass (mowed or grazed); and

214.2 A strip of open grass running parallel to the western stopbank totalling 4.3ha.

215 Other open areas (including open grassed areas) remained in various locations throughout the Site, and these could be used for supplementary foraging and roosting even if not necessarily designed as roost areas.

216 The retained roost sites were selected based on the frequency that roosting shorebird flocks were observed at each location. The size of the retained roosts was informed by the area typically occupied by the roosting flocks, as well as recommendations for artificial roost sizing used at Ambury Regional Park (being three birds per m²).¹⁷¹ Using Site-specific shorebird counts this equated to a recommended roost area of approximately 962m² to accommodate approximately 2888 shorebirds at the Site. With 13.9ha (or 139,000m²) proposed to be specifically retained for roost areas, this exceeded the recommended area.

217 In terms of particular species of concern:¹⁷²

217.1 As noted above, the Site does not provide habitat for Tara iti.

217.2 For Fernbird, a small area (approximately 500m²) of Fernbird habitat would be temporarily lost when the southern stopbank is upgraded. This would be remediated post-works by revegetation of the stopbank (4200m²) resulting in a substantial increase in suitable, contiguous, Fernbird habitat on the Site.

217.3 In terms of Australasian Bittern, Ms Webb stated that infilling of some of the existing, intermittently wet, farm drains would result in the reduction of foraging habitat during winter months. This was considered to represent a moderate adverse effect requiring effects management. The proposed restoration of 2.7ha of wetlands, coupled with expected water quality improvements from cessation of dairy farming, were considered to more than sufficiently replace the habitat lost and address habitat loss effects.

218 Ms Webb concluded that the Proposal sufficiently addressed the loss of roosting and supplementary foraging habitat with low adverse effects and with no residual population effects on the affected species.

¹⁷⁰ Webb, rebuttal [1.7].

¹⁷¹ Watercare Bird Roost Advisory Group. The Ambury Regional Park project was noted to involve a similar suite of shorebird species and the recommendation was to allow for a density of three birds per square metre.

¹⁷² Ms Webb, EIC page 30, rebuttal pages 18 and 19.

The case for the Director-General

- 219 Dr O'Donnell's evidence outlined that the Solar Farm Site at Glorit is a well-known habitat for waterbirds that has been monitored for over 60 years, with annual counts repeated over the last 30 years.¹⁷³
- 220 The Site was considered to support a very rich indigenous bird fauna, with 42 species confirmed on the Site, and a further 25 species in close proximity. At least 33 TAR avifauna species appeared, with four at the highest threat classification of Nationally Critical, being Australasian Bittern, Tara iti, White Heron and Black Stilt. Of these, only Australasian Bittern have been observed on the Site itself.
- 221 A large number of waterbirds were identified and counted on the Site during Dr O'Donnell's site visit, and these were summarised in Table 1 and Figure 1 to his evidence in chief. This included identification of three additional indigenous species, and higher counts for several species than those recorded by the applicant.¹⁷⁴ Dr O'Donnell concluded that *"[o]verall the inspection clearly indicated that the site of the proposed solar farm at Glorit was significant as a waterbird habitat, for both feeding and roosting, and for Threatened and At-Risk species."*
- 222 Further, it was noted that on the day of his visit birds had not been observed to be using the two areas proposed to be retained for roosting habitat. Instead, they were seen to be using a large proportion of the Site towards low tide for feeding as well as roosting.¹⁷⁵
- 223 Table 2 to Dr O'Donnell's evidence in chief very clearly set out, in tabular form, a list of the particular indigenous birds likely using the Glorit Solar Farm Site. Table 2 was particularly helpful for the Panel, identifying the Threat Classification System status, and whether observations were based on the applicant's advisor's or DOC (including via tracking data) on the Site. Also identified were recordings of species:
- 223.1 On the Site (provided to and held) by BirdsNZ;
- 223.2 At or within 3km of the Site in eBird;
- 223.3 In the Kaipara Harbour in publications; or
- 223.4 In eBird at greater than 3km from the Site (but within the Kaipara Harbour).
- 224 Appendix 2 to Dr O'Donnell's evidence in chief set out data from the Ornithological Society's National Wader Count Database (1994-2024). This was provided under a data-sharing agreement with DOC on a restricted basis only and the data was not to be passed to other parties. The data listed wader species counts from the Glorit wader roost, June 1994-2024.
- 225 Dr O'Donnell noted that thousands of waterbirds use the Site, including maximum counts of 4,528 SIPO, 855 Pied Stilts and 1825 Bar-Tailed Godwits.¹⁷⁶ There was

¹⁷³ O'Donnell, EIC, [26].

¹⁷⁴ O'Donnell, EIC [51].

¹⁷⁵ O'Donnell, EIC [84-85].

¹⁷⁶ O'Donnell, EIC [29].

criticism, which we have noted earlier, that the applicant had not accurately identified the species using the Site, nor the numbers of birds present.

- 226 While noting the recognised importance of the Kaipara Harbour in literature,¹⁷⁷ Dr O'Donnell's opinion was that the "*whole Glorit site is of very high significance for birdlife, both nationally and internationally*".¹⁷⁸ The Site, both in isolation and as it connected to the Kaipara Harbour, was considered to trigger numerous national and international significance criteria for birdlife, for example from:
- 226.1 Wetlands of International Importance (Ramsar Convention);
- 226.2 Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention); and
- 226.3 East Asian-Australasian Flyway Partnership.
- 227 To highlight the magnitude of this significance, Dr O'Donnell stated his opinion that the Solar Farm Site would be eligible to be a Ramsar Wetland of International Importance. This was because the Site met four of nine applicable criteria in his opinion, being:
- 227.1 Criterion 2: Supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
- 227.2 Criterion 3: Supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
- 227.3 Criterion 4: Supports plant and/or animal species at a critical stage in their life cycles or provides refuge during adverse conditions.
- 227.4 Criterion 6: Regularly supports 1% of the individuals in a population of one species or subspecies of wetland bird.
- 228 In terms of the size of water bird populations using the Site (the last of the criterion above), Dr O'Donnell advised that, using the most recent estimates of national population sizes, the Site had counts that represented 5.9% of the national total of SIPO (with his own count on the Site visit equating to 3.3%); 5.4% for Pied Stilts (his own count equating to 3.5%); 2.2% for Bar-Tailed Godwits; and around 6.4% for Royal Spoonbills.
- 229 The values at the Site were considered to trigger significance criteria (based on literature rather than the RMA or its subordinate documents directly) for representativeness, diversity and pattern, rarity and special features (distinctiveness) and ecological context. In terms of the latter, it was noted that:¹⁷⁹

"Ecologically, the site should not be viewed in isolation, nor should the significance for different birds be compartmentalised. A key to understanding the significance of Glorit is acknowledging that the site is wholly connected to and part of the greater Kaipara Harbour coastal habitat, as the birds move into and out of the area to other parts of the Kaipara such as the Kakaraia sand

¹⁷⁷ O'Donnell, EIC [60].

¹⁷⁸ O'Donnell, EIC [58].

¹⁷⁹ O'Donnell, EIC [73].

flats immediately adjacent to Glorit or move into or out of the site for different purposes and to exploit differing habitat conditions.”

- 230 In Dr O'Donnell's opinion “*the whole of the proposed solar farm site triggers significance in the context of section 6(c) of the RMA*”.¹⁸⁰ The operational effect of the Solar Farm would be to displace “*almost the entirety of a highly important shorebird roost that is of national and international importance*” and in Dr O'Donnell's experience development of such sites “*is inappropriate and extremely rare*”.¹⁸¹

Panel Reasons and Findings – Habitat Loss

- 231 The Panel accepts the evidence of Ms Webb with regards to the habitat values of the Site and the effects of the Solar Farm Proposal on those values. We consider that the habitat-related effects, which we assess as low to possibly moderate (at most), do not warrant the declining of consent for the Solar Farm.
- 232 The Panel explicitly accepts that there will be a loss of habitat arising from the Solar Farm, particularly roosting and foraging habitat. That is inevitable in the context of a utility scale renewable energy asset. Further, a ‘no net loss’ outcome is not required in the circumstances of this Proposal.¹⁸² Appropriate conditions of consent have been included to respond to the loss of habitat.
- 233 We do not consider that the Solar Farm triggers, in any manner adverse to the grant of consent, section 6(c) of the RMA, or Policies 11(a) or 11(b)¹⁸³ of the NZCPS. Those provisions are examples only from the higher order planning documents, and we recognise that the AUP:OP contains similar policy direction to us.¹⁸⁴
- 234 The Panel found it difficult to reconcile the Director-General's case asserting nationally and internationally significant habitat values for the Site, with our own assessment from our site visits and the totality of the evidence before us. Further, the Panel did not agree that the loss of habitat effects were of such a nature or degree that consent ought to be declined. In regards to Ramsar designation as a wetland of international importance, we agree with Ms Webb's expert opinion that there had been an ‘over-valuation’ of the Glorit Site and that such a high bar of significance was not met.¹⁸⁵
- 235 Our reasons include that:
- 235.1 There needed to be a real-world assessment of the habitat values of the Solar Farm Site, including appropriate recognition that the Solar Farm Site is a working farm and zoned for rural uses.
- 235.2 Ordinary rural use of the Site includes permitted uses that would change, sometimes in a significant way (and potentially, overnight), the desirability and appropriateness of the Site as roosting and foraging habitat. This includes for example the planting of winter feed and other crops (as observed on surrounding

¹⁸⁰ O'Donnell, EIC [64].

¹⁸¹ O'Donnell, EIC [94(f).]

¹⁸² Importantly, the NPS:IB is not at play in these proceedings.

¹⁸³ Including particularly under Policy 11(a)(i) and (iv), and 11(b)(ii) and (v).

¹⁸⁴ Including for example (and without limitation) AUP:OP E15.3(9).

¹⁸⁵ Webb, rebuttal [6.3 – 6.5].

farms), and the use of bird scaring devices to protect crops or deter pest species.

235.3 The Site does not provide a static habitat, and therefore the habitat values are similarly not fixed. The habitat provided by the Site inevitably changes over time (for example, temporally, seasonally, and as a result of landuse practices),¹⁸⁶ and is taken advantage of by avifauna when it provides what is needed to a particular species at a particular time. At times, the values may be very high. At others, they will be lower. Further, some species will benefit from some practices, while others would benefit from a change in practice.

235.4 The Site is part only of a much larger habitat, encompassing the Kaipara Harbour which collectively provides the habitat needs of the bird populations that frequent the Site. The Site's value results from its location within the Harbour context and current landuse practices, and not particularly from other inherent values.

235.5 We note that we are not simply saying that the birds can go elsewhere. This was warned against in Glazebrook J's reasoning in the *East West* decision,¹⁸⁷ but has been implicitly referenced in other decisions. Here we refer to decisions such as *Davidson* where the King Shag habitat loss was assessed in terms of the amount of total available habitat within Beatrix Bay that was being lost,¹⁸⁸ and *Clifford Bay* where the Court described the effect as a reduction in available habitat, with a very low direct impact because "*the first 150 hectares proposed is only 2.5% of the preferred inshore habitat*".¹⁸⁹

235.6 There is a loss of habitat, but that loss is in a particular context to which we have also had regard.

235.7 While areas around the Solar Farm Site have been specifically considered and identified under the AUP:OP as SEA's (both terrestrial and marine), the land on which the Solar Farm infrastructure will be located, and where the habitat available will be reduced, has not.¹⁹⁰

235.8 The Site can be differentiated from other parts of the Harbour where the site-specifics do reflect very high values – for example, the nesting sites that exhibit the required substrate for nesting, and inter-tidal feeding areas. We agree that parts of the Kaipara Harbour may well warrant national or international recognition, for example potentially the Papakanui Spit and Waionui Inlet, and Manukapua Island. Those areas are already SEAs. Based on the evidence before us, the Site does not warrant national or international recognition.

¹⁸⁶ We note that we have had regard in particular to Dr O'Donnell's comments at the hearing, see Transcript Day 4 page 404.

¹⁸⁷ *RFBPS v NZTA* [2024] NZSC 26, see [319-320]. We note that this formed part of Glazebrook J's dissenting opinion, and was in the context of a site and habitat that included SEA overlay.

¹⁸⁸ *RJ Davidson*, supra footnote 21, at [63-64].

¹⁸⁹ *Clifford Bay*, supra footnote 22, at [106(2)].

¹⁹⁰ We specifically recognise that some parts of the stopbank upgrade works do impact on a small portion of SEA in the lower section of the Solar Farm. That SEA relates to wetland areas that are retained (and restored) under the Solar Farm layout. See page 3 of Appendix A, and Landscape Plan 12 in Appendix B, of the Solar Farm AEE.

- 235.9 The full 283ha to be used for the Solar Farm is not entirely lost as habitat. The solar panels, which are by far the largest component (compared to other infrastructure such as the buildings and BESS), are understood to directly cover 80ha,¹⁹¹ with pasture remaining between and beneath the panels, and grazing proposed to be continued.
- 235.10 13.9ha of habitat is being retained at the Site and the Panel accepts, as the applicant's experts did, that this is a reduction in available habitat. We also accept that there is some uncertainty as to whether birds will utilise the retained areas, and indeed the other areas remaining (for example, between or beneath the solar panels), once the Site is developed.
- 235.11 While the applicant suggested that the loss of habitat ought to be considered in the context of the wider South Kaipara Harbour environment, we were not persuaded that this was an appropriate approach. It did have some initial attraction, given that the TAR avifauna species of concern are highly mobile and do use, indeed rely on, the whole Harbour, the much larger frame of reference inevitably tended to reduce the magnitude of the effect.¹⁹² The Panel preferred instead to accept the loss of habitat, appropriately described, as an adverse effect on the environment arising from the Proposal.
- 236 We record too that the Panel did specifically consider whether further land could be set aside and removed from use for solar arrays.
- 237 In Minute 2 the Panel asked what percentage of the total Solar Farm capacity was represented by the arrays shown in the southern area.¹⁹³ The applicant's response of 19 March 2025 advised that the total capacity of the two areas combined was 5.74MW, which represented approximately 3% of the Solar Farm's capacity. We specifically visited this area during our second site visit, and considered that its vegetation, including wetland species rather than pasture / grasses, made it less suitable for retention as roosting or foraging habitat. The southern portion of the Solar Farm, which contains much of the wetland habitat, is in any event much less developed for infrastructure than the northern and middle portions of the Site.¹⁹⁴
- 238 By way of Minute 17 the Panel also requested that particular matters be addressed in evidence, further to the parties' list of proposed topics for the avifauna hearing. If parties were not in agreement with the proposed 13.9ha retained roosting area, we asked for evidence to address what figure might be more appropriate, with reasons, and where that area should be accommodated if approval was granted. We did not receive any specific responses to this request.
- 239 We consider that the conditions of consent for the Solar Farm appropriately respond to, and address as required by the RMA, the loss of habitat that will occur. Those conditions include:
- 239.1 The requirement to prepare a Biodiversity Management Plan (**BMP**) (conditions 45 and 46), which will detail the ecological (restoration) planting and other enhancement works to be undertaken. These include all of the works described

¹⁹¹ Transcript Day 2 page 180.

¹⁹² See for example also the comments provided in Corkery, EIC [90] onwards.

¹⁹³ Being the solar panels depicted on landscape plans 10, 11 and 12 (understood to be PV Arrays G and I on Figure 6 'Plan of PV Areas', GGAR).

¹⁹⁴ See the plan of the layout of the Solar Farm, reproduced above.

in the application material, which are incorporated by reference through condition 6(d). Included for example are stream and wetland enhancements, works to improve habitat for Australasian Bittern and Fernbird, and the creation of a 6m wide vegetated corridor between the Glorit Knoll SEA and the SEA to its south, as detailed in the Landscape Plan (Appendix B to the Solar Farm AEE). Pest management measures are also to be included to protect avifauna and ecological plantings.

239.2 The plantings required under the Landscape Planting and Maintenance Plan (LPMP) will also contribute some ecological benefits (conditions 39 and 40).

239.3 All planting required under the LPMP and BMP (whether for landscape / visual or ecological / biodiversity mitigation purposes) must be maintained for five years following planting. Should any such planting be removed or die during the Solar Farm's operational life, such that they no longer provide effective screening or mitigation, they must be replaced with a similar species within the next planting season (condition 98).

239.4 The obligation to set aside and appropriately manage the retained roosting areas (totalling 13.9ha, with additional areas remaining within the Solar Farm) (conditions 48, 49 and Schedule C).

239.5 Specific conditions to address the potential for disturbance to wetlands (conditions 42 to 44 and 76-77); disturbance to Australasian Bittern (condition 50), and potential effects on Kiwi (condition 53). Conditions also address the potential for construction activities to affect nesting birds (conditions 51-52).

240 We address the conditions of consent for the Solar Farm further in Part H of this decision report.

D2: Landscape, visual, amenity and character effects (including glint / glare)

241 Two principal issues of contention arose under this category:

241.1 Adverse landscape, visual, amenity and character effects were the most common concern raised in submissions on the Proposal, identified in relation to both the Solar Farm and, to a lesser extent, the Substation.

241.2 In relation to the Solar Farm they included submissions expressing concern about the potential for glint and / or glare effects from the solar panels.

242 The planning hierarchy contains numerous provisions for landscape and visual effects matters, including those relating to the protection of the natural character of the coastal environment (for example, within the NZCPS and the AUP:OP Regional Policy Statement provisions) and to maintaining or enhancing rural character and visual amenity (within the AUP:OP).¹⁹⁵

¹⁹⁵ See for example NZCPS Objective 2, Policies 6, 13, 14 and 15; AUP:OP Regional Policy Statement provisions B4.2.1(1) and (3), B8.2.1(1) to (3), B8.2.2(3) and (4), and B8.3.1(1) and (2); and the Regional Plan / District Plan provisions of the AUP:OP including E18.2(1) and (2), E18.3(1) to (4), E19.2(1), E19.3(1) and (2), H19.2.3(1), H19.2.4(1), H19.5.2(3), (5) and (6), H19.5.3(1), (5) and (6), H19.5.6.2(1) to (3), H19.5.6.3(2) and (6), E26.2.2(5) and (6), and E26.2.4(9).

- 243 For our findings and reasons relevant to effects in this category, refer to paragraphs 279 to 294 of this decision report in relation to landscape, visual, amenity and character effects, and paragraphs 313 to 315 in relation to glint and / or glare effects.

Landscape, visual, amenity and character effects

Application material

Solar Farm

- 244 The Solar Farm AEE included a detailed *Landscape and Visual Assessment – Glorit Solar Farm (LVA(SF))*¹⁹⁶ which assessed the actual and potential effects of the Solar Farm on the character and values of the landscape. We can only summarise the key findings of the LVA(SF), which extended to 140 pages, in this decision report, but record that we found the LVA(SF), and particularly its photo simulations, of assistance to our decision-making, particularly alongside our two site visits as we discuss in more detail below.
- 245 The LVA(SF) noted the Rural Coastal zoning¹⁹⁷ and “*typical rural character*” of the Site,¹⁹⁸ and its coastal environment setting. The absence of values-based landscape overlays and ‘outstanding’ landscapes or features on the Site itself was recorded, along with the presence of surrounding landscape featuring terrestrial and marine SEAs,¹⁹⁹ and two adjacent / proximate areas of HNC and ONL overlays under the AUP:OP, being the adjacent Glorit Knoll / Hoopers Bush and the Mataia Headland. The reclaimed nature of the Site, its stopbanks, farm tracks and open drainage channels, were also featured.
- 246 The LVA(SF) described the local landscape as having three distinct sub-areas, with the flat to rolling pastoral land either side of the SH16 corridor, stretching from Puatahi Marae in the north to Wycksted in the south, being “*sandwiched*” between the open waters and coastal edge of the Kaipara Harbour to the west, and the heavily vegetated peaks, ridgelines and hill slopes to the east (including Atuanui / Mt Auckland and Taranaki, the latter of which is around a kilometre to the south of Mt Auckland). Natural features like the Mataia Headland, Glorit Knoll / Hoopers Bush and the vegetated knoll about Puatahi Marae, were noted as “punctuating” the otherwise flat pastoral central area.
- 247 The predominant public experience of the local landscape was noted as being from SH16, where road users are subject to a largely rural character, with flat to rolling pastoral land to the east and west (where not screened by intervening vegetation and landform).
- 248 The same was considered to apply to views from most local rural residential properties. Elevation provided by the rising foothills to the east of SH16 and north of Omaumau Stream was noted as affording views across the flat pastoral land to the west, across to the Kaipara Harbour with backdrop hills in the distance.
- 249 From a natural character perspective the local landscape was considered to exhibit “a high degree of naturalness (i.e. biotic and abiotic aspects)”, owing to the clear influence

¹⁹⁶ ‘*Landscape and Visual Assessment: Glorit Solar Farm*’ prepared for Glorit Solar P LP by Beca Limited, dated 13 November 2024.

¹⁹⁷ Rural – Rural Coastal Zone.

¹⁹⁸ Recognising that despite the vast majority of the Solar Farm Site being zoned Rural Coastal, parts of the stopbank, located around the coastal edge, are zoned Open Space – Conservation.

¹⁹⁹ Referred to as Significant Natural Areas in the LVA, Figure 2-3 of the Solar Farm AEE, and the AUP:OP identifies these as SEAs. Both Marine 1 and Marine 2 SEAs are present adjacent to the Solar Farm Site.

that natural coastal processes have on the coastal margin (e.g. the Mataia Headland HNC / ONL and adjoining terrestrial and marine SEAs) and the widespread distribution of native vegetation across the hills. Taking physical and experiential aspects together, the local landscape was considered to exhibit moderate to high natural character.

- 250 Following an assessment of the relevant NZCPS and AUP:OP provisions the LVA(SF) summarised, correctly in the Panel's view,²⁰⁰ the three key themes emerging as being (i) retention and enhancement of rural character and amenity; (ii) preservation, restoration and enhancement of coastal natural character, and (iii) the protection of outstanding natural features and landscapes.
- 251 The LVA(SF) included visual simulations of the Solar Farm, based on 13 viewpoints, prepared to show the Solar Farm and anticipated growth of plantings in the short (juvenile) and medium (mature) term. These included simulations from affected private properties (where access was available) and from publicly accessible locations, being intended to be representative of (i) views for the general public and (ii) surrounding rural properties with views to and across the Site.
- 252 The majority of effects for the selected viewpoints were considered to fall:
- 252.1 For the short-term (0-3 years) in the very-low to moderate scale of effects, with the exception of 3354 and 3310 KCH,²⁰¹ which was "*moderate-high*"; and
- 252.2 For the medium to longer term (3-15 years) largely very-low to low, excepting moderate effects for 3354 and 3310 KCH, and low-moderate for 3356 KCH²⁰² and similarly elevated locations (e.g. 3390C and 3390D KCH)²⁰³ and the Mt Auckland walkway.
- 253 For the above cases the LVA(SF) explained that elevation was the primary factor contributing to a higher degree of effect. Viewers 'looking down on' the Solar Farm with little intervening vegetation or landform to screen views would experience adverse visual effects. The LVA(SF) author considered the photo simulations showed that, for these views, while proposed planting would 'blur the edges' to a degree, the solar arrays would be "*a highly visible element in the middle ground view*". In this largely rural setting, the LVA(SF) author further considered that constructed elements were either visually recessive (e.g. existing farm buildings) or predominantly set back against the historical coastline (e.g. SH16 and transmission lines). The Solar Farm was considered to be a departure from this existing characteristic, pushing out towards the coastal edge and occupying the middle ground view.
- 254 In terms of rural character and amenity, the LVA(SF) recorded the general policy direction in the Rural Coastal Zone and AUP:OP policies being the retention and maintenance of rural character. While existing infrastructure is present within the local rural landscape (including SH16, transmission lines and buildings), at 283ha the Solar Farm was recognised as establishing "a clear counterpoint to existing pastoral character". The character of the Site would change from rural pastoral (dairy / dry

²⁰⁰ With particular reference to (without limitation) NZCPS Objective 2 and Policies 6 (particularly (h) through to (j)), 13, 14 and 15; and from the AUP:OP Policies E18.3(1), E19.2, H19.2.4(1), H19.5.1, H19.5.3, H19.5.6, H7.4.2(1) and (2).

²⁰¹ Affected party approvals have been provided for 3354 and 3310 KCH.

²⁰² Affected party approval has been provided for 3356 KCH.

²⁰³ Affected party approval has not been provided for 3390C or 3390D KCH. Invitations to submit were provided to these properties however no submissions were received.

stock beef grazing) to solar infrastructure, which was considered to be an atypical proposition in terms of land use typology and scale in the local (and broader) landscape context.

- 255 Despite this change, which would be experienced most by owners and occupiers of elevated properties adjacent to SH16, the author of the LVA(SF) noted that there were aspects of the Proposal that drew parallels with, and reinforced, existing Site characteristics, namely:

255.1 It would continue the long history of resource utilisation on the Site and local landscape.

255.2 It would reinforce the flat and expansive underlying landform, being the result of historical reclamation.

255.3 It would still appear as a homogenous area within the local landscape context, albeit a shift from green 'nature' to blue / grey infrastructure.

255.4 The proposed 'internal' landscape planting, located alongside access roads and between clusters of solar arrays, sought to mimic wind breaks, reinforce the existing geometric layout of paddocks, and as an homage to existing vegetation patterns and an effort in breaking up the scale of the Solar Farm.

- 256 The LVA(SF) concluded that:

256.1 The Solar Farm would adversely affect the existing rural character and amenity of the local landscape to a low to moderate degree, with primary contributing factors being the overall scale and atypical nature of the Solar Farm when considered in the context of the local landscape. Impacts on the perceptual aspects of the local rural landscape were considered to be the most notable.

256.2 While the proposed ecological and landscape planting were viewed as mitigating aspects of the Solar Farm proposal (enhancing / increasing naturalness (biotic and abiotic aspects) on the Site and coastal margins), it was considered to represent *"a notable departure from typical rural character and [would] establish a highly visible counterpoint to pastoral character and the "predominance of rural production activity, particularly pastoral farming activities" found in the rural coastal landscape"*.²⁰⁴

256.3 The Solar Farm would result in low natural character effects at the Site level and low to moderate natural character effects on the local landscape. Further, the proposed landscape and ecological planting would result in several net gains / positive effects on naturalness, especially at the Site scale. Potential effects on the natural character values of the Mataia Headland and Glorit Knoll were considered to be very low to negligible. The Solar Farm does not physically encroach into these areas and because both landside and seaward public access is restricted (either through private land ownership or the practicalities of crossing shallow mudflats in the case of the Mataia Headland), perceptual / experiential values were considered to be unaffected.

256.4 Conditions should be included on any grant of consent including in relation to required detailed planting plans and related management plans, perimeter

²⁰⁴ Quoted text within this quote is from the zone/area description (excerpts only), H19.5.6.1 of the AUP:OP.

security fencing details, and building material finishes. Conditions addressing these matters were included in the condition sets provided by the applicants.

Substation

- 257 As with the Solar Farm, the Substation AEE included a detailed *Landscape and Visual Assessment – Glorit Substation*²⁰⁵ (**LVA(GS)**) which assessed the actual and potential landscape effects of the proposed Substation. The LVA(GS) noted the Substation Site's Rural Production zoning, and that the local landscape exhibited a typical rural character when considered in the context of the wider inland rural landscape around Glorit.
- 258 The local landscape's rolling pastoral hills were noted to be punctuated by waterways, wetlands, riparian planting and scattered patches of native bush and exotic tree stands and shelterbelts. Built form was considered to consist of a scattering of dwellings and ancillary buildings mostly to the east of SH16 and when coupled with smaller elements like light poles, road markers, signs and fence lines established a development matrix that added to the overall visual complexity in the local landscape.
- 259 The Substation Site was considered to be a "*nondescript piece of pastoral land located between SH16 to the east and 110kV and 220kV transmission line corridor to the west*", both of those being prominent infrastructural elements. While there are headwater streams adjacent to the project area and a wetland area immediately to the northwest of the footprint, aside from its north-westerly aspect, the Site itself was considered to be devoid of notable physical attributes.
- 260 The Site was noted to be most visible from SH16 and rural / rural residential properties to the east and is part of the local rural outlook (i.e. perceptual landscape), with a sense of openness and distant views to the Kaipara Harbour from elevated locations underpinning amenity values.
- 261 The central themes that were considered to emerge from the policy context, with which the Panel agrees,²⁰⁶ related to maintenance of rural character and amenity, alongside the anticipation of future infrastructure development.
- 262 As with the LVA(SF) the LVA(GS) included the identification of viewpoints and prepared photo simulations. Again, the Panel found these to be of assistance to our decision-making, alongside our site visits.
- 263 Visual effects were summarised, in relation to the three viewpoints, as being negligible to low-moderate in the short term, and negligible to very-low in the medium to long term.
- 264 The LVA(GS) summarised its findings as follows:
- 264.1 While the Proposal would result in physical change to the Site, its current physical values were assessed as very low because of a lack of notable physical attributes. Therefore, physical effects on the local landscape would be negligible. From a perceptual standpoint, the Proposal was noted as being visible from parts of SH16 and elevated properties to the southeast, and this

²⁰⁵ 'Landscape and Visual Assessment: Glorit Substation' prepared for Glorit Solar P LP and Transpower New Zealand Limited by Beca Limited, dated 14 November 2024.

²⁰⁶ With particular reference to (without limitation and further to those of application to the LVA(SF)) Policy E26.2.2(4), Objective H19.2.3(1), Policies H19.2.2(5)(c) and (d), H19.2.4(1).

would result in a slight change in outlook for these viewing audiences. Short to medium term visual effects were considered to range from very low to low-moderate, reducing to negligible to very low in the long term once proposed planting matured.

264.2 In the long term, the Proposal was not considered to alter the current balance between built and non-built elements in the landscape to a discernible degree, and the current rural outlook and associated amenity values would remain. It was not considered to impact on people's ability to 'read' the existing rolling pastoral landscape, nor impact local resident's views to the distant Kaipara Harbour and backdrop hills. The Substation was considered to be consistent with the existing infrastructural 'thread' (i.e. SH16 and the National Grid transmission lines) which passes through, and is prominent within, the local landscape.

264.3 The proposed landscape planting (including a screening planting framework estimated to be 5m high in 4 years and 10m high in 10 years) was considered to be consistent with existing vegetation patterns and would appear as an extension of vegetation running horizontally in the middle ground view. This would serve to mitigate visual effects and to also reinforce geomorphic legibility of the rolling pastoral landscape.

264.4 Based on the successful implementation of the proposed planting and re-seeding of the cut batters and fill embankments, the overall long-term effects on rural character and amenity of the local landscape were assessed to be very low to negligible. The introduction of the Substation was considered to be generally consistent with the character of the local rural landscape.

264.5 Conditions were recommended, in relation to required detailed planting plans and related management plans. Conditions addressing these matters were included in the condition sets provided by the applicants.

Submissions

- 265 All of the properties the Panel considered potentially subject to moderate and above effects based on the relevant LVA, or potentially subject to more than minor landscape and / or visual effects following our first site visit, were included as persons to be invited to submit on the Proposal.
- 266 Landscape and visual effects (broadly) were the key topic within the submissions received.
- 267 Many of the submissions expressed concern at the scale of the Solar Farm and the adverse landscape, visual, character and amenity effects that would result.
- 268 Submitters expressed the view that the Solar Farm would not be able to be hidden or blocked from view with the proposed plantings (mainly because of the elevation factor), and would be an "eyesore" destroying the scenic beauty currently experienced. As another submitter put it, "*significant visual pollution*". Many noted the impact the Solar Farm would have on otherwise uninterrupted views of the Kaipara Harbour. Several submitters noted that, because of their elevation above the Solar Farm Site, they would be able to see the entirety of the Solar Farm, with the field of arrays taking up almost as much of the view as the harbour.

- 269 Concerns were also expressed with regards to the Substation, including the potential for the Substation to cause an impact on or distraction to drivers on SH16, with the stretch of road adjacent to the Substation noted as being a “*race track*”.
- 270 Concerns were expressed in submissions too regarding the relevant LVA’s choice or election of viewpoints (with some residences being missed or viewpoints not being considered appropriately representative, for example because they focussed on dwellings when the broader property was used), or its characterisation of effects being low to moderate in circumstances where the submitter considered the impact to be large, significant or major.
- 271 Submitters also expressed concern at the length of time that would be needed for proposed screening (for both the Solar Farm and the Substation) to have an effect, because of the time needed for plantings to grow and establish, and the possibility of planting failure.
- 272 The submission from Auckland Council included sections on landscape matters prepared by a specialist on behalf of the Council. This assessment concurred with the conclusions of both the LVA(SF) and the LVA(GS), and included the following further comments:
- 272.1 A note of caution, appropriate in the Panel’s view, that information on Māori cultural landscape values was (at that time) outstanding for both of the LVAs.
- 272.2 Detailed proposed amendments to the conditions (as originally proposed at the time of the applications) were also provided.
- 272.3 For the LVA(SF) specifically in relation to the Solar Farm:
- (a) A query regarding the lack of any analysis regarding views from South Head or Ōkahukura Peninsula and the absence of assessment of the proposed transmission line from the Solar Farm to the Substation.
 - (b) Questions regarding the planting strategy for areas internal to the Solar Farm Site (between the groups of solar panels) given the long-term potential to block sunlight to the panels. The proposed planting appeared to the author to be “a seemingly random arrangement of trees which does little to strengthen any natural or land use pattern”. The author considered that a more appropriate strategy could be to supplement the existing planting at the Glorit Knoll ONL, while acknowledging that this feature is located on land that is outside the Site boundary.
 - (c) Concern was also expressed over the ability to effectively establish the proposed planting on an exposed coastal site with what appeared to be relatively poor soil conditions. Suggestions were made to revisit the proposed plant species list, and to provide details regarding the protection of plantings from stock and pests.
- 272.4 For the LVA(GS) specifically in relation to the Substation:
- (a) A query regarding the proposed planting, and the suggestion of an alternative strategy being to retire areas of pasture to the north and south of the Substation, and revegetating these areas as large extents of planting. This alternative arose from the visual simulations for

representative public Viewpoint 3 where planting after five years did not appear effective (taking ten years to succeed).

- (b) A query regarding the absence of a visual simulation of the Substation view for people travelling north on SH16.

273 The applicants' (Glorit Solar and Transpower's) response to submissions included a separate, specialist's, response to submissions raising landscape and visual matters.²⁰⁷ This response carefully addressed each of the submitter's concerns, including for example noting:

273.1 Where appropriate, amendments to the degree of visual effect assessed, for example providing specific comment on the degree of visual effect from Mr Porteous' dwelling, and providing an additional two photo simulations following the submission from Mr Stewart.

273.2 The inability to screen the Solar Farm where submitter properties were elevated above it, and the effects that flow from that in the context of those elevated sites.

273.3 That increasing the size of trees when first planted would be unlikely to achieve a higher degree of mitigation over time. The sizes as currently proposed (2.0 – 3.0m) were noted to already be at the upper limit in terms of availability, acceptable levels of plant mortality during the establishment phase, and likelihood for sustained growth over time.

274 In response specifically to the Auckland Council submission and specialist input it was noted:

274.1 South Head is located approximately 12km to the west of the Solar Farm Site, with Ōkahukura Peninsula approximately 7km to the northwest. At these distances, judgement had been applied to their inclusion in the relevant visual catchment, and they were omitted. If they were included, visual effects would have been very low to negligible.

274.2 In response to queries regarding the internal planting strategy for the Solar Farm Site it was noted that resultant shading of the solar panels had been deemed acceptable for the Solar Farm's operation and performance, and that this planting was only part of the way in which natural or land use patterns were strengthened. Other distributed landscape planting across the site, a 'blurring the edges' approach (drawing in some of the visual complexity of the surrounding landscape), was all intended to fragment the horizontal expanse of the Solar Farm and provide visual relief. It was further considered that supplementing planning on the Glorit Knoll would not mitigate the effects of the Solar Farm.

274.3 It was noted that plant selection for the Solar Farm Site had been subject to liaison between the project landscape architects and ecologists, where the potential impacts of the coastal site conditions had been well traversed. The issues raised could further be adequately addressed via the LPMP.

²⁰⁷ Letter from Wade Robertson of Rough Milne Mitchell Landscape Architects to Beca Limited, subject line '*Response to submissions raising landscape and visual matters*' dated 8 April 2025. Mr Robertson had been one of the authors of the earlier LVA(SF) and LVA(GS).

274.4 In relation to the Substation planting, while appreciating the suggestion to introduce larger swaths of planting, it was noted that a focus was on achieving adequate mitigation, whilst minimising the footprint and resulting land take.

274.5 Lastly, in relation to the absence of a SH16 northbound viewpoint / visual simulation, it was noted that it had been determined during the site analysis process that effects were likely to be at the lower end of the effects scale. It was considered that the nature of the views for northbound travellers did not warrant a visual simulation and this was due to factors like screening by landform and road side vegetation.

Site visits

275 The Panel undertook a full visit to the Solar Farm Site, Substation Site and surrounding areas in February 2025, and a second visit was undertaken to several submitter properties, the Solar Farm Site itself, and areas surrounding both of the Sites, in May 2025.²⁰⁸ This enabled the Panel to see the area under both summer and early autumn conditions, with the area being subject to heavy rain and some flooding around the time of our second visit.

276 A key focus of the Panel's second visit was assessment of the actual and potential landscape, visual, amenity and character effects. We therefore sought landowner approval to visit submitter properties that had expressed concerns regarding visual effects. We also viewed the Solar Farm Site and Substation Site from a wider range of public viewpoints. This was principally from SH16 including well to the north (as far as Puatahi Marae) and south of the Solar Farm Site, and from Kaipara Hills Road.

277 The Panel's intention was, firstly, to seek to 'ground truth' (to the extent able) the photo simulations provided in the LVA(SF) and LVA(GS), and secondly, especially where no such photo simulations were available, to assess the actual and potential effects for ourselves.

278 While the photo simulations were prepared to a very high standard, in accordance with best practice and from representative viewpoints, they can never replace in-person viewing. The Panel found the photo simulations to fairly represent the views available, and they were of immense assistance in helping the Panel to mentally 'sit' the proper extent of the proposed Solar Farm (in particular) into the landscape being viewed, and to appreciate the likely colouring and texture of the infrastructure from various distances.

Panel findings (and reasons) on landscape, visual, amenity and character effects

279 The Panel found the site visits invaluable and informative. When considered alongside the other material available to us and outlined above, we concur with the findings of the LVA(SF) and LVA(GS).

280 The Panel did not find any adverse effects (in the landscape, visual, amenity or character sense) that we would have characterised to any worse degree than the authors already had. Further, the Panel concurs with their findings in relation to the maintenance of rural character and amenity (with respect to the Substation Site) and, for the Solar Farm Site, in relation to (i) the retention and enhancement of rural character and amenity; (ii) the preservation, restoration and enhancement of coastal

²⁰⁸ The Panel specifically visited properties relevant to the submissions by Mynott, Porteous, Taylor, Rehfield & Evans, Stewart and Drinnan.

natural character, and (iii) the protection of outstanding natural features and landscapes.

- 281 Neither the Solar Farm nor the Substation are likely to create significant adverse effects when viewed from SH16. We consider that the Substation in particular would not be an unexpected element in the rural setting, when the presence of the National Grid transmission lines is obvious (there being two lines, both with large pylons), and that rural environment already including working and agricultural built form of a similar scale to the Substation buildings. As a moderately sized piece of infrastructure the Substation would be passed in a small amount of time.
- 282 The Solar Farm could possibly create a point of interest in views from parts of SH16, but not to an unreasonable or distracting degree. Some of the viewing audience may in fact find it of particular interest, perhaps even wanting to stop and view the Solar Farm, as happens with wind farms. Not all of the viewing audience will necessarily find the solar arrays adverse. Some, or even a majority, may.
- 283 Conditions are included to ensure that buildings are of appropriate neutral colours (see condition 30 of the Substation designation and condition 38 of the Solar Farm consent).
- 284 Screening planting, of both the Solar Farm Site and Substation Site should be provided, and is appropriately described in the indicative design drawings for the Substation²⁰⁹ and the Solar Farm's Landscape Plans.²¹⁰ Conditions 1 of both the Solar Farm consent and the Substation designation require that the Solar Farm and Substation must be in general accordance with the application documentation.
- 285 The conditions of consent for the Solar Farm require the preparation and implementation of a LPMP (conditions 39 and 40), which is to incorporate the plantings described in the application material (condition 6(d)). Maintenance of these plantings is required, should they fail or be removed (condition 98). A Landscape Plan is also required to be prepared for the Substation outline plan of works process (conditions 3 and 25), with a five year maintenance obligation (condition 27).
- 286 The Panel gave careful thought to whether or not further plantings should be undertaken within the Solar Farm Site, to break up the form and expanse of solar arrays. We concluded that this was not necessary. This is in part because the form is already broken up by the presence of tracks, buildings and the PCUs and battery storage containers and, for most of the viewing audience, by intervening landforms such as the Glorit Knoll. Further, plantings ought to be focused, as they are in the Solar Farm's Landscape Plans, along and around the stop-banks, wetlands and roosting areas, for ecological reasons.
- 287 All of the submitter properties we visited experienced picturesque views, to a greater or lesser degree. Elevated views were particularly commanding, especially where these included the 'layering' of pastoral land to the west of SH16, with the SEAs standing out, the Kaipara Harbour edge (including in places the stopbank and mangrove areas) and expanse of harbour waters, and then out across to the South Head. Submitter properties further to the east and away from the Solar Farm Site also included viewed

²⁰⁹ See 3.1 Landscape Plan, dated November 2024, with proposed primary planting, proposed successional planting and extent of grassed area.

²¹⁰ Landscape Plans, sheets 01 to 13, including the Planting Schedules and Palettes, Appendix B to the Solar Farm AEE, prepared by Beca Limited and dated 16 August 2024.

areas of vegetated and forested land, and properties to the north-east of the Solar Farm Site experienced views of the estuary and Omaumau River Scientific Reserve.

- 288 These horizontal layers exhibited a 'patchwork' and layered range of colours and textures (blues, silvers, greys, greens and browns), with much to catch the interest of the viewer including moving elements such as stock, vehicles and wildlife. While the majority of the land is pastoral, different pastoral practices and grazing cycles meant that the grasses and pastures were of different colours and textures between different landholdings. Some crops (potentially winter feed) were also present, along with earthworked areas and various built form in the way of houses, farm buildings, sheds, tracks and fences etc.
- 289 At times, the harbour itself was flat and 'shiny' due to catching the late afternoon sun, resulting in the desirability of sunglasses when looking to the west. At other times it was shades of blue and grey, with shadows from passing clouds and wind-vaning patterns present on the water surface.
- 290 The Panel did not find any views where the Solar Farm would be adversely dominant or create unbearable or inappropriate adverse effects, including in the context of the matters sought to be addressed by the planning hierarchy. This was the case for the Substation as well. The RMA does not require that private views be retained without change, or that there be no adverse effects.
- 291 For some of the submitter properties, and other properties similarly elevated with views over the Solar Farm, and from some public views, the Solar Farm will undoubtedly result in a noticeable change to the view(s) presently enjoyed. However those views will still contain the layering of other pastoral land, the expansive harbour waters and views to the South Head (or the North Head and other islands when viewed from the south).
- 292 While the change will be to obvious built (infrastructure) form on the Solar Farm Site, with darker greys predominating, and the scale is significant (at 283ha of occupation), this part of the landscape is a working one. Other parts of the wider landscape are wild and natural, but the Site itself, and those to the south and east of it, are working, productive, land.
- 293 Other rural uses could also impose a visual change to the Solar Farm Site, or to one or more of the landholdings that form the view currently experienced. Relevant activity standards would obviously need to be met, however permitted activities within the Rural Coastal Zone include for example farming and intensive farming, rural airstrips, greenhouses, intensive and free range poultry farming, and farm or forestry quarries. While recognising the limitations of the Solar Farm Site (particularly in relation to flooding), it is not guaranteed to remain grazed and in pasture, as it currently is.
- 294 The Panel is satisfied that, with the conditions proposed adverse effects in this category are appropriately avoided, remedied and mitigated.

Glint and / or glare effects from the Solar Farm

- 295 The potential for the Solar Farm to create glint and glare effects, particularly from the sun hitting some, or even many of, the proposed 290,000 solar panels and reflecting towards receivers, was raised in many submissions. This is a known issue that needs to be addressed in relation to PV installations, and is a sub-set of landscape and visual effects. In this regard, the planning provisions and assessments we have referred to and referenced in paragraph 242 above apply equally to this topic.

Application material

296 The Solar Farm AEE included a *Glint and Glare Assessment Report*²¹¹ (**GGAR**) which provided a glint and glare impact assessment of the Solar Farm. The GGAR noted the size of the proposed PV installation at the Solar Farm, with particular focus on the solar panels, as follows:

296.1 Approximately 280,000 (*sic*)²¹² panels attached to single-axis (bifacial tilting) trackers.

296.2 Approximate panel dimensions of 2.4m (length) x 1.3m (width).

296.3 The glass surfaced panels would be coated to maximise daylight absorption, minimising glare potential.

296.4 The mounting frames would be made of either galvanized aluminium or steel, with a rough matte rather polished finish.

296.5 Once mounted and fully tilted the solar panels would reach an overall height of no more than 3.2m (approximately)²¹³ above ground level.

296.6 To maximise solar exposure the panels would 'track' the sun, in an east to west plane.

297 While the assessment of glint and glare effects from solar farms is not a new exercise in New Zealand, the GGAR noted the absence of specific national guidelines in this country. The GGAR therefore utilised international publications, including for example guidelines issued by the US Federal Aviation Administration (**FAA**) (*'Technical Guidance for Evaluating Selected Solar Technologies on Airports'* (version 1.1 dated April 2018)), and a United Kingdom guidance document that aims to standardise glint and glare assessments (Pager Power Limited's *'Solar Photovoltaic and Building Development – Glint and Glare Guidance'* (Fourth Edition dated September 2022)).

298 It is important in the Panel's view to be specific about the nature and scale of the effects that could arise in this category. The GGAR noted that the FAA's Technical Guidance provided the following definitions for reflectivity, glint and glare:

298.1 Reflectivity: Light that is reflected off surfaces.

298.2 Glint: A momentary flash of bright light, reflected off a surface.

298.3 Glare: A continuous source of bright light, reflected off a surface.

²¹¹ *'Glint and Glare Landscape and Visual Impact Assessment'*, 6 November 2024, Glint and Glare Assessment Report, prepared for Lightsource Development Limited by Urbis Limited.

²¹² We note that the GGAR refers to approximately 280,000 panels, while the Solar Farm AEE, at 3.4.1, refers to approximately 290,000. We do not find this difference material, particularly where the modelling undertaken was based on areas of arrays (i.e. the maximum potential area proposed to contain solar panels based on the proposed layout) rather than a specific array / panel layout (page 11 GGAR).

²¹³ We note that the Solar Farm AEE refers to the height of the panels slightly differently (at page 31, emphasis added): "[a]t their steepest angle, the panels will sit approximately 500mm above ground or a minimum of 200mm above the modelled 1% AEP flood level (whichever is the higher) at the lower end, with a maximum height of approximately 3.3m, depending on the modelled flood level underneath, noting the panels will all be at the same relative level across the site, with the maximum height of 3.3m being at locations where ground level is lowest." Again, we do not consider this difference material.

- 299 The difference between glint and glare is therefore duration, with the GGAR noting that glint was more likely under a dynamic scenario, e.g. a momentary sun reflection off a passing vehicle's windscreen on a sunny day, while glare was more likely under a static scenario, e.g. standing by a lake and observing the sun's reflection off the water surface.
- 300 The GGAR included several technical assessment tools, used to define the level of effects that could be experienced. This included:
- 300.1 Glare modelling,²¹⁴ based on described input parameters, and subject to the assumptions and limitations specifically listed in the GGAR. We return to the modelling outputs shortly.
- 300.2 Glare hazard plotting, relevant particularly to assessments for air traffic control towers and pilots, which looked at the degree of potential ocular impacts calculated based on retinal irradiance and subtended angle of the glare source. The resulting graph provided three impact categories, with green equivalent to "*low potential to cause after-image (flash blindness)*", yellow equivalent to "*potential to cause temporary after-image*", and red equivalent to "*potential to cause retinal burn (permanent eye damage)*".
- 300.3 Impact ratings for dwellings, road users and pilots on approach, which defined glare impacts as high, moderate or low depending on the receiver type and the duration of glare (minutes per day and months per year).
- 301 The GGAR identified a total of 50 receptors to assess, including four for the runways at Springhill and Kaipara Flats aerodromes, and one each for Omaumau Road and the KCH. The remaining receptors were for dwellings, located from 440m to 2.07km distant from the nearest PV array at the Solar Farm. Following viewshed analysis, which confirmed whether the initially identified receptors had actual direct visibility towards the Solar Farm (for example, due to the potential for intervening topography), the following were assessed for glint and glare impacts:
- 301.1 Dwellings (22) with visibility to the solar arrays.
- 301.2 Two roads with visibility, being:
- (a) Route 1 – Omaumau Road - and ~750m length from east to west.
- (b) Route 2 – KCH – and ~3.2km length from north to south.
- 301.3 Despite significant distance, in the range of 14 to 18km or more, the four identified aerodrome receptors were still assessed.
- 302 Careful modelling was undertaken, as described in the GGAR, including the use of a number of scenarios across the solar panel's tilt range (the tracking range is -60° to +60°).
- 303 This was important because the single-axis tracking systems proposed for the Solar Farm are designed so that the tilting panels can track the sun, ensuring the surface is mostly perpendicular to the angle of the sun. Glare or glint impacts on surrounding

²¹⁴ Glare modelling utilised ForgeSolar's GlareGauge software, which was stated to be based on the Solar Glare Hazard Tool developed by Sandia National Laboratories in conjunction with the FAA.

areas are therefore unlikely during the day. Glare is more likely during the morning or evening, when the sun is low in the sky. The configured resting angle of the arrays is also important, and for solar farms generally is usually set to around 45° to 60° (the resting angle is defined as the angle of rotation of panels when the sun is outside of the tracking range and backtracking rotation has settled).

- 304 The GGAR recorded that a total of eight resting angle scenarios were modelled, covering the full range of configurations from 0° to +/-60°. This was in order to understand the impact of altering the resting angle on predicted glare. The GGAR reported that the modelling showed:
- 304.1 For scenarios with the resting angle configured at 0° to 6°, glare was predicted towards some receptors from some of the PV arrays. The amount of glare predicted decreased as the resting angle was increased:
- (a) A resting angle of 0° was the 'worst-case scenario', where five receptors were predicted to have a moderate or high glare impact which would require mitigation. 15 further receptors were identified as having a low glare impact (which would not require mitigation). Glare was predicted throughout the year between the periods 7:10am-8:00am and 4:40pm-8pm.²¹⁵
 - (b) At 5° to 6° there was a significant drop in the number of affected receptors, with up to four receptors having a low glare impact (requiring no mitigation). Under this scenario glare was predicted towards some receptors from early November through to mid-February between 6:45pm-7:45pm.
- 304.2 Scenarios ranging from a resting angle of 7° to 60° (inclusive) resulted in no predicted glare to any receptors from any of the PV arrays.
- 305 As a result the GGAR recommended that the resting angle for the solar panels be configured to between 7° and 60° (inclusive) to eliminate all potential glare towards assessed receptors.
- 306 This range was noted as falling within the typical resting angle range for solar farms of around 45 to 60°. As there was no glare predicted, with the solar panels configured within those resting angle ranges, additional glare mitigation measures were not considered to be required. The GGAR authors noted that they would expect that, for viewpoints located at greater distances from the Solar Farm Site, there would also be no glare expected.
- 307 The proposed conditions put forward by Glorit Solar were slightly more nuanced than the above recommendations, and included a condition that, between the hours of 7:10am-8am and 4.40pm-8pm (New Zealand Standard Time) or the hours of 8:10am-9am and 5:40pm-9pm (New Zealand Daylight Time) as applicable, the solar panels must not be orientated at an angle between 0° to 7°. This condition effectively avoids all of the predicted glare described in the scenarios under (a) and (b) in paragraph 304.1 above.

²¹⁵ The modelling input parameters show use of a timezone offset of +12 from UTC, to accommodate NZST (page 19 of the GGAR).

Submissions

- 308 Submissions raised concerns regarding the potential for glint and / or glare effects, noting the size of the Solar Farm (283ha) and number of panels (290,000) proposed, including by comparison to the effects that were already experienced from the sun hitting private residential solar panels (likely to be of a fixed nature).
- 309 Some submissions mis-read the application of the glare hazard plotting referenced in the GGAR, for example, and raised concerns about the level at which glare was considered adverse, for example, querying whether “*no impact*” meant “*no glare*”, or whether it was on a spectrum to “*low glare*”. Others were unclear as to whether the modelling undertaken had accounted for the sun’s position throughout the day and year. One submission noted that the submitter’s property had not been included as a receptor within the GGAR.
- 310 The Rodney Local Board, in comments included within the Auckland Council submission, raised concerns in relation to potential nuisance from glint and glare, and requested that consent conditions enable robust mitigation and monitoring, including responsive remedies to any community complaints.
- 311 The applicant’s (Glorit Solar’s) response to submissions:
- 311.1 Noted that a condition had been proposed which would avoid all potential for glare from the solar panels, by configuring the panels with a resting angle from 7° to 60° (inclusive) at all of the times during which the potential for glare had been modelled. Further clarity was provided by advice that “*no impact is defined in PagerPower (2022) to mean ‘a solar reflection is not geometrically possible or will not be visible from the assessed receptor’*”.²¹⁶
- 311.2 Corrected misunderstandings as to the application of various technical elements of the GGAR, including confirming that the modelling undertaken had included every position of the sun throughout the day and year.
- 311.3 Included an updated GGAR²¹⁷ with an additional assessment for the submitter property that had not previously been identified as a receptor. That assessment confirmed that the only potential glare effects occurred within the same parameters that Glorit Solar had already undertaken to avoid, through the proposed 0° to 7° condition.
- 311.4 Confirmed that conditions were proposed requiring the preparation of a Glint and Glare Management Plan to set out the management methods to be undertaken to avoid, remedy or mitigate any substantiated adverse glint and glare effects.

Further information request

- 312 The Panel requested further information from Glorit Solar via Minute 10. These requests, and the applicant’s response, were as follows:
- 312.1 The Panel noted advice in the applicants’ response to submissions that, with the proposed orientation limitations set out in the (then most recent draft) conditions “all potential glare from the panels can be avoided”, and “[u]nder all scenarios

²¹⁶ Applicant’s response to submissions, prepared by Beca Limited, dated 9 April 2025, page 23.

²¹⁷ *Glint and Glare Landscape and Visual Impact Assessment*, 17 March 2025, Glint and Glare Assessment Report, prepared for Lightsource Development Limited by Urbis Limited. This differed to the GGAR only in respect of the assessment of one additional receptor (being the submitter’s property).

where the Project is configured with a resting angle from 7° to 60° (inclusive) there is no glare predicted towards all identified receptors and therefore no mitigation measures [are] required". We sought clarity with regards to what "no glare predicted" meant in practice.

312.2 For example, we sought clarity as to whether this statement meant there was predicted to be nil glare (i.e. no continuous source of bright light reflected off the panel surfaces because a solar reflection is not geometrically possible or will not be visible), or that the effects were not within the scale shown in the glare hazard plotting (i.e. there is not even a low potential for after-image (flash blindness)).

312.3 The applicants' response advised that "*no glare predicted*" means that there is a nil glare predicted, due to solar reflections not being geometrically possible where the panels are configured with a resting angle from 7° to 60° (inclusive).²¹⁸

312.4 Because of the focus on glare, we asked for examples of solar farm specific activities that might be expected to create glint (i.e. not vehicles moving about the site, which would happen under permitted scenarios), noting that we understood that the solar panels may do so briefly while being manoeuvred on or off arrays.

312.5 The applicant's response noted a number of permitted activities on the Site which could potentially result in glint, including glint off vehicles moving along Omaumau Road and within the site, and glint off windows, doors, sheds, rooftops or glasshouses. Glint off these surfaces could be from construction / installation (e.g. manoeuvring a window for installation) or opening / closing of these elements. There is also ongoing potential for glare off glasshouse rooftops.

312.6 Potential solar farm specific activities which may result in glint were noted by the applicant as including the movement and handling of panels as they were being installed and tracking of panels during operation. With regards to potential glint from the installation of panels, the applicant noted that this would be a temporary activity associated with building and construction (a permitted activity under Rule E40.4.1 (A20) of the AUP:OP). The potential for glint from the operation of the panels was noted as having been assessed in the GGAR.

Panel findings (and reasons) on glint / glare effects

313 The potential for the solar panels to create glint and / or glare is a comfortably 'mathematical' problem – something reasonably uncommon in the resource management area where effects are usually being assessed around more qualitative, future facing and uncertain matters. The sun follows a strict path, and the solar panels will be fixed to arrays that can only move in set directions.

314 The Panel is satisfied that an appropriate assessment has been made, as outlined in the GGAR, and that the conditions of consent can address and, if necessary, control any actual or potential glint and glare effects. Conditions 102 and 104, which relate to solar panel orientation and the requirement for an anti-reflective coating, and the Glint and Glare Management Plan conditions (conditions 99 to 101) appropriately address effects in this category. The potential for glint to occur will remain, but is not an effect of such a scale that it warrants further steps for avoidance, remediation or mitigation.

²¹⁸ Applicant's response to request for further information in Minute 10, prepared by Beca Limited and dated 28 May 2025.

Glint could occur on the Solar Farm Site under permitted scenarios and could never be wholly prevented.

- 315 We do not consider there will be any risks raised in relation to the Springhill and Kaipara Flats aerodromes (for example, glint and / or glare affecting pilots on approach or departure from those aerodromes), given the distances involved. Pilots in transit are already used to significant glare from water bodies, buildings and other sources, and can accommodate these in the usual manner.

PART E: OTHER MATTERS RELEVANT TO DECISION

- 316 The Panel is directed by the NBEA to sections 149P(2) and 149P(4) of the RMA. These sections require that:

316.1 For the resource consent applications, we must apply sections 104 to 104D, 105 to 112 of the RMA as if we were a consent authority; and

316.2 For the NOR, we must have regard to the matters set out in section 171(1) of the RMA as if we were a territorial authority.

- 317 We address the key aspects of those sections in this decision report, noting that the Panel was greatly assisted by the applications and both of the AEEs, which very clearly and concisely set out how the Proposal fared against, or achieved, the various requirements. Central aspects of the referenced RMA provisions that the Panel has been concerned to ensure were appropriately addressed included:

317.1 For the resource consents, having regard to any actual and potential effects on the environment of allowing the activity (section 104(1)(a)), and considering the effects on the environment of allowing the NOR (section 171(1)). These are addressed in Part D of this decision report, above, in relation to effects forming the principal issues in contention, and for other effects, within this Part E.

317.2 Having regard to / particular regard to the relevant provisions within the hierarchy of planning documents identified in section 104(1)(b) for the resource consents and section 171(1)(a) for the NOR, noting that the latter contains a smaller list than the former. Parts D, E and F of this decision report address our findings in relation to the relevant planning provisions.

317.3 In terms of the Solar Farm consents, checking against the restrictions on our ability to grant consent to certain discharge permits (sections 105 and 107). The Panel concurs with section 9.4 of the Solar Farm AEE in relation to these matters.

317.4 Ensuring that we had adequate information to determine the applications (section 104(6)). The Panel is satisfied that we had more than adequate information to determine the applications. This is particularly the case in relation to the avifauna matters addressed at the avifauna hearing.

317.5 For the Substation's resource consents, the matters over which our discretion is restricted by virtue of section 104C and the restricted discretionary status of those applications. The Panel concurs with the analysis set out in sections 9.3.2 and 9.3.3 of the Substation AEE in relation to these matters.

317.6 Ensuring the application of appropriate conditions for the resource consents to avoid, remedy and mitigate actual and potential adverse effects (sections 108,

108AA and 108A), and likewise in respect of the NOR. We address conditions in Parts D, E and H of this decision report.

317.7 If it was likely that the NOR works would have a significant adverse effect on the environment, or Transpower did not have a sufficient interest in the land, whether adequate consideration had been given to alternative sites or methods (section 171(1)(b)(ii)). We concur with the conclusions reached in section 9.1.2 of the Substation AEE.

317.8 In respect of the NOR, whether the work and designation were reasonably necessary for achieving Transpower's objectives for which the designation was sought (section 171(1)(c)). We set out above, at paragraph 37 Transpower's stated objectives, and concur with the conclusions in section 9.1.3 of the Substation AEE that both the proposed works and the designation are reasonably necessary for achieving those objectives. It is appropriate and necessary for National Grid infrastructure to be both provided for, and protected (for example, by virtue of section 176(1)(b) RMA), by way of designation.

Other effects on the environment

- 318 The Solar Farm AEE and Substation AEE comprehensively addressed the actual and potential effects on the environment. They each included appendices containing detailed technical assessments and reports, to support the findings of the AEEs.²¹⁹ The AEEs addressed the following categories of effects on the environment:

<i>Solar Farm AEE</i>	<i>Substation AEE</i>
<i>Landscape and Visual Effects</i>	<i>Landscape and visual effects</i>
<i>Glint and Glare Effects</i>	<i>Groundwater effects</i>
<i>Ecological Effects</i>	<i>Hazardous substances</i>
<i>Cultural Values Effects</i>	<i>Noise and vibration effects</i>
<i>Stormwater Effects</i>	<i>Land disturbance effects</i>
<i>Natural Hazards</i>	<i>Archaeological effects</i>
<i>Erosion and Sedimentation Effects</i>	<i>Transport effects</i>
<i>Contaminated Land</i>	<i>Effects on productive capacity of soils</i>
<i>Hazardous Substances</i>	<i>Electric and magnetic fields and earth potential rise</i>
<i>Transport Effects</i>	<i>Cultural values</i>
<i>Noise and Vibration Effects</i>	
<i>Effects on Productive Capacity of Soils</i>	
<i>Archaeological Effects</i>	

²¹⁹ The Solar Farm AEE included appendices A through to U, while the Substation AEE included appendices A through to R.

319 Aside from the effects addressed already in terms of the principal issues in contention (Part D of this decision report), the Panel also spent some time on the following matters, which we address briefly (further below):

319.1 Positive effects of the Glorit Solar Scheme.

319.2 Ecological effects (separate to avifauna effects).

319.3 Noise effects, from operation of the Solar Farm and Substation.

319.4 Construction effects, particularly in relation to traffic and noise / vibration.

319.5 Addressing the risk from fire at the Solar Farm.

319.6 Flooding effects in relation to the Solar Farm Site.

319.7 Impacts on highly productive land / prime soils.

319.8 Decommissioning and rehabilitation of the Solar Farm Site.

320 In relation to all other effects on the environment, where not specifically addressed in this decision report, we concur with the findings of the Solar Farm AEE and / or the Substation AEE, as applicable.

Positive effects of the Glorit Solar Scheme

321 The Glorit Solar Scheme, at a peak output of 179MW²²⁰ and with a connection to the National Grid, will contribute to New Zealand's efforts to mitigate climate change and transition to a low-emissions economy, by generating a nationally and regionally significant volume of new, renewable, energy. The co-located battery energy storage system has the ability to store an additional 200MWh of renewable electricity. The new provision of renewable energy infrastructure assists to reduce reliance on greenhouse gas (GHG) emitting fossil fuels.

322 The National Policy Statement for Renewable Energy Generation 2011 (**NPS:REG**) is of course of direct relevance to the applications before us, as well as relevant related provisions within the NZCPS, and there are flow-on provisions of a similar ilk in the lower order planning documents.²²¹

323 The NPS:REG sets as its (sole) objective recognition of the national significance of renewable energy activities, by providing for the development of new renewable generation activities (and subsequently their operation, maintenance and upgrading), such that the proportion of New Zealand's electricity generated from renewable sources increases to a level that meets or exceeds the Government's renewable electricity generation national target.

²²⁰ Which provides the equivalent of the electricity needs for approximately 40,000 households.

²²¹ NZCPS Objective 6, Policy 6; NPSREG Objective; Policies A, B, C1 and C2; AUP:OP Regional Policy Statement provisions B3.2.1(1) to (4) and (8), B3.2.2(1), (3) and (8), B3.4.1(1) and (2), B3.4.2(1) to (3), B9.6(8); and AUP:OP Regional Plan / District Plan provisions E26.2.1(1), (3), (4), (8) and (9), E26.2.2(1) to (6), (9) and (12).

- 324 Policy A then requires that the Panel recognise and provide for the national significance and benefits of renewable electricity generation activities, including the national, regional and local benefits. These benefits are noted to include:
- 324.1 Maintaining or increasing generation capacity while avoiding, reducing or displacing GHG emissions.
 - 324.2 Maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and / or location of generation.
 - 324.3 Using renewable natural resources rather than finite resources and avoiding reliance on imported fuels for the purposes of generating electricity.
 - 324.4 The reversibility of the adverse effects on the environment of some renewable electricity generation technologies.
- 325 Policies B and C require that particular regard be had to a number of matters, including as relevant to this Proposal:
- 325.1 That meeting or exceeding the national target will require the significant development of renewable electricity activities;
 - 325.2 The logistical or technical practicalities associated with developing renewable electricity generation; and
 - 325.3 The location of existing structures and infrastructure (such as roads, the distribution network and the National Grid), and the need to connect to the National Grid.
- 326 The National Policy Statement on Electricity Transmission 2008 (**NPS:ET**) has one objective, being to recognise the national significance of the electricity transmission network by facilitating the establishment of new transmission resources to meet the needs of present and future generations, while (relevantly) managing the network's adverse environmental effects.
- 327 The Proposal provides a number of benefits at a national, regional and local scale, including:
- 327.1 By providing generation capacity from solar sources, it contributes to diversification of energy sources, reducing reliance on other sources. This can assist with New Zealand's 'dry year' problem, when there are insufficient inputs to our hydro-generating lakes resulting in reliance on fossil fuels as a back-up source.
 - 327.2 By supporting energy resilience and security.
 - 327.3 Importantly, the Glorit Solar Scheme increases the generation (and some storage) of electricity in close proximity to Auckland, which is a (if not, the) key demand centre.
 - 327.4 This proximity benefit improves security of supply, supports the National Grid's resilience to shocks, and minimises losses in transmission. Transmission losses occur when electricity is transferred from more remote generation sources (for example, most power is generated in the South Island, but consumed in the North Island). New generation, particularly new renewable energy generation

infrastructure at-scale, right on Auckland's doorstep, has been a rare beast indeed.

328 We note that the Panel has not needed to place much, if any, weight on assessment of the MW / GW of new generation that would be required to meet the Government's renewable energy targets, and what this Proposal may be able to contribute to any 'gap'. It is, we think, well known that the current 'pipeline' is not going to be sufficient to bridge the gap, and that the pipeline is both (i) not guaranteed to all obtain consent, and, (ii) if consented, not then guaranteed to be built.²²² The Panel has not, for example, needed to look to positive effects to 'off-set' or counter-balance any adverse effects on the environment. Our findings are that the Solar Farm meets the statutory requirements on its own (effects) merits and there is no need for us to assess (what would otherwise potentially be) competing planning direction in that manner.

329 The Proposal includes other positive effects, such as:

329.1 Extensive planting and pest control across the wider Solar Farm Site, and wetland and stream works, improving some aspects of the ecology of that Site.

329.2 Habitat suitable for Fernbird at the southern stopbank will be increased from approximately 500m² to 4,200m² through replanting of native vegetation.

329.3 Creation of the 6m wide vegetated corridor between the two SEAs.

329.4 Cessation of dairy and beef dry stock farming at the Solar Farm Site (and to a much lesser extent on the Substation Site) which is anticipated to reduce dissolved nutrient leaching rates and reduce erosion potential (that would lead to sediment transport) from stock grazing damage. In combination with the riparian plantings, and fencing of priority wetlands and streams, this could be expected to improve aquatic habitat values and water quality (including in the Kaipara Harbour) over time.

330 There are locational constraints, and logistical or technical practicalities, to the development of new renewable energy infrastructure. Utility scale solar farms require large, reasonably flat, sites with high irradiance levels, in close proximity to the National Grid.²²³ Further, there must clearly be a landowner willing to provide access to that site. We accept that there is a finite number of such sites across the country, even more restricted within the Auckland region (being a narrow isthmus, with large areas inevitably within the coastal environment, and competing land use needs), and which are not otherwise subject to formal scheduled protection for natural resource or heritage reasons.

331 Lastly, we recognise the 'reversibility' of many of the Solar Farm's adverse effects, in the sense that the Solar Farm can be dismantled and removed upon cessation of operation,²²⁴ returning the land to availability for productive uses and removing or reversing many of the impacts the Solar Farm may have had on ecological, landscape or visual matters. Proactive management of the Solar Farm's decommissioning and

²²² See for example rebuttal evidence of Brendan Clarke dated 11 August 2025, at 3.4 to 3.8.

²²³ See for example evidence in chief of Brendan Clarke dated 28 July 2025, at 7.1.

²²⁴ See Appendix A to memorandum for the applicants containing response to request for information, dated 19 March 2025, page 4.

rehabilitation is required, including the preparation and implementation of draft and final Decommissioning and Rehabilitation Plans (condition 107)

Ecological effects (non-avifauna)

- 332 Ecological effects from the Proposal (separate to the avifauna effects which we have addressed elsewhere in this decision report) and the appropriate avoidance, remediation, mitigation in relation to these were identified by the applicants and raised in submissions.
- 333 On these matters we agree with the applicants conclusions (if not for all the specific reasons they have identified) as set out in the Ecological Impact Assessments (Glorit Solar Farm 13 November 2024, and Glorit Substation 5 November 2024, both prepared by Beca Limited). Key conditions to ensure delivery of the anticipated outcomes include the required preparation and implementation of various management plans, and compliance (in general accordance) with the material submitted to the Panel. These include, for the Solar Farm in particular, conditions 45 and 46 relating to the Biodiversity Management Plan and conditions 55 and 56 relating to the Avifauna Management Plan.

Operational noise effects

- 334 Submitters expressed concern regarding the potential for noise effects from the operation of both the Solar Farm and Substation, particularly at night when the submitter's experience was of rural aural amenity (i.e. reasonably quiet).
- 335 Operational noise at the Solar Farm may be generated by the inverters (in pairs as a PCU with DC to DC converters and a medium voltage transformer), BESS cooling systems, the tracker motors on the solar arrays, or PCU / switchgear building transformers. Noise sources at the Substation include the transformers, switchgear and auxiliary heat pumps or air conditioning.
- 336 We are satisfied, on the basis of the technical material provided with the AEEs,²²⁵ that actual and potential noise effects are appropriately managed, in particular (but not solely) because the activities readily comply with and are able to meet the relevant AUP:OP permitted noise standards.
- 337 Conditions 96 and 97 for the Solar Farm, Transpower's Substation designation condition 23, and Glorit Solar's condition 9 for its Substation district consent, all comply with the recommendations of the technical experts and are appropriate to control actual and potential operational noise effects.

Construction effects

- 338 Submitters also raised concerns with regards to effects arising from construction activities, particularly in relation to construction traffic and with regards to noise and vibration. This was for the establishment of both the Solar Farm and (to a lesser degree) the Substation.
- 339 Having reviewed the AEEs and accompanying technical advice we are satisfied that construction of the Glorit Solar Scheme can be appropriately managed to avoid,

²²⁵ See 'Glorit Solar Farm Assessment of Noise and Vibration Effects' prepared by Marshall Day Acoustics and dated 16 August 2024 and 'Glorit Substation Assessment of Noise and Vibration Effects' also prepared by Marshall Day Acoustics and dated 5 September 2024.

remedy and mitigate the inevitable, but temporary, adverse effects that arise during construction.

- 340 The Scheme does not require any particularly unusual, or novel, construction techniques. Earthworks are required, at both Sites, but not to an unreasonable degree. Further, while the Solar Farm Site is large, the arrays themselves (which form the majority of the infrastructure to be established) require a surprisingly 'light' earthworks touch. The solar panel mounting frames are pile driven into the ground using H-piles, with no concrete foundations required.
- 341 Delivery of the panels to the Site will require a number of truck movements, and construction generally will increase truck movements, however both the Solar Farm Site and Substation Site are accessed off a State Highway which can be expected to be able to cope with construction traffic. Unexpected closures of the State Highway, for example due to natural disaster damage or traffic incidents, can be managed in the usual way.
- 342 In terms of noise and vibration:
- 342.1 Construction activity for the Solar Farm will readily comply with the AUP:OP construction noise and vibration rules. Construction traffic would likely result in only an imperceptible increase in noise for most dwellings near SH16.²²⁶
- 342.2 Noise from construction activities at the Substation will also readily comply with the relevant daytime noise limits (with a significant margin). Construction noise will be reasonable and there was not considered to be any risk that cumulative noise from the construction of the Solar Farm and Substation would breach the AUP: OP construction noise rules. Construction vibration was expected to be negligible at the setback distances to the nearest receivers.²²⁷
- 343 Conditions are included to address construction effects, including reasonably standard controls on earthworks (such as the requirement to prepare Erosion and Sediment Control Plans, and hold pre-start meetings, etc), conditions relating to possible damage to public roads and bridges, and conditions that ensure appropriate sight distances are provided and available at the entrance to each of the construction sites. In relation to noise, vibration and traffic more specifically the conditions include:
- 343.1 For the Solar Farm, requirements to prepare and comply with a Construction Management Plan and a Construction Traffic Management Plan (conditions 28 to 32), and construction noise and vibration conditions (conditions 35 and 36).
- 343.2 For the Substation, designation conditions address the requirement to prepare a Construction Management Plan (conditions 3, 11 and 12), a Construction Traffic Management Plan (conditions 14 to 16), a construction noise condition (condition 20) and Site-Specific Construction Noise Management Schedules if required (conditions 21 and 22).

²²⁶ See above *Solar Farm Assessment* at page 3.

²²⁷ See above *Substation Assessment* at page 13.

Fire risk (Solar Farm Site)

- 344 The risks arising from a fire at the Solar Farm Site were initially of some concern to the Panel but were able to be appropriately resolved.
- 345 While close to Auckland the Site is still somewhat remote from the larger-scaled Fire and Emergency New Zealand (**FENZ**) resources. We were concerned about how a fire would initially be responded to, particularly if it involved batteries of the type, size, and number, proposed to be present at the Site. The energy storage system comprises containerised lithium-ion batteries which include a thermal management system and supporting electrical and fire protection (suppression) equipment. They also include an internal containment device and do not for example allow the entry of rainwater.
- 346 While fire protection equipment will be in place at the Solar Farm, fires involving batteries need to be dealt with in a particular way and can be dangerous.
- 347 Volunteer firefighters, and / or members of the public, might be the first to attend, particularly at night when Solar Farm employees would not be in attendance. We were also unsure what resources FENZ had available to it to be able to liaise with Glorit Solar, to ensure that appropriate training and information was provided and shared. Consultation had been undertaken with FENZ prior to lodgement, but further inputs were proposed to be sought in relation to future preparation of the Site's Emergency Response Plan (**ERP**) and Battery Storage Safety Management Plan (**BSSMP**).
- 348 We issued a request for further information to address our concerns, which the applicants satisfactorily responded to.
- 349 Conditions of consent are included to appropriately address the risk of fire, including those relating to the preparation and implementation of the ERP (conditions 90 to 92) and the BSSMP (conditions 93 to 95).

Flooding effects (Solar Farm Site)

- 350 The presence of the stopbank and numerous farming culverts across the Solar Farm Site made it reasonably obvious to the Panel that the Site can suffer from flooding. This was also a matter raised in submissions.
- 351 While the application comprehensively addressed flooding effects, and the way in which these would be managed, we were also provided with updated modelling following the receipt of submissions by way of a letter from Beca dated 9 April 2025 (**updated modelling letter**).²²⁸ The updated modelling letter looked at a 3.8° climate change scenario increase in rainfall for both the pre-development and post development situation, further to the 2.1° scenario used in the original modelling, and responded to an Auckland Council comment request for that to be done.
- 352 The updated modelling letter showed minimal change from what had been included in the application material. We are satisfied with the applicants' proposals in relation to flooding, and how potential effects arising from the Site's flood profile will be managed. Significant capital expenditure will be incurred on Solar Farm infrastructure which has obliged careful consideration of flooding risks.
- 353 The potential for the works proposed on the Solar Farm Site to alter the flooding conditions experienced by neighbours to the northeast of the Site was identified in the

²²⁸ Beca letter '*Flooding response to submissions*' from Justin Kirkman, Technical Director – Civil Engineering, dated 9 April 2025.

application material (which included a Stormwater Management and Hazard Risk Assessment), and a submission was lodged by the affected neighbour. This matter was also addressed in the updated modelling letter.

354 The author of the updated modelling letter made the following observations:

354.1 An average increase in flood level between pre and post changed from a 25mm increase (under 2.1°) to a 16mm increase (under 3.8°); i.e a relative change reduction of 9mm within the Site.

354.2 The private land parcel to the northeast shows an increase in flood level increase from +61mm (under 2.1°) to +68mm (under 3.8°) in the 1% AEP flood event (i.e a relative change increase of 7mm).

354.3 Only a minor change in flood level increase was noted in the south of the Site where the flood level increase changed from +24mm to +26mm.

355 The change in the relative flood level increase was considered to be reasonable and expected from the increased precipitation represented by the 2.1° to 3.8° rainfall events, given that the Site “*acts as a bathtub during high tide conditions (when the non-return gates are closed) or if the pipes are blocked*”. The model was stated to be based on a 1% AEP rainfall event lasting for a full 24 hours with a perpetual high tide / fully blocked outlet. That clearly represents a worst-case scenario. If the pipes were functioning in the model, the author considered that the Site would likely flood to a lower magnitude and for a shorter duration.

356 The updated modelling letter recorded that the land outside of the Site (being the neighbour to the northeast) would still continue to experience a small increase in the peak flood level as predicted in the original Stormwater Management and Hazard Risk Assessment. This was predicted to occur on land used for livestock grazing, and the increase of 61mm / 68mm, during the peak of the 1% AEP rainfall event, was considered to have a negligible effect on the continued use of the land for livestock grazing. Additionally, no increase in flood *extent* was identified from the revised modelling. The author of the updated flood modelling letter considered that the increased peak flood level on the adjacent land was still “negligible” with the 3.8° climate change state.

357 In Minute 10 we requested further information from Drinnan & Eagle Holdings Limited (the neighbour to the northeast), which was responded to on 22 May 2025. That response raised concerns about the impact of flooding effects on grazing and cropping activities.

358 Having considered the concerns expressed by the neighbour, and the level of effect described in the application material and the updated modelling letter, we do not consider there to be any RMA matter requiring further avoidance, remediation or mitigation. The flooding effects are, in an RMA sense, not sufficiently adverse to warrant a response by way of amended conditions, etc. However, the Panel does expressly record that we have considered this matter solely from an RMA perspective, and that we do not have the power to authorise impacts on neighbouring land should those breach property or common law rights and obligations.

Highly Productive Land

- 359 The Panel was somewhat surprised to find ourselves needing to look at the National Policy Statement for Highly Productive Land (**NPS:HPL**) provisions in relation to the Solar Farm Site, which is largely comprised of reclaimed land. The Substation Site was more obviously a candidate for assessment under this NPS.
- 360 In relation to the Solar Farm, we record a degree of uncertainty as to whether the NPS:HPL applied to the bulk of the Site, with the Solar Farm Site land being zoned mainly Rural – Rural Coastal Zone, rather than general rural or rural production (per the HPL definition under clause 3.5(7)). The transmission line does however partly run on land zoned Rural – Rural Production Zone.
- 361 We have reviewed the material available to us, in the Solar Farm AEE and Substation AEE (which both included detailed mapping of the Land Use Capability Class for the respective Sites), and the Auckland Council submission, and agree with the conclusions contained therein, including:
- 361.1 That the exemptions provided under clause 3.9(2) of the NPS:HPL are available, to allow for the use or development of highly productive land for requiring authority activities (such as Transpower's designation for the Substation), and for specified infrastructure (such as the Solar Farm and the Substation) where there is a functional or operational need for that specified infrastructure to be on the highly productive land.
- 361.2 We agree that the functional or operational need requirements are met, in the case of both the Substation (which must be where it is to connect the Solar Farm to the National Grid) and the Solar Farm (which is located where it is because of the need for available flat land, high solar irradiance and proximity to the National Grid).
- 361.3 In relation to the Substation, that it is consistent with the objective and policy direction of the NPS-HPL as the loss of highly productive land has been minimised and the proposed use and development of the Site is not inappropriate.²²⁹ The Substation AEE fairly records that some loss of highly productive land is unavoidable due to the nature of the activity, noting that the scale of the loss is minimal. The LUC 3 land within the fenced area of the Substation Site comprises just 0.0044% of the total LUC 3 land mapped by NZLRI in the Auckland Region.
- 361.4 The need, in both the case of the requiring authority activity and for specified infrastructure, to take measures to ensure that the use or development meets the obligations within clause 3.9(3). We are satisfied that those are met.
- 361.5 In the event the NPS:HPL does apply to the bulk of the Solar Farm Site, and in relation to the transmission line land that is zoned Rural – Rural Production Zone, we agree with the assessment in the Solar Farm AEE.²³⁰
- 361.6 This includes recognition that, based on detailed site mapping that has been undertaken, only around 15% of the Solar Farm Site contains Class 2 and Class 3 soils (limited to the southern portion of the Site), which, where located in a general rural or rural production zone are classified as "highly productive" under

²²⁹ Substation AEE, sections 6.9 and 9.4.3.

²³⁰ Solar Farm AEE, sections 2.9 and 6.14.

the NPS:HPL. Across the Site, in total, the works will include development of approximately 1.5ha of new impervious area, which is 0.5% of the total fenced Solar Farm (283ha). This comprises only approximately 845m² of impervious area on mapped highly productive land, or 0.003% of the highly productive land mapped on the Site.

361.7 The relevant fact that the Solar Farm Site can continue to be grazed (albeit by lighter stock, and without some of the usual pastoral care practices, such as drilling and fertiliser application, given the sensitivity of the solar panels), and once no longer operational is to be returned to its former state, in accordance with the conditions relating to decommissioning and rehabilitation. Further, proposed works to protect the land from rising sea levels, including upgrading of the stopbank, may retain the primary production values of the land and enable its continued use for primary production purposes for longer than might otherwise have been possible absent those upgrades.

Solar Farm decommissioning and rehabilitation

362 The Solar Farm, while providing significant positive effects, unavoidably also imposes actual and potential adverse effects on the surrounding land and environment. We have described the extent of those in this decision report.

363 Once no longer operational the Panel considers it to be very important that the Solar Farm is properly decommissioned, and the Solar Farm infrastructure removed. This is necessary in order to remove the adverse landscape, visual and amenity effects; address any remaining ecological effects; and to enable the land to return to primary production purposes.

364 For this reason we have included much more detailed conditions regarding decommissioning and rehabilitation. This includes, in condition 107, the need to prepare a Draft Decommissioning and Rehabilitation Plan (**DRP**) 10 years after the Solar Farm commences operations. A Final DRP will need to be prepared and provided to the Council for certification at least one year prior to cessation of those activities (for example, the permanent cessation of providing power to the National Grid). Updating the Draft DRP to a Final version will be important, as technology and 'best practice' relating to solar farms and their decommissioning, will likely have experienced change with the passage of time.

365 The DRP (both the Draft and the Final) is required to address matters such as the duration, nature and estimated cost of decommissioning works; the measures needed in the absence of management plans that will no longer be in force; and the capacity of the consent holder to fund and manage those works, including whether there is a need to provide a bond. The review condition then links in with the DRP, through condition 118(f).

Mana Whenua

366 Section 6(e) of the RMA directs the Panel to recognise and provide for, as a matter of national importance, the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu (sacred sites), and other taonga (highly prized objects or resources). While the Solar Farm AEE and Substation AEE provided us with a reasonably detailed assessment of matters considered by the applicants to be relevant to mana whenua,²³¹ to make sure that we were appraised of as much

²³¹ Including (without limitation) for example the Substation AEE at sections 2.11, 6.11, 8.2 and Appendix Q; and the Solar Farm AEE at sections 2.5, 6.6, 8.2 and Appendix T.

information relevant to section 6(e) as possible, the Panel also ensured that all relevant entities were invited to provide formal submissions through the clause 26 of Schedule 10 NBEA process.

367 This provided us with reassurance that all mana whenua within Tamaki Makaurau had been provided opportunity for engagement, and included:

367.1 Four entities that the Minister had directed must be invited to make submissions on this Project,²³² being:

- (a) Ngātiwai Trust Board
- (b) Ngāti Whātua Ōrākei Trust
- (c) Hauraki Māori Trust Board
- (d) Puatahi Marae

367.2 The following Iwi authorities and Treaty Settlement entities:

- (a) Ngā Maunga Whakahii o Kaipara
- (b) Te Rūnanga o Ngāti Whātua
- (c) Ngāti Manuhiri
- (d) Te Kawerau ā Maki
- (e) Ngāti Maru - Hauraki
- (f) Te Uri o Hau
- (g) Te Ara Rangatū o Te Iwi o Ngāti Te Ata Waiohū
- (h) Te Kawerau ā Maki Iwi Settlement Trust
- (i) Ngā Maunga Whakahii o Kaipara Development Trust
- (j) Ngāti Maru Rūnanga Trust
- (k) Ngāti Manuhiri Settlement Trust
- (l) Ngāti Te Ata Claims Support Whānau Trust
- (m) Te Uri o Hau Settlement Trust
- (n) Ngāti Whātua o Kaipara Claims Settlement Act 2013
- (o) Ngāti Manuhiri Claims Settlement Act 2012

²³² Minister for the Environment's decision accepting the referral application for the Project, dated 25 August 2024.

- (p) Te Kawerau ā Maki Claims Settlement Act 2015
- (q) Ngāti Maru (Hauraki) Deed of Settlement 2017
- (r) Te Uri o Hau Claims Settlement Act 2002

367.3 Relevant customary marine title and protected customary rights groups, being:

- (a) Te Rūnanga o Ngāti Whātua
- (b) Ngā Puhi Nui Tonu (Te Kotahita Ngā Marae)
- (c) Ngā Puhi Nui Tonu (Taiao Marae)
- (d) Ngā Puhi Nui Tonu (Matawhaorua Marae)
- (e) Ngāti Awa
- (f) Ngāti Rāhiri
- (g) Ngāti Whatua o Kaipara
- (h) Ngāti Kawau
- (i) Te Waiaiki Korora
- (j) Ngā Hapū o Ngāi Tahu
- (k) Te Kaunihera o Te Tai Tokerau
- (l) Te Parawhau Hapū
- (m) Te Taou (Kaipara Harbour)
- (n) Ngāitawake

368 No submissions were received from any of the above entities. The Panel did receive information from the Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Development Trust, including through the applicants, at various points in the process, as we have noted in more detail below.

369 The Panel does not take this absence of submissions to mean that there was any lack of interest in the Proposal from the above entities. Firstly, we explicitly recognise that they must be facing a significant number of requests for consultation and engagement, and to make submissions and comments on numerous fast-tracked projects across their respective rohe (territory). This is on top of the existing capacity challenges, for many Iwi entities, to respond to traditional RMA and planning processes. Secondly, the Panel also acknowledges the absence of submission is likely an unspoken reaffirmation by other Iwi of what is stated upfront in the CVA - that the Solar Farm and Substation are in the rohe of Ngāti Whatua.

370 Importantly, as we discuss further below, we received a detailed and carefully considered Cultural Values Assessment from the Puatahi Marae Trust, which recorded that Puatahi Marae and Ngā Maunga Whakahii o Kaipara Development Trust were the

key partners to progress a cultural values assessment for the Solar Farm and Substation.

- 371 We note the applicability of the Te Uri o Hau Iwi Management Plan, *Te Uri o Hau Katiakitanga o te Taiao* (prepared by the Te Uri o Hau Settlement Trust Environs Holdings Trust, dated 2011), and as there is not a publicly available Iwi Management Plan, the Ngāti Whātua ō Kaipara Annual Plan 2023. Absent submissions suggesting that the Panel ought to take a contrary view, we concur with the conclusions reached in respect of these documents in the Substation AEE and Solar Farm AEE.²³³

Cultural Values Assessment

- 372 The Panel was grateful to receive both a letter from the Puatahi Marae Trust dated 14 April 2025 in response to the Panel's Minute 5, and the detailed CVA (the *Cultural Values Assessment for the Ōmaumau Solar Farm Resource Consent Application and Glorit Substation Notice of Requirement and Consent Application* from the Puatahi Marae Trust and dated 22 May 2025).

- 373 The CVA recorded that Puatahi Marae and Ngā Maunga Whakahii o Kaipara Development Trust were the key partners to progress a cultural impact assessment for the Solar Farm and Substation, and did so noting the key purposes of the CVA as being to:

373.1 Identify and articulate cultural values and relationships;

373.2 Assess potential effects on cultural values;

373.3 Support decision-making under the RMA;

373.4 Strengthen the role of iwi / hapū as kaitiaki;

373.5 Recommend appropriate mitigation or design responses; and

373.6 Guide cultural outcomes, partnerships, and enduring relationships.

- 374 Section 4 of the CVA set out identified cultural values, the effects on these values and mitigation, including pathways, outcomes and recommendations in section 5. Cultural values and significance were addressed under the following headings:

374.1 Ngā Tikanga - Guidance

374.2 Whenua - Land and Ancestral Connection

374.3 Hau - Spiritual and Physical Wellbeing

374.4 Taiao - Natural Environment and Biodiversity

374.5 Wai Māori - Freshwater Systems

374.6 Wai Tai - Coastal and Estuarine Values

²³³ In the Substation AEE see sections 2.11, 6.11 and 9.5.1; in the Solar Farm AEE see sections 2.5.2 – 2.5.4, 6.6 and 9.3.1 – 9.3.2.

374.7 Wāhi Tapu - Sacred Sites

374.8 Wāhi Taonga - Sites of Cultural Use and Significance

- 375 Importantly, the CVA recorded that the information contained within it was to remain confidential, and the contents were not to be disclosed to third parties without express permission. Permission was sought, and granted, for the CVA to be made available on the EPA website.
- 376 The Panel is of the opinion, given the recommendations of the CVA which we refer to below, that it is appropriate to note the topics addressed (as we have, above), and to record that the CVA gave us a good deal of detail and thoughtful consideration of the values, effects on those values, and how the effects could best be addressed. Recommendations within the CVA covered both methods through this NBEA (RMA) setting, but also outside of that context, for example through further work, agreements and partnering with the applicants.
- 377 Relevant to the task before us, the CVA concluded with detailed draft proposed conditions and advice notes. These included conditions that would see the establishment of a Kaitiaki Advisory Group (**KAG**); preparation of a Puatahi Whakatutuki Plan (**PWP**); preparation of an Archaeological Management Plan and Accidental Discovery Protocol; and other amendments to conditions to provide for Kaitiaki Monitors, ensure appropriate cultural input to various management plans, provision for cultural health indicators, cultural site inductions and training, blessings prior to earthworks and ongoing tikanga-led cultural monitoring during construction.
- 378 Glorit Solar and Transpower accepted and adopted these conditions, with some minor amendments made for consistency and clarity, and included them in a set of conditions supplied to the Panel and parties dated 28 May 2025. To achieve the objectives of the CVA, a structure and plan were agreed between the applicants and Puatahi Marae.
- 379 The KAG will be established by the applicants with Puatahi Marae Trust for the cultural, environmental, and operational objectives set out in the CVA. The objectives of the KAG is set out in the conditions, with the main responsibility being the implementation and monitoring of the Relationship Agreement between the applicants and Puatahi Marae Trust and Nga Maunga Whakahii o Kaipara Development Trust. The consent holders and requiring authority are required to resource the operationalisation of the KAG. The conditions also confirm that the KAG will develop a Kaitiaki Monitoring Framework.
- 380 The PWP is the primary mechanism to integrate cultural values into project governance, environmental management, kaitiaki monitoring, and adaptive decision-making for the Solar Farm and Substation. Key functions of the PWP include:
- 380.1 Embedding of tikanga practices and cultural oversight across project operations;
 - 380.2 Kaitiaki-led environmental and cultural monitoring, with direct reporting obligations;
 - 380.3 Monitoring of Taiao (the natural world or the environment) and wai (waters) health through mātauranga Māori (Māori knowledge) indicators and scientific methods; and
 - 380.4 Identification of impacts and triggering of adaptive management responses.

- 381 In Minute 19 the Panel asked the applicants to advise us whether the conditions that flowed from the CVA, which had been amended somewhat from their form as expressed in the CVA (by both the applicants and the Panel), were acceptable to the Puatahi Marae Trust. We were unable to make a request directly to the Trust because they were not formally a party to the proceedings. The applicants' memorandum of 18 August 2025 confirmed the acceptability of the conditions that had been circulated for comments, and some further amendments which the Panel largely accepted. The resulting conditions now sit (predominantly) as conditions 15 through 18 of Glorit Solar's Solar Farm resource consent, and conditions 7 to 10 of Transpower's Substation designation.
- 382 The Panel is satisfied that these conditions appropriately address the matters raised in the CVA, as relevant to our decision-making on the consents and NOR sought.

PART F: STATUTORY AND OTHER DOCUMENTS

- 383 The key statutory documents relevant to the Panel's decision-making are:

383.1 New Zealand Coastal Policy Statement 2010

383.2 National Policy Statements:²³⁴

- (a) for Renewable Electricity Generation 2011
- (b) on Electricity Transmission 2008
- (c) for Freshwater Management 2020
- (d) for Highly Productive Land 2022

383.3 National Environmental Standards:

- (a) for Assessing and Managing Contaminants in Soil to Protect Human Health (2011)
- (b) for Freshwater (2020)

383.4 AUP:OP, comprising the:

- (a) Regional Policy Statement
- (b) Objectives and Policies (Regional Plan and District Plan)
- (c) And the relevant rules, assessment criteria, matters for discretion and other provisions applicable to the zones and overlays applied to the sites and the activities proposed.

²³⁴ The National Policy Statement for Indigenous Biodiversity (2023) is not relevant to the Proposal. Section 1.3(3) of the Statement explicitly provides that "[n]othing in this National Policy Statement applies to the development, operation, maintenance or upgrade of renewable electricity generation assets and activities and electricity transmission network assets and activities".

- 384 A number of other documents are of course also relevant, including for example Te Uri o Hau's Iwi Management Plan '*Te Uri o Hau Katiakitanga o te Taiao*' and the Ngāti Whātua ō Kaipara Annual Plan 2023.
- 385 The Panel was provided with detailed reference to, and assessment of, the relevant planning provisions and other documents, including the analysis set out in the applicants' AEEs, the submissions received (particularly the Auckland Council submission) and responses to those submissions, and in the various memoranda of counsel.
- 386 The Panel has made a particularly careful assessment of the provisions relevant to our assessment of effects for the principal issues in contention (being those matters discussed in Part D of this decision report).
- 387 We have had regard to all of the material available to us, and undertaken our own assessment of the relevant provisions and documents. Helpfully, the Panel generally concurs with the conclusions reached in the following assessments:
- 387.1 Section 9 of the Solar Farm AEE including Appendix U (policy direction assessment) and Appendix I (rules assessment). The assessment undertaken grouped the provisions under the following themes
- (a) enabling infrastructure, including renewable energy
 - (b) freshwater and water quality, including in the coastal environment
 - (c) indigenous biodiversity and ecological values, including in the coastal environment
 - (d) land use in rural zones, including highly productive land
 - (e) landscape, including natural character of the coastal environment, rural character, and visual amenity
 - (f) mana whenua and cultural values, including Te Tiriti o Waitangi
 - (g) historic heritage including archaeology
 - (h) natural hazards
 - (i) hazardous substances and industrial and trade activities
 - (j) land disturbance
 - (k) contaminated land
 - (l) amenity, including rural amenity, traffic, lighting, noise and vibration; and
- 387.2 Section 9 of the Substation AEE.
- 388 While the Panel did disagree in some instances with particular assessment reasons or interpretation, we agree with the overall conclusions. We have addressed in Part D of this decision report the main instances where we have disagreed with the reasons contained in the applicants' assessments relating to the principal issues in contention.

PART G: RMA 1991, PART 2

- 389 The Supreme Court's decision in *King Salmon*, and the Court of Appeal decision *R J Davidson* provide well-established caselaw that, where there is an absence of ambiguity in the planning documents, there is generally no need to refer back to Part 2 of the RMA. There are well-understood caveats to this general rule,²³⁵ none of which apply in the context of these proceedings. Further, gone are the days of the 'overall broad judgment' approach where Part 2 might be used to resolve otherwise uncomfortable, undesirable or conflicting provisions in the lower-order documents.
- 390 If the Panel did need to refer 'back up the chain' to Part 2, and we do not consider that necessary, we would simply record that we have, while exercising functions and powers relevant to the RMA and as described throughout this decision report, appropriately:
- 390.1 Recognised and provided for the section 6 matters of national importance that are relevant in the context of the Glorit Solar Scheme;
- 390.2 Had particular regard to the various section 7 matters that are relevant; and
- 390.3 Taken into account, under section 8, the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).²³⁶
- 391 On that basis, to the extent that Part 2 of the RMA might be in play, the Proposal will, in the Panel's view and findings, achieve the sustainable management purpose of the RMA, such that a grant of the resource consents applied for, and confirmation of the NOR sought, is appropriate.

PART H: CONDITIONS

- 392 The Panel has outlined earlier in Part B of this decision report the two-step procedure by which draft conditions were circulated for comments from the parties.

Avifauna-related conditions

- 393 During the avifauna hearing we received very detailed evidence and submissions on the conditions put forward by the applicant to address avifauna-related matters.²³⁷

Collision risk conditions

- 394 The applicant had in particular offered a suite of conditions to address the risk of collisions. These included offered conditions relating to the avifauna monitoring and research protocols (conditions 78 and 80), the contingency requirements for TAR avifauna species (conditions 81 and 82), and the conditions relating to the Avifauna Collision Contingency Plan (conditions 83 and 84). These conditions provide, in the Panel's view, a 'super-precautionary' approach, and therefore needed to have been offered for us to have included them.

²³⁵ See *Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited*, above at [85] – [88].

²³⁶ In this sense the Panel concurs with the findings of the Solar Farm AEE at section 9.5 and the Substation AEE at section 9.6.

²³⁷ The conditions put forward were included in Appendix C (updated, version 10. 19 August 2024 [sic]) to the applicant's opening legal submissions dated 18 August 2025.

- 395 One of the most significant criticisms of the applicant's conditions, during the avifauna hearing evidence, cross examination and submissions, had been that the mitigation measures put forward to address collision risk were unproven or experimental.
- 396 The Panel finds that they were unavoidably and inevitably so.
- 397 When the effect the conditions were looking to address was a possible potential effect, with unknown or hypothetical causation only, it was (and remains for this Panel) impossible to craft a condition that responds in any *proven* way.
- 398 The applicant could only ever offer possible responses,²³⁸ and provide a process that enables discovery of possible future collision issues. It is only post that possible discovery, and assessment of the circumstances that might then be identified, that a considered response could be provided regarding what ought to be done next.²³⁹ While this does leave some detail that would need to be created and provided through the ACCP, which it would fall to Council to certify, we consider that to be an appropriate outcome given the level of risk (and remote to unlikely risk that the ACCP will ever need to come into existence).
- 399 We consider also that it would not have been in accordance with all of the accepted requirements for resource consent conditions for the Panel to have imposed obligations on the consent holder to search the entire Solar Farm Site (or even large parts of it), at very frequent intervals, to see whether any collisions occur.²⁴⁰ The evidence that the Panel was provided with does not support those impositions as reasonable, fair, or for a resource management purpose (including to address the effects on the environment of the activity authorised).
- 400 The conditions we have just mentioned were however offered, and do provide a benefit or positive effect. It would for example be of benefit to New Zealand's increased future provision of renewable energy generation, to have some additional, reliable, New Zealand-based, evidence regarding solar panel collision risk. In that sense, the offered conditions addressing the risk of collision have been accepted.
- 401 Following the close of the hearing on avifauna matters we circulated draft avifauna-related conditions as noted in Part B of this decision report.
- 402 The Panel appreciates that, absent the Panel's reasons (including our key findings on the evidence) and a draft decision report, it was more difficult for the parties to comment on conditions. In that regard, the Panel expresses its gratitude to counsel for the applicant and the Director-General, in particular, for the detailed reasons and

²³⁸ The Panel notes the Director-General's concern for example, expressed in their 3 October 2025 material, that chemical deterrents to deter attempted landing on solar panels are not proven safe and effective. All of the items in condition 83(d) are simply listed for consideration, with the condition expressly recording that the measures will depend on any causation (or likely causation) identified, but may for example include (i) to (v).

²³⁹ In that regard, we find counsel's question to Dr Bull illustrative when that witness was asked "*Isn't that the crux of the problem here? That until we know what the mechanism for that collision is, we don't know what mitigations might be effective?*" Transcript Day 2 page 162.

²⁴⁰ We have carefully considered Dr Bull's comments at the hearing in relation to this point. We note that her comments in relation to the need to "search the whole site" followed questions being asked about *guaranteeing* that a particular mortality would be found, and where the purpose of the monitoring was specifically to determine or detect collision or no collisions.

explanation provided with their comments on conditions, as outlined in their 3 October 2025 responses.

403 Other key issues that arose in relation to the avifauna conditions included:

- 403.1 The applicant sought that condition 40(b)(i) refer to “*avoidance, as far as practicable, and otherwise...*”, rather than “*avoidance as far as possible*”. We consider that the direction provided by the NZCPS requires the higher standard of “*as far as possible*”, and that the scope of what is possible is appropriately corralled by the requirement that the BMP be in accordance with the specific conditions of consent and the application material (conditions 6(a) and (d)).
- 403.2 The Panel had proposed an increase in the Bittern nesting habitat distances provided in condition 42A. In our conditions circulated for comment we had increased this to 200m, and the applicant sought that we return this to 100m. We have carefully considered the appropriate distance and agree with the applicant that 100m is more appropriate. 200m extends a good distance into the Site, and would create an obligation that is not commensurate with the evidence heard in relation to Australasian Bittern. We have noted that the reference to the “*southern stopbank*” is potentially unclear, so an advice note has been added to explain this reference.
- 403.3 The applicant also sought deletion of reference to “*limiting loud and / or disruptive human activity*” in condition 48. This condition refers to managing activities on the remainder of the Solar Farm Site so that the retained roosting habitat is available and attractive for use by birds. We think this wording should remain, given the habitat loss effects the Proposal creates. We have amended it to reference “*managing loud or potentially disruptive human activity during Operational Activities (as further outlined in the AMP)*”. The operation of the Solar Farm is not anticipated to be particularly noisy, but may at times need to be (for example, where repairs and maintenance are needed). Those activities should have some degree of management in terms of their potential to disturb use of the roosting areas.
- 403.4 We broadly agree with the clarifications proposed by the applicant in relation to the avifauna monitoring and research protocols, conditions 78 to 84, and have accepted most. We agree for example with the appropriateness of deleting reference to monitoring the success of nest exclusion zones, and not requiring the *publication* of material (which may have been interpreted to mean formal publication in scientific literature).
- 403.5 The Panel would have preferred that the edits proposed by the applicant to the end of the first paragraph of condition 82 were not made. However, having carefully checked back to the applicant’s offered conditions, we can see that our proposed conditions circulated for comments went further than the applicant had originally offered. Accordingly, we have accepted those amendments. However, we record that we do not think it would have imposed too big an imposition on the Solar Farm operator to respond to an incidental finding, at any time and for the life of the Solar Farm, of a dead or injured Threatened – Nationally Critical, Nationally Endangered or Nationally Vulnerable species. That is particularly so where the likelihood of this eventuating is remote to unlikely.
- 403.6 We have accepted some of the amendments sought by the Director-General, as helpful clarification and tightening of the conditions generally, for example, edits to the TAR avifauna species definition (adopted in part), and to condition 45(b), relating to the BMP’s objective.

403.7 However, many of the Director-General's requested amendments, particularly those requested to conditions 78 to 84, go too far in light of our findings on the evidence, and / or are inappropriate in the context of conditions that need to have been offered by the applicant. For example:

- (a) The Panel finds, on the evidence provided to us, and as described in more detail in Part D1 of this decision report, that there is no resource management purpose served by, or actual or potential effect on the environment requiring, a condition as follows:

"[#] (a) There shall be no death or injury to any individual of a species that has a threat classification of "Threatened – Nationally Critical", including tara iti/fairy tern, matuku hūrepo/Australasian bittern, kōtuku/white heron or kaki/black stilt, as a result of the construction or operation of the Solar farm, and there shall be no death or injury of other Threatened, At Risk or other indigenous avifauna individuals in numbers which meet a threshold in Table 1 of condition 57D.

(b) In the event of a death or injury referred to in (a) above, the consent holder shall immediately implement measures to ensure no further such deaths or injuries occur, in accordance with conditions [83 and 84]."

- (b) Likewise, and for identical reasons, we do not consider it necessary to include an "injured bird protocol" in the AMP (condition 56), or conditions relating to the provision of carcasses to DOC, preferring instead to rely on the Wildlife Act 1953 (which is referenced throughout the Solar Farm consent advice notes).
- (c) The Panel does not consider it appropriate to require that the consent holder consult with DOC when preparing the BMP or AMP. Consultation obligations appropriately arise under condition 79 in relation to the monitoring and research protocols within the AMP, and were offered by the applicant. We also do not consider it necessary to require reporting, to the Council and DOC, on construction activity including for example nests found and fledgling fates.
- (d) The proposed amendments to the avifauna monitoring, research and contingency measures and the ACCP (conditions 78 to 84, and including new proposed conditions)²⁴¹ are not accepted by the Panel. The amendments are out of keeping with the nature and scale of the potential collision risk, as we have outlined in Part D1 above. They are not necessary in the Panel's view to address any relevant actual or potential adverse effect on the environment.
- (e) A 150m buffer to all of the retained roosting habitat (as opposed to applying only to the Main Roosting Area) imposes a significant burden under conditions 48 and 49 that is not in keeping with the scale of effects identified on the evidence before us.
- (f) Likewise, the proposed significant increases to the exclusion zones for indigenous bird species nests in condition 52, from 50m to 150m for TAR

²⁴¹ See conditions 57ZA to 57G of Attachment 1 to the memorandum of counsel for the Director-General of Conservation in relation to the expert consenting panel's draft solar farm avifauna conditions, dated 3 October 2025.

avifauna species, and from 20m to 100m for all other indigenous bird species, are unsupported by appropriate evidence in the Panel's view.²⁴²

- (g) RFBPS's request that a new subclause be added to condition 82, as follows "*(d) remove Solar Farm infrastructure immediately until measures, including redesign or reduction in footprint, developed in conjunction with the Department of Conservation and approved by the Council are established to prevent further collision*", is not accepted. While holding serious reservations about how such a condition would work practically, we consider that the conditions included with this decision report set out a more appropriate and commensurate response to collision risk.
- (h) Amendments to condition 84, seeking deletion of the text "*For the avoidance of doubt, implementation shall include seeking any additional required consents or approvals, or obtaining variations to existing consents and approvals, where necessary*" are not accepted. This text makes it clear that, while the ACCP must be immediately implemented, if implementation requires a new or amended consent, the consent holder is implementing the ACCP immediately if they immediately seek to obtain that new or amended consent.

403.8 In terms of the advice note to the review condition, condition 118, we have deleted the text which referred to the basis on which the consents have been granted (relating to collision risk). The applicant and Director-General had both sought amendment to this advice note. The Panel's findings in relation to effects on avifauna, and particularly collision risk, are set out in this decision report, and do not need to be referenced in an advice note.

Other (non-avifauna) conditions

- 404 The Panel has addressed through earlier parts of this decision report the reasons for, and appropriateness of, the various conditions imposed on the resource consents and designation for the Proposal relating to the management of other effects on the environment. For example, the conditions responding to landscape and visual effects, glint and / or glare, noise, construction effects, ecological effects, streamworks and the risk of fire. We are satisfied that the conditions are appropriate and necessary, and that they meet the standard tests for conditions on resource consents and designations.
- 405 As with many modern consents and designations, there is (particularly for the Solar Farm), some reliance placed on the preparation of, and requirement to implement, various management plans. We have carefully considered whether or not the related management plan conditions are appropriate, and in particular whether there is any potential that they might have the effect of unlawfully delegating our substantive decision-making.
- 406 In the context of this Proposal we do not consider that they have. Where there have been matters of particular importance for the management plans we have explicitly referenced these in the relevant management plan conditions. Most of the details for the management plans are standard, or have already been provided within the application material for the Solar Farm and Substation, hence our inclusion of conditions which require that the management plans be in general accordance with that

²⁴² In particular, Dr O'Donnell's rebuttal evidence does not provide specific distances, instead referencing only a 100m setback for shorebirds on braided rivers (rebuttal [18]). We accept the evidence and information provided by the applicant.

material.²⁴³ Should there be any discrepancy between the submitted material and the relevant management plan condition(s), the requirements of the condition(s) are to prevail.

- 407 While many amendments were sought by the parties, the key issues that arose and were required to be addressed in relation to the other (non-avifauna) conditions included:

Management plans

407.1 Queries were raised regarding which management plans needed to be prepared by Suitably Qualified and Experienced Persons (**SQEPs**). The Panel confirms that SQEPs are not required for preparation of the following management plans: BSSMP, CMP, DRP, ERP, OSMP and StMP. See condition 6 of the Solar Farm consents.

407.2 The applicants had sought that management plans were to be 'deemed certified' where a Council response was not received within a certain time period. This was strongly opposed by Auckland Council, who will be the consent authority. While the Panel understands the applicants' potential for frustration, we did not consider it appropriate to provide for deemed certification. We note here the findings of the Environment Court regarding the importance of the certification process generally, in the *Ōtaki to North of Levin State Highway* direct referral decision.²⁴⁴

407.3 We have recorded in an advice note to the management plan conditions for the Solar Farm that the Panel does not expect delay to occur, and that unresolved certification matters that would require construction to be delayed are expected to be rare. These would need to relate to significant issues impacting on the construction methodology or design and which could not be 'reversed' or otherwise addressed if construction had already begun. This is not anticipated by the Panel, given the detailed design work and material already before us, and the relatively simple construction of the Solar Farm.

407.4 The Panel has also provided for partial certification where an outstanding matter in a management plan prevents full certification (and therefore prevents the commencement of earthworks or operational activities). The Council may decide, following a request from the consent holder, whether or not a matter raises discrete issues of minor consequence for the management of effects, allowing for partial certification of a management plan. The Panel would not like to see construction delayed in instances where there was a minor disagreement between the consent holder and consent authority on appropriate management plan contents.

Roading conditions (Solar Farm)

407.5 The amendments sought by Auckland Transport to the roading conditions relating to Omaumau Road and the timber bridge have not been incorporated by the Panel. Conditions 21 to 22, and 85 to 88, in the Panel's opinion appropriately provide for pre-use condition surveys, and for the consent holder to remedy any damage caused. We do not consider that any further scope is necessary or required, for example as might have been the case if any serious safety concerns had been identified. In that regard we note the Environment

²⁴³ Condition 6(d) of the Solar Farm consent and condition 4(d) of the Substation designation.

²⁴⁴ [2024] NZEnvC 133 New Zealand Transport Agency - Waka Kotahi, [124] to [128].

Court's decision in *Norsho Bulc*,²⁴⁵ and that any potential road upgrading issues can be “squarely addressed by the road controlling authority through any of a number of options for the management of the road”.

Archaeological advice notes

- 407.6 Numerous and lengthy advice notes were sought in relation to the condition addressing the Archaeological Management Plan (**AMP**) and Accidental Discovery Protocol (**ADP**), under both the Solar Farm and Substation consents and the Substation designation.²⁴⁶ The Panel does not consider these references necessary. The condition responds to cultural effects that have been raised, and relate to the need to prepare any AMP and ADP in consultation with the Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014 (**HNZPTA**). The conditions also require that the AMP and ADP include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes.
- 407.7 The AUP:OP provisions relating to accidental discovery, and the HNZPTA, apply over and above any conditions the Panel might impose. To the extent the conditions have been agreed with the Puatahi Marae Trust and address a cultural effect, we have included them. The Panel considers that the lengthy advice notes requested are not otherwise required.

Conditions addressing FENZ involvement (Solar Farm)

- 407.8 The Panel initially proposed quite detailed conditions for the ERP (conditions 90 to 92) and the BSSMP (conditions 93 to 95), for circumstances where FENZ was unable to respond to requests for consultation and input. For example, requiring that independent expert advice be sought if FENZ was not able to provide appropriate inputs to those plans. We have since been satisfied that this is not necessary, particularly as we now understand that FENZ has a formal process for commenting on ERP's.

GGMP and verification (Solar Farm)

- 407.9 The Panel also proposed, in our circulated conditions, that the GGMP provide for a monitoring regime that would verify, post commencement of operation, that the actual glint and glare effects aligned with the predictions and analysis in the GGAR. After receiving comments from the applicant, we understand that this would be impractical, as verification would require access onto private properties continuously over a long period. We are satisfied that the procedures in conditions 99 and 100 appropriately address glint and glare effects.

Decommissioning and Rehabilitation of Solar Farm

- 407.10 The timing and contents of the DRP (condition 107) were also queried. The Panel considers that it is important for the DRP to be prepared, in draft, from early on. Ten years allows the consent holder to establish operations and become familiar with the site and management of effects operationally. Part of the right to operate the Solar Farm includes making sure it will be decommissioned (i.e. the solar farm infrastructure removed) and the land rehabilitated at the end, as the applicant (Glorit Solar) has described in their application material.

²⁴⁵ *Norsho Bulc decision Ltd v Auckland Council* (2017) EnvC 109, see [95]-[104].

²⁴⁶ Condition 75 of the Solar Farm consent, condition 19 of the Substation designation and condition 25F of Transpower's regional consent conditions.

407.11 The Solar Farm may stop sending power to the National Grid (i.e. cease operational activities) however the physical structures present may not immediately be removed. Adverse landscape and visual effects would persist, as would ecological effects, and the land would (largely) not be available for use as HPL. While the solar arrays remain a number of effects on the environment persist. Management plans that address those effects, such as the LPMP, BMP, AMP, OSMP, ERP, BSSMP and GGMP, all largely cease when operational activities do. The DRP is necessary to step in to cover the gap between operational activities ceasing and removal of the Solar Farm infrastructure (including completion of rehabilitation).

Substation CMP

407.12 For the Substation designation conditions, we have noted a potential misunderstanding as to the role of the CMP (condition 6). The CMP is required as part of the outline plan of works (condition 3 and section 176A RMA), and so condition 6 does not need its own timing provisions.

PART I: DECISION MADE BY THE PANEL

408 In terms of clause 36(2) of Schedule 10 to the NBEA, for all of the reasons outlined above (particularly in Parts D through to H of this decision report), the Panel therefore grants the resource consents sought by Glorit Solar and Transpower, and confirms the NOR sought by Transpower, for the Glorit Solar Scheme comprising:

408.1 The Glorit Solar Farm (an approximately 179MW PV solar farm with energy storage and associated 33kV transmission line); and

408.2 The Glorit Substation (a 33kV / 220kV substation providing a National Grid injection point into Transpower's existing 220kV transmission line);

on the conditions included as Schedule One to this decision report.

DATED 15 October 2025



Catherine Somerville-Frost
(Chair)



David Mead
(Member)



Tiumalu Peter Fa'afiu
(Member)

SCHEDULE ONE

Conditions

Glorit Solar Farm – Conditions of Consent

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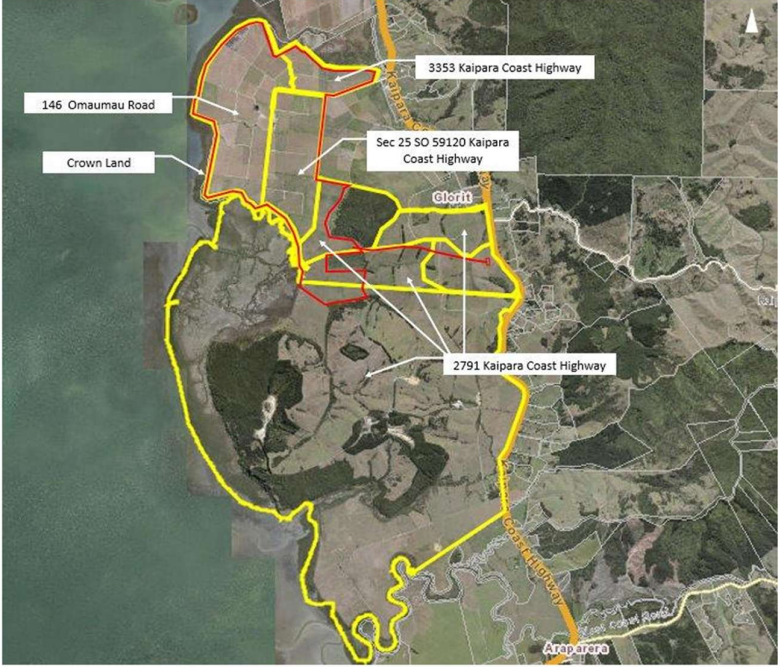
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DEFINITIONS

Consent(s)	Consent means either: a. Land Use Consent: LUC60443854; b. Discharge Permit (contaminants to land): DIS60445348; or c. Land use consent (streamworks consent for works within an ephemeral stream): LUS60446131; and “consents” means the collective of the above consents.
Consent Holder	Means Glorit Solar P LP, or any person or entity to which these Consents have been transferred in accordance with sections 134 to 137 of the RMA.
Construction Works	Means all activities authorised by these consents associated with the physical establishment of the Glorit Solar Farm and its supporting infrastructure, excluding Enabling Works. Construction Works includes, but is not limited to: a. Site preparation works such as vegetation clearance, earthworks, excavation, grading, and contouring; b. Installation of temporary or permanent stormwater measures; c. Installation of solar arrays and associated mounting structures (e.g. piles, foundations, or tracking systems); d. Construction of ancillary buildings and structures including inverters, battery storage units, switchgear, and control rooms; e. Installation of associated infrastructure including internal access tracks, underground or overhead cabling, and grid connection infrastructure; f. Delivery and storage of construction materials and equipment; and g. Any other physical activities undertaken for the purpose of constructing the Solar Farm prior to commissioning or Operational Activities.
Enabling Works	Means preliminary works undertaken to prepare for Construction Works, which are limited to activities necessary to establish site access, temporary facilities, and environmental mitigation prior to the commencement of Construction Works. Enabling Works include the following: a. Geotechnical investigations; b. Formation of access for geotechnical investigations; c. Establishment of site yards, site entrances, and fencing; d. Constructing site access roads; e. Demolition or removal of buildings and structures; f. Relocation of services; and g. Establishment of mitigation measures (such as erosion and sediment control measures, earth bunds, and planting).

Glorit Solar Farm / Solar Farm / Project	Means the approximately 180MW photovoltaic solar farm with energy storage and a 33kV transmission line, and all associated and ancillary infrastructure on the Site, located off Ōmaumau Road in Glorit, Auckland. The solar farm, energy storage and transmission line, along with the Glorit substation, form the Glorit Solar Scheme. For the avoidance of doubt, the Glorit Solar Farm / Project excludes the Glorit substation, which is authorised by way of designation and separate district and regional consents held by Transpower New Zealand Limited and Glorit Solar P LP.								
Glorit Solar Scheme	Means the Glorit Solar Farm (Ōmaumau solar farm) authorised by these consents and the Glorit Substation authorised by separate approvals held by Transpower New Zealand Limited and Glorit Solar P LP.								
KAG / Kaitiaki Advisory Group	Means the Kaitiaki Advisory Group established under condition 15 of these consents.								
Kaitiaki Cultural Monitor	Means a Kaitiaki Cultural Monitor appointed and acting in accordance with conditions 17 and 26 of these consents.								
KMF / Kaitiaki Monitoring Framework	Means the Kaitiaki Monitoring Framework as described in condition 16 of these consents.								
Management Plan	Means a management plan required under the conditions of these consents, prepared and certified in accordance with conditions 6 to 13, and includes: <table><tr><td>AMP – Avifauna Management Plan Conditions 55 and 56</td></tr><tr><td>BMP – Biodiversity Management Plan Conditions 45 and 46</td></tr><tr><td>BSSMP – Battery Storage Safety Management Plan Conditions 93 to 95</td></tr><tr><td>ChTMP – Chemical Treatment Management Plan Conditions 67 and 68</td></tr><tr><td>CMP – Construction Management Plan Conditions 28 to 30</td></tr><tr><td>CSMRP – Contaminated Soils Management and Remediation Plan Conditions 58 to 60</td></tr><tr><td>CTMP – Construction Traffic Management Plan Conditions 31 and 32</td></tr><tr><td>DRP – Decommissioning and Rehabilitation Plan Condition 107</td></tr></table>	AMP – Avifauna Management Plan Conditions 55 and 56	BMP – Biodiversity Management Plan Conditions 45 and 46	BSSMP – Battery Storage Safety Management Plan Conditions 93 to 95	ChTMP – Chemical Treatment Management Plan Conditions 67 and 68	CMP – Construction Management Plan Conditions 28 to 30	CSMRP – Contaminated Soils Management and Remediation Plan Conditions 58 to 60	CTMP – Construction Traffic Management Plan Conditions 31 and 32	DRP – Decommissioning and Rehabilitation Plan Condition 107
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DRP – Decommissioning and Rehabilitation Plan Condition 107									

	ERP – Emergency Response Plan Conditions 90 to 92	
	ESCP – Erosion and Sediment Control Plan Conditions 65 and 66	
	GGMP – Glint and Glare Management Plan Conditions 99 and 100	
	LPMP – Landscape Planting and Maintenance Plan Conditions 39 to 41	
	NFCRP – Native Fish Capture and Relocation Plan Condition 113	
	OSMP – Operational Site Management Plan Condition 89	
	StMP – Streamworks Management Plan Conditions 110 and 111	
	Operational Activities	
PWP / Puatahi Whakatutuki Plan	Means the Puatahi Whakatutuki Plan required by condition 17 of these consents.	
RMA	Means the Resource Management Act 1991.	
Site	Means all that land outlined in red on the plan below, being Figure 2-1 of the Assessment of Effects on the Environment Glorit Solar Scheme: Glorit Solar Farm prepared by Beca and dated 13 November 2024 (AEE), as more particularly described in Table 2-1 of the AEE: [Figure on next page]	

	 Figure 2-1: Site location with solar farm site outlined in red and properties outlined in yellow (Base map source: Auckland Council Geomaps 2024)
SQEP(s)	Means a suitably qualified and experienced person or persons, who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.
SQEP(s)*	For the purposes of conditions 50 to 56, and 78 to 84, a SQEP* means a suitably qualified and experienced professional that has particular ecological and ornithological qualifications and / or experience relevant to the particular avifauna task or subject matter.
Streamworks	Means the following streamworks activities subject to streamworks consent LUS60446131: - Temporary piped diversions within intermittent and permanent streams mapped on Figure 18, page 48 of the Ecological Impact Assessment for the Solar Farm dated 28 November 2022.
TAR avifauna species	Means a species of avifauna classified under the New Zealand Threat Classification System, (administered by the Department of Conservation) in any of the following categories at the relevant time: 'Threatened' (Nationally Critical / Nationally Endangered / Nationally Vulnerable / Nationally Increasing) or 'At Risk' (Declining / Uncommon / Recovering).
Working day	Has the same meaning as in section 2 of the RMA.

No.	Condition
GENERAL CONDITIONS	
1.	The design, construction and operation of the Project must be undertaken in general accordance with the information submitted in the documentation entitled 'Glorit Solar Farm Assessment of Effects on the Environment', prepared by Beca, dated November 2024, and the information provided to the Expert Consenting Panel, all listed in the table at Appendix A to these consents. Where there is any discrepancy between the documentation in Appendix A and the conditions below, the requirements of the conditions will prevail. <i><u>Advice note:</u> The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences required for the proposed activity, as well as complying with any separate agreements that it may have entered into regarding the Project (for example, with the Puatahi Marae Trust or neighbouring landowners).</i>
Lapse and expiry	
2.	Consent LUS60446131 shall expire ten (10) years from the date of its commencement unless it has been surrendered or cancelled at an earlier date.
3.	Consent DIS60445348 shall expire thirty-five (35) years from the date of its commencement unless it has been surrendered or cancelled at an earlier date.
4.	Under section 125 of the RMA, the consents shall lapse five (5) years after the date of their commencement, unless given effect to before that date.
Charges	
5.	The Consent Holder must pay Auckland Council an initial consent compliance monitoring charge of \$3,500 (inclusive of GST), plus any further monitoring charge or charges to recover the actual and reasonable costs incurred to ensure compliance with the conditions attached to these consents. <i><u>Advice note:</u> The initial monitoring deposit is to cover the cost of inspecting the Site, carrying out tests, reviewing conditions, updating files, etc., all being work to ensure compliance with the resource consent(s). In order to recover actual and reasonable costs, monitoring of conditions, in excess of those covered by the deposit, must be charged at the relevant hourly rate applicable at the time. The Consent Holder will be advised of the further monitoring charge. Only after all conditions of the resource consent have been met, will the council issue a letter confirming compliance on request of the consent holder.</i>
Management Plans – general conditions	
6.	All Management Plans required by the conditions of these consents must: - be prepared and implemented in accordance with the relevant management plan condition(s); - be prepared by a SQEP(s) or SQEP(s)* having regard to the subject matter of the management plan, (excluding the BSSMP, CMP, DRP, ERP, OSMF and StMP);

	c. include sufficient detail relating to the management of effects associated with the relevant activities and/or stage of work to which it relates; and d. otherwise be in general accordance with the material set out in Appendix A to these consents. Where there is any discrepancy between the material in Appendix A and the relevant management plan condition(s), the requirements of the condition(s) will prevail. <i><u>Advice note:</u> The BSSMP, CMP, DRP, ERP, OSMP and StMP do not need to be prepared by a SQEP / SQEP*(s).</i>
7.	Any Management Plan may be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), a stage of work, or to address specific activities authorised by these consents.
8.	Where specified in any condition of these consents, Management Plans must be submitted to Council for certification in accordance with the relevant management plan condition(s). If Council's response to a lodged management plan raises discrete issues that are of minor consequence for the management of effects, the Consent Holder may request that the Council partially certify the management plan, with any residual issues subsequently addressed through certification of those outstanding issues. <i><u>Advice note:</u> The Council may decide, following a request from the Consent Holder and acting reasonably, whether or not a matter raises discrete issues of minor consequence for the management of effects, allowing for partial certification of a management plan. Unresolved certification matters that would require construction to be delayed are expected to be rare. These would need to relate to significant issues impacting on the construction methodology or design and which could not be 'reversed' or otherwise addressed if construction has commenced. This is not anticipated given the detailed design work and material already before the Expert Consenting Panel (for example, the draft ESCMP), and the relatively simple construction of the Solar Farm. Unresolved certification matters that would need to prevent the operation of the Solar Farm (i.e. power being supplied to the national grid) should likewise be rare.</i>
9.	Certification in relation to all management plans means written confirmation from the Council that the management plan: • has been prepared by a SQEP(s) or SQEP(s)*, (excluding the BSSMP, CMP, DRP, ERP, OSMP and StMP); • meets its objective; • provides appropriate means to ensure that the conditions are able to be met; and • contains all the required information and specifications of the relevant condition(s) for that management plan. <i><u>Advice note:</u> Certification of management plans by the Council relates only to those aspects of the management plan that are relevant under the RMA. The certification does not amount to an approval or acceptance of suitability by the Council of any elements of the management plan that relate to other legislation, for example, but not limited to, the Building Act 2004, the Heritage New</i>

	<i>Zealand Pouhere Taonga Act 2014, Wildlife Act 1953 or the Health and Safety in Employment Act 1992.</i>
10.	If the Council's response is that they are not able to certify the management plan, the Consent Holder must consider any reasons or recommendations provided by Council and resubmit an amended management plan for certification.
11.	If Council's response to the amendments in the resubmitted management plan raises discrete issues that are of minor consequence for the management of effects, the Consent Holder may request that the Council partially certify the management plan, with any residual issues subsequently addressed through certification of those outstanding issues. <i><u>Advice note:</u> The Council may decide, following a request from the Consent Holder and acting reasonably, whether or not a matter raises discrete issues of minor consequence for the management of effects, allowing for partial certification of a resubmitted management plan.</i>
12.	Any material amendments to any of the management plans certified by Council must be submitted to Council at least ten (10) working days before the relevant works (or relevant portion of works) are undertaken, and subject to certification of the amendment prior to works being undertaken. Any such material amendments must also comply with condition 5.
13.	Certification of amendments to management plans must be in accordance with conditions 6 to 10.
14.	The Consent Holder must implement and comply with all management plans (including amendments to those plans) for the duration of the relevant activity, or as otherwise specified in the relevant management plan condition(s).
Cultural Values	
15.	Kaitiaki Advisory Group (KAG) At least three (3) months prior to the commencement of Construction Works, the Consent Holder must establish a KAG comprising up to three representatives from Puatahi Marae Trust, up to two representatives from Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, and up to two representatives from the consent holder. The KAG must be provided with the opportunity to have ongoing input into cultural, ecological, heritage, and landscape matters throughout the duration of the Project. The purpose of the KAG is to: - Foster and encourage mutual understanding between the consent holder, Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, with Puatahi Marae Trust as the lead and for the purpose of this consent condition as mana whenua, on the effectiveness of the measures implemented by the Consent Holder to avoid, remedy, or mitigate adverse effects on cultural values associated with the whenua, wetlands, wai and moana; - Facilitate ongoing engagement with mana whenua;

	c. Enable KAG or appointed kaitiaki (being persons nominated by Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu in writing to the consent holder, in the absence of a representative(s) on the KAG) to provide cultural inputs into the drafting and preparation of management plans; d. Discuss access and management arrangements for sites of cultural significance to mana whenua; and e. Provide mana whenua with reports, monitoring information and updates. The first meeting of the KAG must be convened prior to the commencement of any bulk earthworks. Thereafter the KAG meetings are to be convened at least twice per year (or at such lesser frequency as the KAG decides). At least twenty (20) working days prior to each KAG meeting, the Consent Holder must provide meeting invites to all KAG representatives including the date and time of the meeting. A record of all meetings is to be distributed to Auckland Council no later than one month after each meeting. The Consent Holder must provide reasonable resourcing, technical and administrative support for the operation of the KAG. <u>Advice notes:</u> <i>Should any KAG representatives choose not to attend a KAG meeting, this does not constitute a non-compliance with this consent condition.</i> <i>A single KAG can be formed for the Glorit Solar Scheme (being comprised of the Ōmaumau Solar Farm authorised by these consents, and the Glorit substation authorised by a designation held by Transpower New Zealand Limited).</i>
16.	Kaitiaki Monitoring Framework (KMF) The Consent Holder must, following consultation with the KAG, enable Puatahi Marae Trust and hapū to prepare and develop a KMF to outline how monitoring will occur across project phases for pre-construction, construction, and post-construction with a focus on ecological enhancement and restoration, land disturbance activities, and cultural health indicators (CHI) for the Kaipara Moana coastal edge, estuaries and associated environments including Ōmaumau reserve and tributaries. The KMF must be incorporated within the PWP required by condition 17. The objective of the KMF is to: i. Uphold kaitiakitanga; ii. Monitor effects on cultural values, ecological health and mauri of ecosystems; iii. Guide timely identification and responses to adverse effects; and iv. Inform mitigation and enhancement actions. <u>Advice notes:</u> <i>Should the Consent Holder invite and enable Puatahi Marae Trust and hapū to prepare and develop a KMF, and a framework is subsequently not prepared, this shall not constitute non-compliance with this condition.</i>

	<i>A single KMF can be prepared for the Glorit Solar Scheme.</i> <i>The Consent Holder has provided its acknowledgement and agreement that it will endeavor to implement the principles of Te Tiriti O Waitangi in the implementation of the KMF.</i>
17.	Mātauranga Māori – Puatahi Whakatutuki Plan (PWP) A PWP must be prepared in collaboration with Puatahi Marae Trust (where the Trust agrees to provide such collaboration), and must be provided to the Council for information at least twenty (20) working days prior to the commencement of Construction Works. The PWP must be provided to the KAG for comment at least twenty (20) working days prior to submitting the PWP to Council. The PWP must set out cultural monitoring protocols; Site cultural induction processes; tikanga-led monitoring of wetlands, stop banks, groundwater, and culturally significant areas; and define the roles and responsibilities of Kaitiaki cultural monitors (Kaitiaki Cultural Monitors). The purpose of the PWP is to establish a methodology to monitor and report on cultural values of the natural environment within and around the Site for the duration of the Solar Farm. To achieve this purpose, the PWP must include: - A description of the Kaitiaki Cultural Monitors roles and responsibilities. - A description of the Kaitiaki Cultural Monitors tasks and commitments. - The KMF described in condition 16, to outline how monitoring will occur during project phases. - A methodology, established with the KAG, to use Cultural Health Indicator (CHI) surveys to monitor the health of the environment. - The development of CHI attributes tailored to monitoring points on the Site. - Recommendations and advice on landscape and ecological enhancement and restoration works, including riparian and wetland enrichment and planting treatment, pest flora and fauna management, and any fish passage devices. - Optional initiatives that respond to the historic and cultural context of the Ōmaumau properties (Solar Farm and Glorit Substation) and its features to be developed, confirmed and implemented in association with the KAG, and the identified management plans. For example, this may include installation of interpretive signage, wayfinding devices, pouwhenua and/or artworks in suitable locations to reference the historic and cultural relationship and values of the Site and wider setting. Implementation of the PWP must include the following: - An introductory hui for the KAG on the use of CHI survey and monitoring; - An initial CHI survey to be undertaken at, or within, 6 months of ecological enhancement and / or restoration works commencing; and - Ongoing CHI surveys at monitoring sites at least every five years thereafter (or at such greater frequency as the KAG may request).

	Any changes proposed to the PWP, or its implementation, must be confirmed in writing to Puatahi Marae Trust by the Consent Holder following consultation with the KAG, and prior to the implementation of any changes proposed. The Consent Holder must provide reasonable resourcing, technical and administrative support for the implementation of the PWP. <u>Advice notes:</u> A single PWP can be prepared for the Glorit Solar Scheme. <i>The Consent Holder has provided its acknowledgement and agreement that it will endeavour to implement the principles of Te Tiriti O Waitangi in the development and implementation of the PWP.</i>
18.	The Consent Holder must, in collaboration with Puatahi Marae Trust, convene an annual (or less frequent as agreed to by Puatahi Marae Trust and the consent holder) hui to review the effectiveness of cultural and environmental mitigation measures. A summary report of monitoring outcomes and management responses, and capacity building, must be prepared following each hui. <u>Advice notes:</u> A single hui can be convened for the Glorit Solar Scheme. <i>The Consent Holder has formally acknowledged and agreed to collaborate with Puatahi Marae Trust to support and invest in marae development objectives. This forms part of the consent holder's commitment to cultural mitigation, the observance of tikanga reciprocity, and partnership obligations. Actions will include entering into a formal relationship agreement with Puatahi Marae Trust and making best efforts to fulfil these commitments..</i>
PRE-CONSTRUCTION CONDITIONS	
Seal Widening	
19.	Prior to the commencement of Construction Works, the Consent Holder must ensure that localised seal widening of the State Highway 16 (SH16) / Omaumau Road intersection has been completed, as detailed in Drawing <i>Omaumau Road Intersection Option-2 Concept Layout Plan 4211074-TA-01A</i>, prepared by Beca, Revision A dated 3 February 2023. The purpose of the seal widening is to provide sufficient space for vehicle tracking and safe operation, including sight distance and vehicle deceleration requirements. For the avoidance of doubt, this condition will not apply in circumstances where only Enabling Works are being carried out.
Sight Lines	
20.	Prior to the commencement of Construction Works, the Consent Holder must undertake works to achieve 330m sight lines to the north of the SH16 / Omaumau Road intersection, including removal of the approximately 10m strip of vegetation in the SH16 road reserve located on the west side of SH16, approximately 180m to the north of the intersection as identified in Figure 1, Schedule A.

Omaumau Road pavement preconstruction baseline assessment	
21.	Prior to Construction Works commencing, the Consent Holder must provide a baseline assessment prepared by a registered Pavement Engineer that is a SQEP with an understanding of roading asset management, to describe the existing state of the pavement on the full legal extent of Omaumau Road. The baseline assessment must comprise of (as a minimum) high-definition videos and photographs clearly showing road surface condition, RAMM (road assessment and maintenance management) condition rating assessment, FWD (falling weight deflectometer) analysis (no older than six (6) months) and a report discussing the results and visual findings. The baseline assessment must be submitted to Auckland Transport as the road controlling authority within twenty (20) working days following completion of the baseline assessment, and a copy provided to Council.
Omaumau Road timber bridge preconstruction condition survey	
22.	Prior to the commencement of Construction Works, a preconstruction condition survey of the timber bridge on Omaumau Road is to be undertaken by an engineer that is a SQEP, at the expense of the Consent Holder. A record of the pre-construction condition survey must be provided to Auckland Transport prior to the commencement of Construction Works.
CONSTRUCTION CONDITIONS	
Pre-start meeting	
23.	Not less than five (5) working days prior to the commencement of Construction Works the Consent Holder must hold a pre-start meeting that: a. is located on the Site b. includes representation from the Council c. includes representation from the contractors and/or SQEP(s) who will undertake the works. At least fifteen (15) working days prior to the meeting, the Consent Holder must invite each KAG representative to nominate Kaitiaki Cultural Monitors to attend the pre-start meeting to provide cultural induction and cultural safety training, including tikanga protocols, for construction workers and other specialists involved in such works. <i>Advice notes:</i> <i>Kaitiaki Cultural Monitors can be changed by each KAG representative at any time.</i> <i>Prior to the commencement of any stream, ecological or drainage works, the Consent Holder must arrange a time for the Kaitiaki Cultural Monitor(s) to provide cultural induction and cultural safety training, including tikanga protocols, for construction workers and other specialists involved in such works.</i>
24.	The purpose of the pre-start meeting is to ensure that all relevant parties are aware of and understand the requirements for compliance with the conditions of these consents and the management plans required under these conditions. It is also to ensure that cultural values, monitoring protocols, and health and safety processes are understood and agreed. The following information must be made available at the pre-start meeting:

	• Timeframes for key stages of the works authorised under these consents. • Resource consent conditions. • Puatahi Whakatutuki Plan (PWP). • Construction Management Plan (CMP). • Construction Traffic Management Plan (CTMP). • Landscape Planting and Maintenance Plan (LPMP). • Biodiversity Management Plan (BMP) . • Contaminated Soils Management and Remediation Plan (CSMRP). • Erosion and Sediment Control Management Plan (ESCMP). • Chemical Treatment Management Plan (ChTMP), if required. <i><u>Advice note:</u> To arrange the pre-start meeting please contact the Council on email at monitoring@aucklandcouncil.govt.nz.</i>
25.	A pre-start meeting must be held prior to the commencement of Construction Works authorised by these consents in each period between October 1 and April 30 of any year that these consents are exercised.
Kaitiaki Cultural Monitoring	
26.	The Consent Holder must invite each Kaitiaki Cultural Monitor to undertake cultural monitoring visits and cultural surveys of the Site and surrounds for the duration of the Construction Works, in accordance with the KMF established under condition 16. The Consent Holder must provide reasonable resourcing, technical and administrative support for Kaitiaki Cultural Monitors during the Construction Works.
No night-time construction works	
27.	The Consent Holder must not undertake construction works at night (being after sunset and before sunrise) unless required for emergency or safety requirements.
Construction Management Plan (CMP)	
28.	A CMP, or a series of CMPs, must be prepared and provided to the Council for certification at least twenty (20) working days prior to the commencement of Construction Works. The CMP(s) must address the management of all Construction Works, including details of how the adverse effects of construction will be managed. The objective of the CMP(s) is to avoid, remedy and/or mitigate adverse effects arising from Construction Works. The CMP(s) must be complied with for the duration of Construction Works.
29.	To achieve the objective noted in condition 28 the CMP must contain details covering the following matters: a. An outline construction programme for the works indicating, in particular, staging of work and construction methodology. b. Identification of the key personnel and contact person(s) and their contact details. c. Methods and systems to inform and train all persons working on the Site of potential environmental issues and the relevant contents of Management Plans including particularly the BMP and AMP, and how to avoid, remedy or mitigate potential adverse effects.

	d. Procedures for ensuring that surrounding property owners and occupiers are given prior notice of the commencement of construction works and are informed about the expected duration of those works. e. Procedures for communicating with surrounding property-owners and occupiers during construction works, including: i. Engaging with property owners and occupiers to minimise disruption to farming and other on-site activities; ii. Ensuring property owners and occupiers have contact details for relevant Consent Holder representatives during construction works; iii. Consulting prior to any high noise or vibration generating activities in proximity to dwellings including but not limited to piling; and iv. Implementing procedures to ensure action is taken in a timely manner, in response to any complaints received. f. Procedures for recording complaints including: i. The requirement to keep a register of any complaints received regarding the construction activities authorised by these resource consents. As a minimum, the register must include: a. The name and contact details (if supplied) of the complainant; b. The nature and details of the complaint; c. The location, date and time of the complaint and the alleged event giving rise to the complaint; d. The weather conditions at the time of the complaint, where relevant to the complaint; e. Other activities in the area, unrelated to the Project, that may have contributed to the complaint; f. The outcome of the consent holder's investigation into the complaint; and g. A description of any measures taken to respond to the complaint. ii. Making the complaints register available to Council on request. g. Procedures for responding to any complainant, including providing a response as soon as reasonably practicable and, within at most five (5) working days, advising the complainant of the outcome of the consent holder's investigation and all measures taken, or proposed to be taken, to respond to the complainant. h. The location of notice boards, visible to the public, that clearly identify the name, telephone number and address for service of the site manager. i. The location and layouts of any construction compound(s) proposed within the Site, including details of any turning areas, laydown areas, site offices, storage containers, and staff parking. j. Construction noise and vibration management measures to ensure compliance with the noise limits outlined in condition 36 and vibration limits outlined in condition 37. k. Dust management measures for earthworks, the movement of vehicles and any other dust generating activity to ensure that any dust caused by construction activities on the Site do not cause an effect that is noxious, dangerous, offensive or objectionable at or beyond the boundary of the Site. l. Measures for the protection of utility services, including electricity distribution within the road reserve. m. Measures to be adopted to maintain the land in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of building materials and similar construction activities.
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	n. Measures to ensure the safety of the general public where potentially affected by construction activities. o. Inclusion of Accidental Discovery Protocols and a list of contact names and numbers relevant to accidental discovery. p. Relevant parts of the KMF and PWP, required under conditions 16 and 17 (for example, provisions for cultural Site inductions, blessings prior to earthworks, and ongoing tikanga-led cultural monitoring during construction, developed in collaboration with Puatahi Marae Trust).
30.	The CMP must include methods for management of air quality throughout the construction period, in accordance with the Good Practice Guide for Assessing and Managing Dust, Ministry for Environment, 2016 and the Good Practice Guide for Assessing and Managing Odour, Ministry for Environment, 2016.
Construction Traffic Management Plan (CTMP)	
31.	A CTMP must be prepared in consultation with Waka Kotahi NZ Transport Agency and Auckland Transport (as road controlling authorities) and provided to Council for information at least twenty (20) working days prior to the commencement of Construction Works. (For the avoidance of doubt, the CTMP does not require certification by the Council). The objective of the CTMP is to avoid, remedy or mitigate adverse construction traffic effects. The CTMP must be complied with for the duration of Construction Works.
32.	To achieve the objective noted in condition 31, the CTMP must include: a. Roles, responsibilities and contact details, including for public enquiries and for members of the public to communicate any traffic issues arising as a result of the Construction Works. b. Expected number of vehicle movements, particularly heavy vehicle numbers during each phase of construction. c. Hours of work. d. Points of Site access. e. Construction traffic routes. f. Measures to advise drivers exiting the Site to be cautious and account for approximately four seconds of obstructed visibility, where vehicles will not be visible due to a dip in the SH16 corridor to the north of Omaumau Road. g. Installation of advisory warning signs for “trucks crossing ahead” for vehicles on SH16 approaching Omaumau Road, from both the north and south. h. Traffic management measures to be implemented on Omaumau Road to allow heavy vehicles to use the opposing lane of Omaumau Road to complete turning movements and limit conflict between opposing vehicles at the one lane bridge. i. Location of on-site parking and loading areas for deliveries. j. Consideration of school bus routes and stopping points on SH16, particularly those in close proximity to the Site, and measures to ensure the safety of school children using such bus services.
33.	Any vehicle access point onto a public road controlled by Auckland Transport must be designed in accordance with the Auckland Transport Design Manual (AT TDM) and Chapter E27

	Standards of the Auckland Unitary Plan (or any equivalent replacement regulation). This must be undertaken at the consent holder's expense and to the satisfaction of Auckland Transport.
34.	The Consent Holder must locate all existing services (water, wastewater, stormwater, power, gas and telecommunications) within the road reserve that may be affected by Construction Works or Enabling Works and notify the owners of the services of the works prior to the commencement of work. Any work necessary for the protection or relocation of services must be undertaken at the consent holder's expense and must be undertaken in accordance with the Auckland Code of Practice for Land Development and Subdivision (CoP) (Chapter 4 for stormwater (2025) Chapter 5 for wastewater (2019) and Chapter 6 for water (2021)) and the requirements of the relevant utility operator responsible for power, gas and telecommunication services. <u>Advice notes:</u> <i>Corridor Access Requests:</i> <i>It will be the responsibility of the Consent Holder to determine the presence of any underground services that may be affected by the consent holder's work in the road reserve. Should any services exist, the Consent Holder must contact the owners of those and agree on the service owner's future access for maintenance and upgrades. Services information may be obtained from https://www.beforeudig.co.nz/.</i> <i>All work in the road reserve must be carried out in accordance with the general requirements of the National Code of Practice for Utility Operators' Access to Transport Corridors https://nzuag.org.nz/wp-content/uploads/2018/11/National-Code-amended-version-29-Nov2018.pdf and Auckland Transport Design Manual https://at.govt.nz/about-us/manualsguidelines/transport-design-manual/</i> <i>Prior to carrying out any work in the road corridor, the Consent Holder must submit to Auckland Transport a Corridor Access Request (CAR) and temporary Traffic Management Plan (TMP), the latter prepared by an NZ Transport Agency qualified person and work must not commence until such a time as the applicant has approval in the form of a Works Access Permit (WAP). The application may be made at https://at.govt.nz/about-us/working-on-the-road/corridor-accessrequests and 15 working days should be allowed for approval. The Consent Holder will be responsible for ensuring all necessary permits, such as Network Corridor Access Requests (NAR) are obtained from NZTA.</i> <i>Avoid Damaging Assets</i> <i>Unless specifically provided for by this consent approval, there must be no damage to public roads, drains, reserves or other public asset as a result of the earthworks and construction activity. In the event that such damage does occur, the Council will be notified within 24 hours of its discovery where it presents a public safety hazard, risk to infrastructure or the receiving environment. The costs of rectifying such damage and restoring the asset to its original condition must be met by the consent holder.</i>

Sight Lines

35. The area of land within Lot 1 DP 198312 identified in Schedule A (Figure 1) must be kept clear for the duration of the Construction Works period such that the 330m sight line to the north of the SH16 / Omaumau Road intersection is maintained.

Construction noise and vibration

36. Noise from construction of the Project must comply with the following limits, when measured and assessed in accordance with NZS 6803:1999: Acoustics – Construction Noise:

- a. 1m from the façade of any building not on the Site and which contains an activity sensitive to noise (as defined in the AUP), that is occupied during the works:

Time of week	Time	Leq dBA	Lmax dBA
Weekdays	6.30am-7.30am	55	70
	7.30am-6.00pm	70	85
	6.00pm-8.00pm	65	80
	8.00pm-6.30am	40	70
Saturdays	6.30am-7.30am	40	70
	7.30am-6.00pm	70	85
	6.00pm-8.00pm	40	70
	8.00pm-6.30am	40	70
Sundays and public holidays	6.30am-7.30am	40	70
	7.30am-6.00pm	50	80
	6.00pm-8.00pm	40	70
	8.00pm-6.30am	40	70

- b. 1m from the façade of any building not on the Site and which does not contain an activity sensitive to noise (as defined in the AUP), that is occupied during the works:

Time period	Maximum noise levels Leq dBA
7.30am-6.00pm any day	70
6.00pm-7.30am any day	75

37. Vibration from construction activities must not exceed the limits set out in German Industrial Standard “DIN 4150-3 (1999): Structural vibration – Part 3 Effects of Vibration on Structures” when measured in accordance with that Standard on any structure not on the same site.

Landscape Mitigation	
38.	The external appearance (colour finish) of the batteries, DC converter containers and amenities building must be a neutral colour as defined in the BS5252 standard colour palette (greyness groups A, B or C), have a Light Reflectivity Value rating below 10%, and be green, brown or grey in tone.
Landscape Planting and Maintenance Plan (LPMP)	
39.	A LPMP must be prepared and provided to the Council for certification at least twenty (20) working days prior to the commencement of Construction Works. The objective of the LPMP is to avoid, remedy and mitigate adverse landscape effects and to ensure the successful establishment and long-term success of planting that is required to achieve this objective. The LPMP must be prepared in consultation with the independent project ecologist and KAG representatives (or appointed Kaitiaki under condition 15) and must be in general accordance with the indicative landscape plans prepared by Beca Limited, dated 08/11/2024, titled <i>Glorit Solar Farm Landscape Plans</i>. The LPMP must be complied with for the duration of Operational Activities and, following any cessation of Operational Activities, until a Final DRP (certified in accordance with condition 107) has been implemented.
40.	To achieve the objectives noted in condition 39 the LPMP must include: - Planting plans and written specifications detailing the plant species, plant sourcing, plant sizes at time of planting, plant locations, density of planting, and timing of planting that responds to the final Site layout. All indigenous planting must prioritise eco-sourced native species from nurseries in the Kaipara rohe where practicable. - Written specifications for soil preparation to ensure appropriate growing conditions for plants. - A programme of plant establishment, including identifying where planting can be undertaken prior to commencement of construction or undertaken as areas become available for planting due to the progress of the works and seasonal conditions. - A five year programme of post establishment protection and maintenance (fertilising, weed removal/spraying, replacement of dead/poorly performing plants, watering to maintain soil moisture). - The location, materiality, height and design of fencing and stop bank retaining walls. The security fence is to extend around the edge of the legal road as shown in drawing NZL Glorit Solar Farm_LP1-IDL_14, rather than following the Site boundary as originally depicted on the indicative landscape plans that accompanied the application, which was an error). - Details and the locations of stockproof fencing, pest plant management measures, and the use of pest animal barriers (e.g. plant guards) to protect the planting. - Integration of cultural landscape values identified in the Cultural Values Assessment prepared by Puatahi Marae Trust and dated 22 May 2025
41.	The certified LPMP must be fully implemented (i.e. planting and physical works such as fencing, walls and pest animal barriers completed) within the first planting season (May to September)

	following the completion of construction. If implemented in stages, the certified LPMP for that relevant stage must be fully implemented within the first planting season.
Biodiversity Management and Biodiversity Management Plan (BMP)	
42.	Wetland protection and remediation The disturbance of mapped natural inland wetlands in Schedule B must be avoided during construction unless the disturbance is within Wetland Area A shown in Schedule B and: (a) The disturbance is associated with erosion and sediment control measures; or (b) Heavy vehicle access is required and: (i) there is no alternative access to the works site that avoids wetlands; and (ii) suitable access / ground protection mats are in place; and (iii) no more than 10% of the total wetland extent mapped in Wetland Area A is disturbed.
43.	If mapped natural inland wetlands within Wetland Area A shown in Schedule B are to be disturbed (in accordance with condition 39A), the wetland condition in such disturbed areas must be assessed by an ecologist that is a SQEP using the Handbook for Monitoring Wetland Condition (Clarkson et al, 2004), prior to disturbance. This is to provide a baseline for monitoring.
44.	If wetlands are disturbed by erosion and sediment control measures in accordance with condition 42(a), remediation must be undertaken. This must include: (a) recontouring of land within the wetland if the original landform has been altered; (b) planting of appropriate native wetland species; (c) fencing the replanted wetlands to exclude stock; and (d) maintenance in accordance with condition 94. <i><u>Advice note:</u> Remediation in the event of heavy vehicle access (condition 42(b)) is addressed in conditions 76 and 77.</i>
45.	Biodiversity Management Plan (BMP) (a) A BMP must be prepared in consultation with KAG representatives (or appointed Kaitiaki under condition 15) and provided to the Council for certification at least twenty (20) working days prior to the commencement of Construction Works. (b) The objective of the BMP is to ensure that actual and potential adverse effects of the Project on biodiversity values are appropriately avoided, minimised and remedied. To achieve this objective the BMP must include (without limitation) specific design measures and management procedures, methods, mitigations and monitoring to be undertaken in order to achieve the following outcomes: (i) the avoidance, as far as possible and otherwise minimisation or remediation of adverse effects on any At Risk or Threatened fauna species (particularly TAR avifauna species including those species detected during the preconstruction surveys which shall also include Tara iti, Australasian bittern, white heron and black stilt even if not present during the survey period); and (ii) the avoidance, remediation or mitigation (as appropriate) of other adverse effects of the Project on indigenous biodiversity values, including off-setting or compensation. (c) The BMP must be complied with for the duration of Construction Works and Operational Activities, and, following any cessation of Operational Activities, until a Final DRP (certified in accordance with condition 107) has been implemented.

46.	To achieve the objective stated in condition 45 the BMP must include: (a) An Avifauna Management Plan (AMP) in accordance with conditions 55 and 56. (b) Performance measures and actions required to meet the non-avifauna biodiversity objectives outlined in condition 45(b) including: (i) Details of the ecological (restoration) planting in general accordance with the description of such planting in the plans and documents set out in Appendix A to these consents. (ii) A Native Fish Capture and Relocation Plan (NFCRP) in accordance with condition 113. (c) Details of pest management measures to protect avifauna and ecological planting including: (i) During construction, targeting hedgehogs, feral cats, rats and mustelids; (ii) Post-construction for the life of the Solar Farm, targeting rats, mustelids, possums, hedgehogs, feral cats and rabbits. (d) The methods to protect and manage wetlands during construction in accordance with condition 42 and methods to monitor wetlands for twelve months following the completion of construction in accordance with condition 76. (e) Details on, or reference to wetland remediation, habitat restoration and enhancement if required in accordance with conditions 44 or 77. (f) Integration of cultural landscape values identified in the Cultural Values Assessment prepared by Puatahi Marae Trust and dated 22 May 2025.
LPMP and BMP Cultural Protocols	
47.	Prior to any ecological enhancement and/or restoration works commencing, the Consent Holder must follow any cultural protocols outlined in the LPMP and BMP.
Avifauna Management	
48.	Bird roosting areas (a) The final design must include 13.9 hectares of retained roosting habitat (being the Main Roosting Area, Secondary Roosting Area and the Retained roosting habitat areas shown on Schedule C). (b) The Main Roosting Area and Secondary Roosting Area (as shown on Schedule C) must be maintained as short grass either through grazing or mowing. (c) Activities on the remainder of the site must be managed so that the Main Roosting Area, Secondary Roosting Area and Retained roosting habitat areas are available and attractive for use by avifauna (particularly TAR avifauna species), for example by managing / restricting the use of bird deterrents in close proximity, and managing loud or potentially disruptive human activity during Operational Activities, (as further outlined in the AMP).

49.	Construction staging / timing Where any works (including any Construction Works or Enabling Works) are located within 150m of the edge of the Main Roosting Area identified in Schedule C, these works must be staged to make sure the works are completed while undisturbed, grassed roost habitat is still plentiful elsewhere on the site, and that birds are not disturbed within the roosting areas once construction is nearing completion. This must include: (a) Progressing piling and earthworks from west to east; (b) Installation of solar panels and cable trenching over summer months, where practicable; and (c) Installation of solar panels and cable trenching during other times of the year, only when shorebirds are not utilising the Main Roosting Area.
50.	Bittern disturbance (a) Where any works (including any Construction Works or Enabling Works) adjoining the coastal marine area along the southern stopbank are proposed to be located within 100m of suitable nesting habitat for Australasian bittern (i.e. saltmarsh/areas of dense reeds and/or rushes) during the breeding season (September to February inclusive), a survey must be undertaken by a SQEP* during the booming season (September to December inclusive) in accordance with DOC Protocols for Inventory and Monitoring of Australasian Bittern using Acoustic Recording Devices. (b) If booming is detected, a SQEP* must undertake a visual survey (e.g. observation from a visual vantage point on the stopbank or motion activation cameras to identify foraging movements) to confirm whether a nest is present within 100m of the proposed works area. (c) If a nest is confirmed to be present under (b) above, no works must take place within 100m of the nest between September and February inclusive, unless a SQEP* has confirmed the chicks have fledged (d) If no booming is detected in accordance with (a), or no nests are identified in accordance with (b), works in that area can commence. <i><u>Advice note:</u> The southern stopbank works are generally located within the area of stopbank shown in the inset to Figure 2 (Schedule B). See also the plan entitled 'Stopbank bund layout with ecological areas' by Beca and dated 20/12/23 which was included in Appendix A: Design Plan accompanying the AEE for the application.</i>
51.	Pre-clearance nest surveys (a) Vegetation clearance must be timed to avoid the nesting season (September to February inclusive). (b) If, during September to February inclusive, pre-clearance nest surveys have been undertaken by a SQEP* and no active nests of any indigenous bird species have been identified, works in that area can commence. <i><u>Advice note:</u> Vegetation excludes vegetation planted as a crop, or pasture. For the purpose of this condition, it is noted that NZ Pipit have been observed on the Site following the completion of the Ecological Impact Assessment submitted with the consent application.</i>

52.	(a) Where active nests of indigenous bird species are identified during the surveys undertaken in accordance with condition 51, the Consent Holder must implement an exclusion zone for vegetation clearance or earthworks activities as follows: (i) 50m (in all directions) for any TAR avifauna species; (ii) 20m (in all directions) for all other indigenous bird species. c) The 50m or 20m exclusion zone set out in (a) may be reduced if this is determined to be acceptable by a SQEP*. d) The exclusion zone must be marked clearly with temporary cordoning and no person or machinery may enter the exclusion zone. e) A SQEP* is required to monitor the nest and confirm when chicks have fledged and when vegetation within the exclusion zone can be cleared.
53.	Kiwi gates The extent of security fence identified within Schedule D must include openings at regular intervals, in accordance with advice from a SQEP*, to allow access for kiwi to enhancement planting areas and supplementary foraging habitat. Final details of the size and location of the openings must be provided in the AMP.
54.	Visual deterrents – transmission line The Consent Holder must install visual deterrents (e.g. dynamic flappers) on the section of 33kV above ground transmission line located between the Solar Farm and Glorit Substation to minimise the risk of bird collisions or interactions with the transmission line. Visual deterrents must be installed at minimum distances advised by a SQEP*, taking into account design limitations (e.g. line weight limits). Luminescence must be provided to ensure visual deterrence at night-time. Final details of the visual deterrents must be provided in the AMP.
55.	Avifauna Management Plan (AMP) An AMP must be prepared by a SQEP* and provided to the Council for certification at least twenty (20) working days prior to commencement of Construction Works for the Solar Farm. <i><u>Advice note:</u> The AMP forms part of the BMP required by conditions 45 and 46, but may be prepared either as a standalone document attached to the BMP, or as a section or chapter to the BMP. As it is part of the BMP, the AMP must be complied with for the duration of Construction Works and Operational Activities, and, following any cessation of Operational Activities, until a Final DRP has been implemented.</i>
56.	The purpose of the AMP is to set out the specific construction and operational management procedures, monitoring, and other measures that are relevant specifically to avifauna, and that are necessary to achieve (as relevant to avifauna) the objective and outcomes of the BMP described in condition 45. To assist in achieving the objective and outcomes of the BMP, the AMP must include: (a) Operational maintenance methods for the retained roosting habitat, and management of other on-site activities to ensure that retained roosting habitat is available and attractive for use by avifauna (particularly TAR avifauna species) (condition 48). (b) Details of Enabling Works and Construction Works staging to manage disturbance to the Main Roosting Area shown on Schedule C (condition 49).

	(c) The protocols for establishing the presence of, and avoiding disturbance to, bittern (condition 50). (d) The protocols for pre-clearance nest surveys (conditions 51 and 52). (e) Measures to maintain the use of dispersal corridors, including details of the location and size of openings for kiwi in security fencing to access enhancement planting areas and supplementary foraging habitat (condition 53). (f) Details regarding visual deterrents for the transmission line (condition 54). (g) Reference to the habitat enhancement for Australasian bittern, and planting of the southern stopbank for fernbird, as set out within the LPMP (condition 39), and the relevant maintenance requirements for these (condition 98). (h) Methods to minimise the risk of road strike for Australasian bittern and kiwi, including: a. “slow down for bittern” signs on Omaumau Road or near the Solar Farm entrance; b. adoption of appropriate speed limits within the site boundaries (less than 30km/h); and c. site briefings to inform contractors of the potential presence of kiwi and bittern on site and their behavioural responses which may put them at particular risk. (i) Details of the avifauna monitoring and research protocols (condition 78). (j) Details of the toolbox of potential additional or enhanced management measures, as required by condition 83(d).
Contaminated Land and Contaminated Soils Management and Remediation Plan (CSMRP)	
57.	The Council must be notified at least two (2) working days prior to Enabling Works or Construction Works commencing in identified contaminated areas on the Site.
58.	Prior to the commencement of earthworks, the Consent Holder must submit a finalised CSMRP based on the CSMRP prepared by Beca, dated 15 August 2024 to Council for certification. The CSMRP must be prepared by a SQEP(s) in accordance with the current edition of the Ministry for the Environment Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand (Revised 2021). <i><u>Advice note:</u> The objective of the CSMRP is to ensure that appropriate procedures, controls, and contingency measures are in place for the safe management of contaminated soils during earthworks. These measures are intended to protect human health, minimise contaminant discharge, and ensure that exposure pathways are effectively controlled for the duration of the works</i>
59.	Earthworks involving contaminated soils must be undertaken in accordance with the certified CSMRP.
60.	The finalised CSMRP required by condition 58 must include (but not be limited to) the following additional specific requirements: a. The disturbance of soils where asbestos has been found to be present must avoid discharges of dust beyond the boundary of the Site and be undertaken in accordance with the NZ Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2024). b. Excavation areas must be maintained in a damp state while works are occurring to suppress the generation of dust during the works.

	c. Vehicles must be inspected prior to leaving the contaminated works area and wheels brushed/cleaned as required to avoid the potential for sediment to leave the Site on vehicle tyres or entering any stormwater system. d. Any truck-loads of excess excavated material leaving the Site must be covered during transportation. e. Stockpiling is to be minimised. If required, temporary stockpiles must be located within an area protected by erosion and sediment controls and be covered outside working hours and during periods of heavy rain. Stockpiling of material containing separate phase hydrocarbons or odorous petroleum hydrocarbons must not take place. f. Any perched groundwater or surface run-off water encountered within excavation areas where soils containing elevated levels of soil contaminants are present that require removal must be considered potentially contaminated, and must either: i. be disposed of by a licenced liquid waste contractor; or ii. pumped to sewer, providing the relevant permits are obtained; or iii. discharged to the stormwater system or surface waters provided a SQEP verifies compliance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Water Quality Policy Sub-Committee and National Water Reform Committee, 2018) for the protection of 80 percent of species, with the exception of benzene where the 95 percent protection level applies, and that it is free from separate petroleum hydrocarbons and hydrocarbon sheen. <u>Advice notes:</u> <i>Contaminant discharges:</i> <i>Discharges from the Site include the disposal of water (including groundwater or collected surface water) from the contaminated land-disturbance area.</i> <i>Stockpiles:</i> <i>To minimise contaminant discharge, soils containing elevated levels of contaminants should primarily be loaded directly into trucks for any off-site disposal.</i>
61.	Within three months of the completion of earthworks on the Site, a Site Validation Report (SVR) must be submitted to the Council for review and certification. The SVR must be prepared by a SQEP in accordance with the Ministry for the Environment Contaminated Land Management Guidelines No.1, (Revised 2021) and must contain sufficient detail to address the following matters: a. A summary of the works undertaken, including the locations and dimensions of excavations and the volume of soil excavated; b. Conditions of the final site contamination profile, including details and results of any validation testing undertaken (with a map of sampling locations and tabulated sampling results) and interpretation of the results in the context of the NES:CS and the AUP(OP); c. Details and results of any other contamination testing undertaken during the works (including any sampling undertaken on materials re-used on site or imported to site and/or asbestos air monitoring); d. Records/evidence of the volumes and disposal locations for any material containing elevated levels of contaminants removed from the Site; e. Records of any unexpected contamination encountered during the works and response actions, if applicable; f. Any on-going monitoring and/or management measures required to minimise risks to human health or the environment as a result of the final site contamination profile;

	g. Reports of any complaints, health and safety incidents related to contamination, and/or contingency events during the earthworks; and h. A statement certifying that all works have been carried out in accordance with the requirements of the CSMRP and consent, otherwise providing details of relevant approved variations or breaches, if applicable.
Earthworks and Streamworks including Erosion and Sediment Control Management Plan and Chemical Treatment Management Plan	
62.	The Council must be notified at least five (5) working days prior to earthworks (whether part of Enabling Works, Construction Works or Streamworks) activities commencing on the Site.
63.	All imported fill used must: a. comply with the definition for 'cleanfill material' in the Auckland Unitary Plan (Operative in Part) – (Chapter J1 Definitions); b. be solid material of a stable, inert nature; and c. not contain hazardous substances or contaminants above recorded natural background levels of the receiving site.
64.	All machinery associated with the earthworks activity (whether part of Enabling Works, Construction Works or Streamworks) must be operated in a way, which ensures that spillages of hazardous substances such as fuel, oil, grout, concrete products and any other contaminants are prevented. <i><u>Advice note:</u> In accordance with condition 49 refuelling and lubrication activities associated with earthworks machinery should be carried out away from any water body and using methods so that any spillage that does occur can be contained and does not enter the water body.</i>
65.	Erosion and Sediment Control Management Plan (ESCP) Prior to the commencement of earthworks activity (whether part of Enabling Works, Construction Works or Streamworks), a finalised ESCP based on the <i>Erosion and Sediment Control Plan: Glorit Solar Farm</i> prepared by Beca and dated 7 April 2025, must be prepared in accordance with Auckland Council Guideline Document GD2016/005 <i>Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region</i> (GD05) and submitted to Council for certification. The objective of the finalised ESCP is to describe how earthworks associated with the Project can be effectively managed to mitigate the risk of a potential sediment discharge and subsequent adverse impact on the environment during construction.
66.	The ESCP required by condition 65 must contain sufficient detail to address the following matters: a. Specific erosion and sediment control works including the location and design details for any stabilised entranceways, clean and dirty water diversion, silt and super silt fencing, sediment retention ponds and decanting earth bunds. b. Where sediment retention ponds are proposed within 330 m of forest areas identified in Schedule E, the details of silt fencing or other measures to prevent kiwi from accessing the standing water. c. Location and extent of earthworks zones and staging

	d. Where more than 5-hectares of earthworks per floodgate catchment is proposed, adaptive management measures must be included. Indicative floodgate catchments are shown in Schedule F. e. Supporting calculations and design drawings f. Catchment boundaries and contour information g. Details of construction methods h. Streamworks methodology and management measures, including: i. a methodology for diverting upstream flows during works within streams, including how sufficient flow will be maintained at all times below the site of the works to maintain in-stream biota; ii. a detailed methodology for the installation of the structure(s) / disturbance; iii. details of final streambed remediation or stabilisation upon completion of stream works; and iv. the requirement for all pumps used to dewater the stream to have a 3mm screen to prevent fish from entering the pump. i. Timing and duration of construction and operation of control works (in relation to the staging and sequencing of earthworks). j. Details relating to the management of exposed areas (e.g. grassing, mulching). k. Monitoring and maintenance requirements.
67.	Chemical Treatment Management Plan (ChTMP) Prior to the commencement of any earthworks activity on the Site requiring chemical treatment as detailed in the finalised ESCP required by condition 65, a ChTMP must be prepared in accordance with GD05 and submitted to Council for certification. No earthwork activities within catchments requiring chemical treatment may commence until certification is provided by Council that the ChTMP meets the requirements of GD05, and the measures referred to in the ChTMP have been put in place.
68.	The ChTMP must include as a minimum: a. Specific design details of chemical treatment system based on a rainfall activated dosing methodology for the Site's sediment retention ponds, decanting earth bunds or other impoundment devices utilised throughout the earthworks; b. Monitoring, maintenance (including post-storm) and contingency programme (including a record sheet); c. Details of optimum dosage (including assumptions); d. Results of initial chemical treatment trial; e. Provision for ongoing bench to accommodate any changes in the nature of fill throughout the managed fill activity; f. A spill contingency plan; and g. Details of the person or bodies that will hold responsibility for long term operation and maintenance of the chemical treatment system and the organisational structure which will support this system.
69.	All sediment retention ponds and decanting earth bunds (or other impoundment devices) utilised throughout the earthworks, must be chemically treated in accordance with the certified ChTMP. All measures required by the ChTMP must be in place prior to commencement of the earthworks activity and be maintained for the duration of the earthworks activity.

70.	All water discharged from the Site during dewatering and from associated sediment control devices during the earthworks operation must achieve a minimum 100mm depth of clarity prior to discharge in accordance with GD05.
71.	The operational effectiveness and efficiency of all erosion and sediment control measures specifically required by the finalised ESCP prepared under condition 50 must be maintained throughout the duration of the earthworks activity, or until the site is permanently stabilised against erosion.
72.	Immediately upon completion or abandonment of earthworks, all areas of bare earth must be permanently stabilised against erosion to the satisfaction of Council.
73.	Earthworks must be managed to avoid deposition of earth, mud, dirt or other debris on any public road resulting from earthworks activity on the Site. In the event that such deposition does occur, it must immediately be removed.
74.	No earthworks or streamworks must be undertaken between 01 May and 30 September in any year, without the submission and Council approval of a 'Request for winter works'. All such requests must be renewed annually prior to the approval expiring and no works must occur until written approval has been received from Council. All winter works will be re-assessed monthly or as required to ensure that adverse effects are not occurring in the receiving environment and approval may be revoked by Council upon written notice to the consent holder.
Accidental discovery / heritage and cultural including Archaeological Management Plan (AMP) and Accidental Discovery Protocol (ADP)	
75.	The Consent Holder must prepare an AMP and ADP in consultation with Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014. The AMP and ADP must include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes. <i><u>Advice note:</u> The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Heritage New Zealand Pouhere Taonga Act 2014. The provisions of the accidental discovery rules E11.6.1. and E12.6.1 set out in the Auckland Unitary Plan are also noted and should be referred to.</i>
POST CONSTRUCTION	
Wetland monitoring	
76.	During the first full winter season (June to August) following the completion of Construction Works, wetlands disturbed by vehicle access in accordance with condition 42(b) must be monitored by a SQEP(s) to ensure no permanent wetland loss has occurred.
77.	In the event that the monitoring indicates that wetland characteristics have been permanently altered, these areas must be restored and remediated. This includes: (a) recontouring of land within the wetland if the original landform has been altered; (b) planting of appropriate native wetland species; (c) fencing the replanted wetlands to exclude stock; and

	(d) maintenance in accordance with condition 98.
Avifauna Monitoring, Research and Contingency Measures	
78.	Avifauna monitoring and research protocols (a) The avifauna monitoring and research protocols must take into account the TAR avifauna species likely to be present on and around the Site and must include at least 48 months of monitoring from the commencement of installation of the solar panels, and of which at least 24 months must occur following the installation of the last solar panel. (b) The purpose of the avifauna monitoring and research is to: - Contribute to scientific knowledge of TAR avifauna species and their potential behavioural response (if any) to solar panels. - Detect as best as possible the nature and extent of any collision of birds (in particular TAR avifauna species likely to be present on and around the Site) with Solar Farm infrastructure (particularly solar panels) leading to death or injury. - Ascertain the efficacy of the mitigation measures including for potential bird collision effects. - Confirm utilisation of, and extent of use of, the retained roosting habitat. (c) Without limiting the generality of the above purposes, the monitoring and research are to: - Obtain statistically robust data on any collisions by TAR avifauna species with Solar Farm infrastructure (particularly solar panels), and in the event of such collisions, to research the reasons for such collision so that steps can be taken to reduce the likelihood of reoccurrence. - Assess whether (i) the predicted level of potential effects provided in expert assessment on behalf of the Consent Holder and relied on in granting these consents, is correct, and (ii) if the monitoring and research shows a TAR avifauna species mortality or injury rate, to assess whether that rate has a more than an overall low level of effect on the species population and, if it does, to support a response to prevent further collisions. (d) The monitoring and research protocols must be outlined in the AMP, and must include: - Details of what monitoring is to comprise (at a minimum) including: - frequency and duration of monitoring (which may include surveys); - details of background / pre-establishment monitoring required prior to commencement of Enabling Works or Construction Works, and those required post installation of the solar panels; and - monitoring (including survey) methods which may include (but not be limited to): - observer (SQEP*) counts; - observer (SQEP*) records of behavioural responses to solar panels; - use of cameras, sound recordings, and / or artificial intelligence video; and - statistical analyses of roost utilisation. - In addition to the relevant matters under (d)(a) above, specific monitoring methods to detect the nature and extent of any collision of birds with Solar Farm infrastructure (particularly solar panels) leading to death or injury. The methods must include (at a minimum): - establishment of background rates of mortality and injury against which the Solar Farm site can be compared. This should include a reference or control site within the South Kaipara Harbour area or pre-construction monitoring of the Site. - searcher efficiency and carcass persistence trials to determine detection probability;

	iii. distance based sampling protocols; iv. based on (ii) and (iii), details of the minimum area and minimum frequency of physical surveys for the monitoring period; v. incidental discovery protocols; and vi. statistical analyses of carcass detection / removal rates and annual mortality estimates. c. Monitoring of utilisation of, and extent of use of, the retained roosting habitat. d. Details describing how the one year report and completion report required by condition 80 will be made publicly available, so that the research findings are available to territorial authorities, specialist ecologists / ornithologists / avifauna experts, and relevant interest groups. (e) The monitoring and research protocols outlined in the AMP may include: a. A process for a reduction in minimum area and minimum frequency for physical surveys, if in the opinion of a SQEP*, the results of monitoring indicate there is a level of effect where it is appropriate to do so for the remaining monitoring period set out in this condition. b. Reference to the use of artificial intelligence video and / or vibration detections tools; and DNA swabbing of “feather spots”.
79.	Protocols to be provided to DOC in draft Prior to the submission of the AMP under condition 55, the Consent Holder must provide a copy of the draft monitoring and research protocols required under condition 78 to the Department of Conservation (DOC) for comment. Any comments received from DOC must be summarised in a table within the AMP, along with an explanation of where any comments or suggestions have, or have not, been incorporated and, if not incorporated, the reasons why. If no response is received from DOC within twenty (20) working days, this must be noted in the AMP. Certification may not be withheld solely on the basis of no comments having been received from DOC.
80.	Monitoring and research results to be reported and published (a) Within thirteen (13) months of the commencement of the installation of solar panels a written report prepared by a SQEP* must be provided to the Council, summarising key results and findings from the monitoring and research that has been undertaken in accordance with condition 78. (b) Within six (6) months of the completion of the monitoring period set out in condition 78, unless a different timeframe is otherwise agreed with the Council, the outcomes of the monitoring and research undertaken in accordance with condition 78 must be provided to Council in a written report prepared by a SQEP*. (c) The above two written reports must be made publicly available, in accordance with the details outlined in the AMP (per condition 78(d)(e)).

81.	Quarterly monitoring review and reporting, and contingency requirements (all TAR avifauna species) (a) The results of the monitoring required by condition 78 must be reviewed by a SQEP* at least once every quarter within the minimum 48-month monitoring period. (b) If a mortality or injury to any TAR avifauna species has been recorded, a report must be prepared by a SQEP* and provided to Council within twenty (20) working days of the SQEP's* review identifying that mortality or injury. The report must include: a. Any known information on the nature of the incident(s) and a description of the cause (or, if unknown, possible or likely causes); b. To the extent relevant in the opinion of the SQEP*, analysis of background mortality or injury and source-attributed mortality or injury to TAR avifauna species; and c. An assessment of effects to determine whether source-attributed mortality or injury rates would have more than an overall low level of effect on species population(s) in accordance with the assessment methodology (based on the Environment Institute of Australia and New Zealand (EIANZ) guidance for ecological impact assessment) outlined in the Glorit Solar Farm Ecological Impact Assessment (Beca, November 2024). (c) If the report prepared under (b) above determines that any TAR avifauna species mortality or injury rate has more than an overall low level of effect on the species population, the Consent Holder must engage a SQEP* to prepare an Avifauna Collision Contingency Plan (ACCP) as set out in condition 83. The ACCP must be submitted to the Council for certification within one month of advising the Council of the findings under (b).
82.	Contingency requirements (Threatened – Nationally Critical, Nationally Endangered or Nationally Vulnerable species) Notwithstanding condition 81 above, if the monitoring required by condition 78 detects the death or injury of one individual of a Threatened – Nationally Critical, Nationally Endangered or Nationally Vulnerable species the Consent Holder must: (a) Within 24 hours of detecting the fatality or injury, report the incident to the Council and DOC, identifying the species involved. (b) Engage a SQEP*, if not already engaged, to assess any known information on the nature of the incident(s) and to identify the cause of the injury or mortality (or, if unknown, possible or likely causes). (c) If the injury or mortality is attributed by the SQEP* to collision with a solar panel or other Solar Farm infrastructure, or likely a result of such collision on the site, engage a SQEP* to prepare an ACCP as set out in condition 83. The ACCP must be submitted to the Council for certification within one month of detecting the collision fatality or injury. <i><u>Advice note:</u> Additional incident reporting procedures may be required by any authorisations held under the Wildlife Act 1953.</i>
83.	Avifauna Collision Contingency Plan (ACCP) If required by condition 81 or 82, the Consent Holder must engage a SQEP* to prepare an ACCP, and submit that ACCP to the Council for certification.

	The objective of the ACCP is to: (a) Respond to known collision event(s) and implement contingency mitigation measures to reduce the risk of further collision fatality or injury; and (b) Consider and implement other on-site or off-site measures that may benefit any potentially collision-affected TAR avifauna species populations. The ACCP must include: (a) Details of the collision fatality or injury incident(s) including species, location of the incident(s) on the site, and any known information on the nature of the incident(s) and likely cause(s). (b) Details of any changes to monitoring, including (but not limited to) frequency, methods and duration. (c) A summary of any new literature or technology relevant to the incident(s) that is available at the time. (d) Consideration of additional or enhanced design or management measures and/or re-consideration of existing prevention and deterrent measures to be implemented at the site, informed by the details set out in (a) and (c) above. Such measures will depend on any causation (or likely causation) identified, but may for example include: (i) Use of visual deterrent devices or visual warning devices/markings (flags, streamers, or visually distinctive markings on the panels) to deter attempted landing on or interaction with solar panels; (ii) Use of acoustic deterrent devices to deter attempted landing on or interaction with solar panels; (iii) Use of chemical deterrents to deter attempted landing on solar panels; (iv) Limitation on angle or orientation of solar panels over defined spatial or temporal scales, or in particular environmental conditions, if collisions were able to be attributed to certain spatial, temporal or environmental patterns; and / or (v) Removal, redesign, or reconfiguration of Solar Farm infrastructure (including solar panels) to address a confirmed collision event. (e) Consideration of off-site actions where there is a residual risk which cannot be reduced by the measures set out in (d) above, including for example: (i) Predator control at nearby nesting or roosting habitats of the affected species; (ii) Restoration or enhancement of high tide roosting or foraging habitats, or nesting habitats, (whether existing or potential habitats, or areas proposed to be managed to provide potential habitats), within the Kaipara Harbour; and (iii) Funding of conservation research, monitoring programmes, predator works, habitat protection or enhancement works, (or other like activities) for the affected species. (f) Timing of implementation of any proposed additional or enhanced design or management measures.
84.	The Consent Holder must implement the ACCP that is submitted to the Council under condition 83 immediately upon submission to the Council for certification. Any changes to the ACCP resulting from certification must be implemented immediately upon such certification. (For the avoidance of doubt, implementation shall include seeking any additional required consents or approvals, or obtaining variations to existing consents and approvals, where necessary.)

Omaumau Road pavement condition survey	
85.	A pavement condition survey of Omaumau Road is to be undertaken by a SQEP, at the consent holder's expense, on completion of Construction Works and in consultation with Auckland Transport. A record of the survey must be provided to Auckland Transport.
86.	If any damage occurs to Omaumau Road from construction traffic, or is identified through the baseline assessment and survey required under conditions 21 and 85 and verified by a SQEP as being directly attributable to heavy vehicles entering or exiting the construction site, the Consent Holder must, subject to approval and access being granted by the road owner, repair that damage. The timeframe for completing the repair works is to be confirmed in consultation with Auckland Transport. The costs of rectifying such damage and restoring the asset to its original condition (as described in the preconstruction baseline assessment required by condition 21) will be met by the consent holder.
Omaumau Road timber bridge post construction condition survey	
87.	A post construction condition survey of the Omaumau Road timber bridge is to be undertaken an engineer that is a SQEP(s) at the expense of the Consent Holder on completion of Construction Works in consultation with Auckland Transport. A record of the survey must be provided to Auckland Transport.
88.	If any damage occurs to the timber bridge on Omaumau Road from construction traffic, or is identified through the surveys required under conditions 22 and 87 and verified by a SQEP as being attributable to heavy vehicles entering or exiting the construction site, the Consent Holder must, subject to approval and access being granted by the bridge owner, repair that damage. The timeframe for completing the repair works is to be confirmed in consultation with Auckland Transport. The costs of rectifying such damage and restoring the asset to its original condition (as described in the precondition construction survey required by condition 22) will be met by the consent holder
OPERATION	
Operational Site Management Plan (OSMP)	
89.	Prior to the commencement of Operational Activities the Consent Holder must submit an OSMP to the Council for certification. The objective of the OSMP is to ensure the safe and effective management of the Solar Farm in a manner that avoids, mitigates or remedies adverse effects on the environment. To achieve this objective the OSMP must include (without limitation): a. Protocols for recording, responding to, and addressing complaints. This must include: (i) Information on the location and publication of contact details for appropriate Consent Holder and / or contractor / operator representatives, which neighbours and members of the public may use in the event of complaints, concerns or in emergencies. (ii) Prominent signage with these details must be provided on a publicly visible part of the Site. (iii) Details must also be published on a project website for the first three years of Operational Activities at the Solar Farm. (iv) A 24 hour contact number must be provided, and operational (manned), at all times.

	b. Reference to, or inclusion of, the ongoing maintenance requirements set out in the LPMP and requirements of condition 98. c. Reference to, or inclusion of, measures for management of health and safety set out in the ERP and BSSMP. d. Reference to, or inclusion of, any ongoing requirements set out in the BMP including but not limited to requirements in the AMP and pest control. e. Reference to, or inclusion of, any ongoing requirements for management of glint and glare set out in the GGMP. The OSMF must be complied with for the duration of Operational Activities, and, following any cessation of Operational Activities, until a Final DRP has been certified in accordance with condition 107.
Emergency Response Plan (ERP)	
90.	Prior to the commencement of Operational Activities the Consent Holder must submit an ERP to the Council for certification.
91.	The Consent Holder must prepare the ERP in consultation with Fire and Emergency New Zealand (FENZ) as it relates to fire hazards. The Consent Holder must provide evidence to the Council that engagement with FENZ has occurred including evidence that any concerns raised by FENZ have been addressed or provide reasons why they are not addressed.
92.	The objective of the ERP is to outline the procedures to be followed in the event that an emergency (including a fire, the spill of hazardous substances, or a flood event) occurs on Site. To achieve this objective the ERP must provide details on the following: a. A facility description, including infrastructure details, operations, number of personnel, and operating hours. b. A Site plan depicting key infrastructure: i. Site access points and internal access tracks; ii. firefighting facilities; iii. water supply system; iv. drainage; v. and neighbouring properties. c. Details of emergency resources, including communication systems, personal protective equipment and first aid. d. Up-to-date contact details for facility personnel, and any relevant off-site personnel that could provide technical support during an emergency. e. Emergency procedures for all credible hazards and risks, including building, infrastructure and vehicle fire, grass fire, and flood hazard. f. How FENZ will be alerted of an emergency incident. g. Site evacuation procedures. h. An inventory of hazardous substances and the current Safety Data Sheets to be stored on Site. i. Hazardous substance storage, signage and at least annual inspection requirements j. Hazardous spill response procedures, including reporting to the Council within 24 hours of an incident which results in discharge of hazardous substances into the environment. k. Emergency flood response protocols for the safety of people (e.g. exit routes and flood markers).

	The ERP must be complied with for the duration of Operational Activities.
Battery Storage Safety Management Plan (BSSMP)	
93.	A BSSMP must be prepared and provided to the Council for certification at least four weeks (20 working days) prior to the commencement of the operation of the battery energy storage facilities. The objective of the BSSMP is to identify how the Consent Holder will manage the battery storage to reduce potential fire risks. The BSSMP must be complied with for the duration of the operation of the battery energy storage facilities, and for so long as those facilities remain <i>in-situ</i> on the Site.
94.	The Consent Holder must prepare the BSSMP in consultation with FENZ. The Consent Holder must provide evidence to the Council that engagement with FENZ has occurred including evidence that any concerns raised by FENZ have been addressed or provide reasons why they are not addressed.
95.	To achieve the objective noted in condition 93 the BSSMP must set out details of the following: - Design considerations to enable fire mitigation and suppression, including adequate separation from units, appropriate on-site water storage facilities and safe access route for fire services to manoeuvre within the Site; - Battery Energy Storage System (BESS) facility location and layout; - Automatic fire detection systems; - Monitoring systems; - Operational procedures for mitigation of thermal runaway; - Fire suppression systems; - Offers to provide, and details of, proposed training and Site familiarisation, at regular intervals, to relevant FENZ personnel, particularly any local responders likely to be first on-site in the event of a fire involving or threatening to involve batteries; - Information on the location and publication of contact details for appropriate Consent Holder and / or contractor / operator representatives in the event of an emergency. Prominent signage with these details must be provided on a publicly visible part of the Site. A 24 hour contact number must be provided, and operational (manned), at all times; - Information on the location of signage with instructions to first responders in the event of an emergency involving or threatening to involve batteries, which must be provided on a publicly accessible part of the Site.
Noise	
96.	The noise level from Operational Activities must comply with the following limits within the notional boundary of any other site that is within a Rural zone under the AUP: 55 dB LAeq Monday to Saturday 7am to 10pm, and Sunday 9am to 6pm; and 45 dB LAeq and 75 dB LAFmax at all other times.
97.	Noise levels in condition 67 must be measured and assessed in accordance with NZS 6801:2008 Acoustics – Measurement of Environmental Sound and NZS 6802:2008 Acoustics – Environmental Noise.

Planting (landscape / visual and ecological / biodiversity mitigation) – maintenance	
98.	All planting required under the LPMP and BMP (whether for landscape / visual or ecological / biodiversity mitigation purposes) must be maintained for five (5) years following planting. During the operational life of the Solar Farm, and until a Final DRP (certified in accordance with condition 107) has been implemented, should any such planting be removed and / or die, such that they no longer provide effective screening / mitigation, they must be replaced with a similar species within the next planting season.
Glint and Glare Management Plan (GGMP)	
99.	A GGMP must be prepared and provided to Council for certification at least twenty (20) working days prior to the commencement of Construction Works authorised by this consent. The objective of the GGMP is to set out the management methods to be undertaken to avoid, remedy or mitigate adverse glint and / or glare effects. The GGMP must be complied with for the duration of Operational Activities and until a Final DRP (certified in accordance with condition 107) has been implemented including removal of the solar panel arrays.
100.	To achieve the objective noted in condition 99 the GGMP must include the following: - Contact details for the person who will be the main point of contact for parties wanting to report any adverse glint and / or glare effects. - Procedures and timeframes for promptly substantiating and responding to reports or complaints regarding glint and / or glare effects, noting that any complaint must be acknowledged within 24 hours. - Methods to respond to substantiated glint and / or glare effects. These solutions may include but are not limited to, physical alterations to the Solar Farm setup, installation of screening or landscaping to block or diffuse glare, and adjustments to the operational procedures of the Solar Farm (such as tracking management). - A monitoring regime to assess the effectiveness of the mitigation measures and management solutions. - Provision for review and, if necessary, amendment of the GGMP based on monitoring outcomes and any substantiated complaints to ensure ongoing management effectiveness.
101.	A register must be maintained for the duration of the GGMP and made available to Council upon request. The register must, at a minimum, record all complaints received in relation to glint and / or glare, a note of whether each complaint has been verified (or not), and a summary of any measures implemented in response to the complaint.
Solar Panels	
102.	Operational orientation Between the hours of 7:10am-8am and 4.40pm-8pm (New Zealand Standard Time) or the hours of 8:10am-9am and 5:40pm-9pm (New Zealand Daylight Time) as applicable, the solar panels must not be orientated at an angle between 0-7 degrees from horizontal.

103.	Non-operational orientation Between sunset and sunrise, the solar panels must be stowed at an angle of 60 degrees from horizontal.
104.	Solar panel requirements The solar panels must: (a) have an anti-reflective coating; (b) be spaced on arrays with at least 5m between the piles for each neighbouring row; (c) include insulators such that no bare wiring is exposed; (d) be cleaned with water only; and (e) otherwise be in general accordance with the plans included in Appendix A.
Stormwater	
105.	The Consent Holder must inspect panel drip lines monthly for erosion as part of regular and routine maintenance of the Site. If erosion that results in the absence of grass over an area wider than 10cm and erosion to a depth greater than 10cm is identified, the Consent Holder must undertake preventative measures to ensure such erosion is not exacerbated, which may include infilling along the affected dripline by placing aggregate or other material.
106.	On-site vehicle refuelling during operation of the Solar Farm must be undertaken within a bunded re-fuelling area with spill containment measures.
DECOMMISSIONING - Decommissioning and Rehabilitation Plan (DRP)	
107.	A Draft DRP must be prepared and provided to the Council for information at least ten (10) years after the Solar Farm commences Operational Activities. The Draft DRP must provide details of: (a) The likely timing of decommissioning of the Solar Farm, given circumstances known at that time, including the anticipated remaining life of the then installed solar panels (or planned replacements/upgrades); (b) The duration, nature and estimated cost of the decommissioning and rehabilitation works that would be required (including without limitation, removal of the solar panel arrays and related infrastructure, including the BESS) to reinstate the land for productive uses; (c) Address the anticipated management of the decommissioning and rehabilitation works, including measures to avoid, remedy or mitigate adverse effects on the environment; (d) Measures to address any adverse effects that may continue until the Solar Farm Site rehabilitation has been completed (i.e. where solar farm infrastructure remains despite Operational Activities having ceased), where those adverse effects were previously addressed through management plans such as the LPMP, BMP, AMP, ACCP, OSMP, ERP, BSSMP and GGMP. Effects in this category would include, for example, landscape and visual effects, ecological effects, and possibly the risk of fire; and

	(e) The capacity of the Consent Holder to fund and manage the decommissioning and rehabilitation works, including whether there is a need to provide a bond to secure the performance of any of the conditions of these consents. A Final DRP must be prepared and provided to the Council for certification at least one (1) year prior to the cessation of Operational Activities (for example, the permanent cessation of providing power to the national grid). This Final DRP must address the matters outlined in (b) to (e) above. The Final DRP must be complied with until the decommissioning and rehabilitation works outlined in that plan (including, in particular, removal of the solar panel arrays and related infrastructure, including the BESS), have been completed. <i>Advice note: The intention of the Draft and Final DRPs is to ensure that the decommissioning and rehabilitation of the Solar Farm is undertaken in a planned and orderly way. Complete removal of the Solar Farm infrastructure (particularly removal of the solar panel arrays and related infrastructure, including the BESS) is required at the cessation of operation, in order to address the adverse effects that the physical elements of the Solar Farm will have on people, communities, and the wider natural environment and to ensure that the land is reinstated for productive uses. A check-in at 10 years of operation is considered appropriate, including to assess the capability of the consent holder, which may change over time, to fund and manage those works (particularly in circumstances where a bond is not currently provided).</i>
	STREAMWORKS CONSENT – LUS60446131
108.	Streamworks on the Site must not be undertaken between 1 May and 30 September in any year, without the submission of a 'Request for winter works' for approval to the Council. All requests must be renewed annually prior to the approval expiring and no works must occur until written approval has been received from the Council. All winter works will be re-assessed monthly or as required to ensure that adverse effects are not occurring in the receiving environment and approval may be revoked by the Council upon written notice to the Consent Holder.
109.	To avoid works being undertaken within spawning habitat and/or during fish migration, particularly for at-risk species, Streamworks must not be undertaken, nor will any written approval be provided, during the spawning and migration season (1 September to 1 December).
110.	Streamworks Management Plan (StMP) Prior to the commencement of the Streamworks activity, a finalised StMP must be submitted to the Council for certification. The purpose of the StMP is to provide a finalised Streamworks methodology and management measures that enables effects of Streamworks to be managed during construction in accordance with best practice.
111.	Streamworks activity must not commence until written certification is provided from the Council. The StMP must include as a minimum but not be limited to: - management measures to demonstrate how erosion and sediment controls will avoid sediment or sediment laden water entering the stream in accordance with best practice; - information relating to the backfilling of artificial drains within 100m of natural inland wetlands and subsoil drainage installations; - management of contaminants to water (e.g. hydrocarbons, construction materials);

	- methodology for diverting upstream flows during the streamworks, including how sufficient flow will be maintained at all times below the site of the works to maintain in-stream biota; - a detailed methodology for the installation of the structure(s) / disturbance and - details of final streambed remediation or stabilisation upon completion of stream works <i><u>Advice note:</u> These requirements will need to be integrated with the other relevant management plans, including the CMP and ESCP to ensure comprehensive Site management during physical works.</i>
112.	All Streamworks must be undertaken in accordance with the approved StMP. All required control measures and methodologies must be in place prior to the Streamworks commencing and be maintained for the duration of the Streamworks activity.
113.	Native Fish Capture and Relocation Plan (NFCRP) Prior to the commencement of Streamworks, a NFCRP must be submitted to the Council for certification. The purpose of the NFCRP is to ensure fish will be appropriately removed prior to commencement of Streamworks, to avoid fish mortality. The NFCRP must be prepared by a SQEP and include the following details, but not be limited to: • Methodologies to capture fish within the impact streams and wetland habitats, or justification there is no habitat for native fish present at the time of earthworks; • Fishing effort; • Details of the relocation site including habitat suitability for species being relocated and details of existing species present within the relocation site. • Storage and transport measures including prevention of predation and death during capture; • Euthanasia methods for diseased or pest species; • Requiring maps showing the salvage and release site; • Details of the salvage and relocation permit; • Details of the supervising ecologist, and • An accidental discovery protocol for aquatic fauna (including endangered species) which require specialised handling and relocation effort that is not otherwise covered in the standard methodologies (i.e. mudfish). This includes a protocol to implement the following actions: ○ Immediately cease streamworks (including dewatering) upon accidental discovery of any unexpected aquatic fauna and notify the Council. ○ Ensure aquatic fauna are left in a suitable environment where they will be unharmed while the NFCRP is updated. ○ Update the NFCRP to address handling and relocation of the unexpected aquatic fauna to be submitted to Council for re-certification. ○ Only re-commence the capture and relocation upon re-certification of the NFCRP.
114.	All pumps used to dewater the stream must have 3mm screen to prevent fish from entering the pump.
115.	Native fish capture and relocation must be undertaken in accordance with the certified NFCRP and must only be undertaken by a SQEP. The SQEP must also be onsite during the dewatering process to ensure that any remaining native fish that are not caught during defishing are salvaged.

116.	The Consent Holder must provide a Fish Salvage Report detailing the relocation site, the species and number of freshwater fauna relocated prior to and during dewatering, to the Council within five (5) working days of completion of the native fish capture and relocation. These results must be uploaded into NIWA's New Zealand Native Freshwater Fish database.
117.	No machinery must enter the wetted cross section of any stream at any time during the Streamworks. All machinery must be operated (including maintenance, lubrication and refuelling) in a way which ensures no hazardous substances such as fuel, oil or similar contaminants are discharged. If any discharge occurs, works must cease immediately, and the discharge must be mitigated and/or rectified to the satisfaction of the Council. <u>Advice note:</u> <i>Refuelling, lubrication and maintenance activities associated with any machinery should be carried out away from any water body with appropriate methods in place so if any spillage does occur that it can be contained and not enter the water body. If a construction management plan is required under any land use consent, you are advised to include any maintenance / servicing areas as part of that construction management plan.</i>

REVIEW

118.	Auckland Council may, under sections 128 and 129 of the RMA, initiate a review of any or all of the conditions of these consents falling within the scope of the Council's functions under section 30 and 31 of the RMA on the first, second and third anniversary of the commencement date of each consent and every five years after that, for the duration of the activity provided that any such review of conditions must be for the purposes of: - responding to any adverse effect on the environment which may arise from the exercise of the consent(s) and which it is most appropriate to deal with at a later stage; - reviewing the adequacy of and the necessity for monitoring undertaken by the Consent Holder; - in the case of a discharge permit to do something which would otherwise contravene section 15 of the RMA, if appropriate and necessary, requiring the Consent Holder to adopt the best practicable option to remove or reduce any adverse effects on the environment; - dealing with any unanticipated adverse effects on the environment which may arise from the exercise of the consent(s), which it is appropriate to deal with at a later stage; - ensuring that the conditions are effective and appropriate in managing the effects of the activities authorised by these consents; - addressing effects on the environment relating to Solar Farm decommissioning and rehabilitation matters, including any matters raised in a draft or final DRP prepared under condition 107, and including in relation to any arising need for a bond; and / or - reviewing whether or not any additional avoidance, remediation, mitigation, offset and / or compensation needs to be implemented by the Consent Holder to address an adverse effect on TAR avifauna species in light of the contents of an ACCP prepared and submitted to the Council under condition 83. <u>Advice note:</u> <i>For the avoidance of doubt, the Council may initiate a review at any time under section 128(1)(c) of the Act.</i>
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ADVICE NOTES - GENERAL COUNCIL ADVICE NOTES

1.	<i>For the purpose of compliance with the conditions of consent, "the Council" refers to the Council's monitoring officer unless otherwise specified. Please email monitoring@aucklandcouncil.govt.nz to identify your allocated officer.</i>
2.	<i>For more information on the resource consent process with Auckland Council see the Council's website: www.aucklandcouncil.govt.nz. General information on resource consents, including making an application to vary or cancel consent conditions can be found on the Ministry for the Environment's website: www.mfe.govt.nz.</i>
3.	<i>The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, and the Heritage New Zealand Pouhere Taonga Act 2014. These consents do not remove the need to comply with all other applicable Acts (including the Wildlife Act 1953, Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law.</i> <i>These consents in particular do not constitute:</i> <i>(a) building consent approval Please check whether a building consent is required under the Building Act 2004; or</i> <i>(b) an authority under the Wildlife Act 1953. It is an offence to kill protected wildlife without an authority under that Act. An authority under the Wildlife Act 1953 is required to authorise the collection and temporary possession of any carcasses of any protected bird species.</i>

Appendix A – Submitted Information, Reports, Drawings and Plans etc

Report title and reference	Author	Rev	Dated
Assessment of Effects on the Environment Glorit Solar Scheme: Glorit Solar Farm Prepared for Glorit Solar P LP	Beca		13/11/2024
Ecological Impact Assessment Glorit Solar Farm	Beca	7	13/11/2024
Landscape and Visual Assessment Glorit Solar Farm	Beca	V0.4	13/11/2024
Soil and Resource Report for 146 Omaumau Road and 2997 Kaipara Coast Highway, Glorit	Hanmore Land Management	-	14/03/2024
Kaipara Solar Farm: Archaeological Assessment	CFG Heritage	-	29/04/2024
Stormwater Management and Hazard Risk Assessment Glorit Solar Farm	Beca	1	15/08/2024
Hazardous Substances Assessment Glorit Solar Farm	Beca	1	13/08/2024
Glorit Solar Farm Assessment of Noise and Vibration Effects	Marshall Day Acoustics	7	16/08/2024
Traffic Impact Assessment	Beca	1	16/08/2024
Glorit Solar Farm Glint and Glare Assessment	Urbis Ltd	-	17/03/2025
Erosion and Sediment Control Plan	Beca	4	7/04/2025
Combined Preliminary and Detailed Site Investigation (Contamination) Glorit Solar Farm	Beca	1	15/08/2024
Contaminated Soils Management and Remediation Plan Glorit Solar Farm	Beca	1	15/08/2024

Drawing title and reference	Author	Rev	Dated
ZL_Glorit Solar Farm_LP1-IDL_14	Lightsource Development Limited	14	08/09/2024
Stopbank Bund Layout and Long Section 4211074-CE-1001	Beca	C	20/12/2023
Stopbank Bund Layout with Ecological Areas 4211074-CE-1002	Beca	C	20/12/2023
Stopbank Bund Sections Sheet 1 of 3 4211074-CE-1011	Beca	C	20/12/2023

Drawing title and reference	Author	Rev	Dated
Stopbank Bund Sections Sheet 2 of 3 4211074-CE-1012	Beca	C	20/12/2023
Stopbank Bund Sections Sheet 3 of 3 4211074-CE-1013	Beca	C	20/12/2023
Tracker Elevation TR_NXTR Sheet 1	Lightsource Development Limited	-	01/08/2023
Amenities Building AMB_01 Sheet 1	Lightsource Development Limited	-	31/05/2023
Control & Switchgear Building 66/33 01 Sheet 1	Lightsource Development Limited	-	16/07/2024
AUS_BESS Container_00 BESS CNT Sheet 1	Lightsource Development Limited	-	26/04/2023
AUS_DC Coupled BESS_01 DC BESS STN Sheet 1	Lightsource Development Limited	-	08/07/2024
Battery Energy Storage System - DC Coupled (General Cross Section) BESS-DC_01 Sheet 1	Lightsource Development Limited	-	10/08/2023
Inverter-Transformer TwinSkid Details TWS_01 Sheet 1	Lightsource Development Limited	-	01/08/2023
Chain Wire Fence Details CHW_01 Sheet 1	Lightsource Development Limited	-	20/09/2019
Omaumau Road Intersection Option-2 Concept Layout Plan 4211074-TA-01A	Beca	A	03/02/2023
Landscape Plans			
1.1 Sheet Location Plan	Beca	D	08/11/2024
2.1 Landscape Plan Sheet 01	Beca	D	08/11/2024
2.2 Landscape Plan Sheet 02	Beca	D	08/11/2024
2.3 Landscape Plan Sheet 03	Beca	D	08/11/2024
2.4 Landscape Plan Sheet 04	Beca	D	08/11/2024
2.5 Landscape Plan Sheet 05	Beca	D	08/11/2024
2.6 Landscape Plan Sheet 06	Beca	D	08/11/2024
2.7 Landscape Plan Sheet 07	Beca	D	08/11/2024
2.8 Landscape Plan Sheet 08	Beca	D	08/11/2024
2.9 Landscape Plan Sheet 09	Beca	D	08/11/2024
2.10 Landscape Plan Sheet 10	Beca	D	08/11/2024
2.11 Landscape Plan Sheet 11	Beca	D	08/11/2024
2.12 Landscape Plan Sheet 12	Beca	D	08/11/2024

Drawing title and reference	Author	Rev	Dated
2.13 Landscape Plan Sheet 13	Beca	D	08/11/2024
3.1 Planting Schedule	Beca	D	08/11/2024
3.2 Planting Schedule	Beca	D	08/11/2024
3.3 Planting Schedule	Beca	D	08/11/2024
4.1 Planting Palette	Beca	D	08/11/2024
4.2 Planting Palette	Beca	D	08/11/2024
4.3 Planting Palette	Beca	D	08/11/2024
4.4 Planting Palette	Beca	D	08/11/2024

Other additional information	Author	Rev	Dated
Glorit Solar Farm – Application of the National Environment Standard for Freshwater Reg 45 -for Trenching Activities	Beca	-	10/06/2024
Glorit Solar Farm Pavement Impact Assessment	Beca	-	29/10/2024
Assessment of Effects on an additional lot at 3266 Kaipara Coast Highway	Beca	-	06/12/2024
Letter to Brendan Clarke from Justin Kirkman (Beca - Technical Director – Civil Engineering) Flooding response to submissions	Beca		09/04/2025



Schedule A – Area to be kept clear during construction for SH16 sight lines



Figure 1: Vegetation to be removed prior to, and area of land to be kept clear during construction, Lot 1 DP 198312

Schedule B – Wetland Areas and Wetland Area A



Figure 2: Vegetation Wetland Areas and mapped natural inland wetlands

Schedule C – Roosting Areas and Retained Roosting Habitat



Figure 3: Bird Roosting Areas to be retained and 150m staging buffer

Schedule D – Extent of security fence (kiwi openings/access)

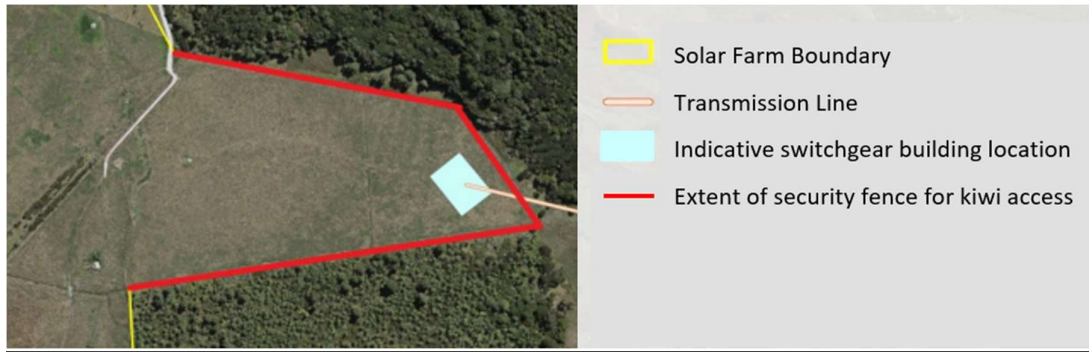


Figure 4: Extent of security fence for kiwi openings

Schedule E – Forested areas setback



Figure 5: 330m set back from forested areas

Schedule F – Indicative Floodgate Catchments

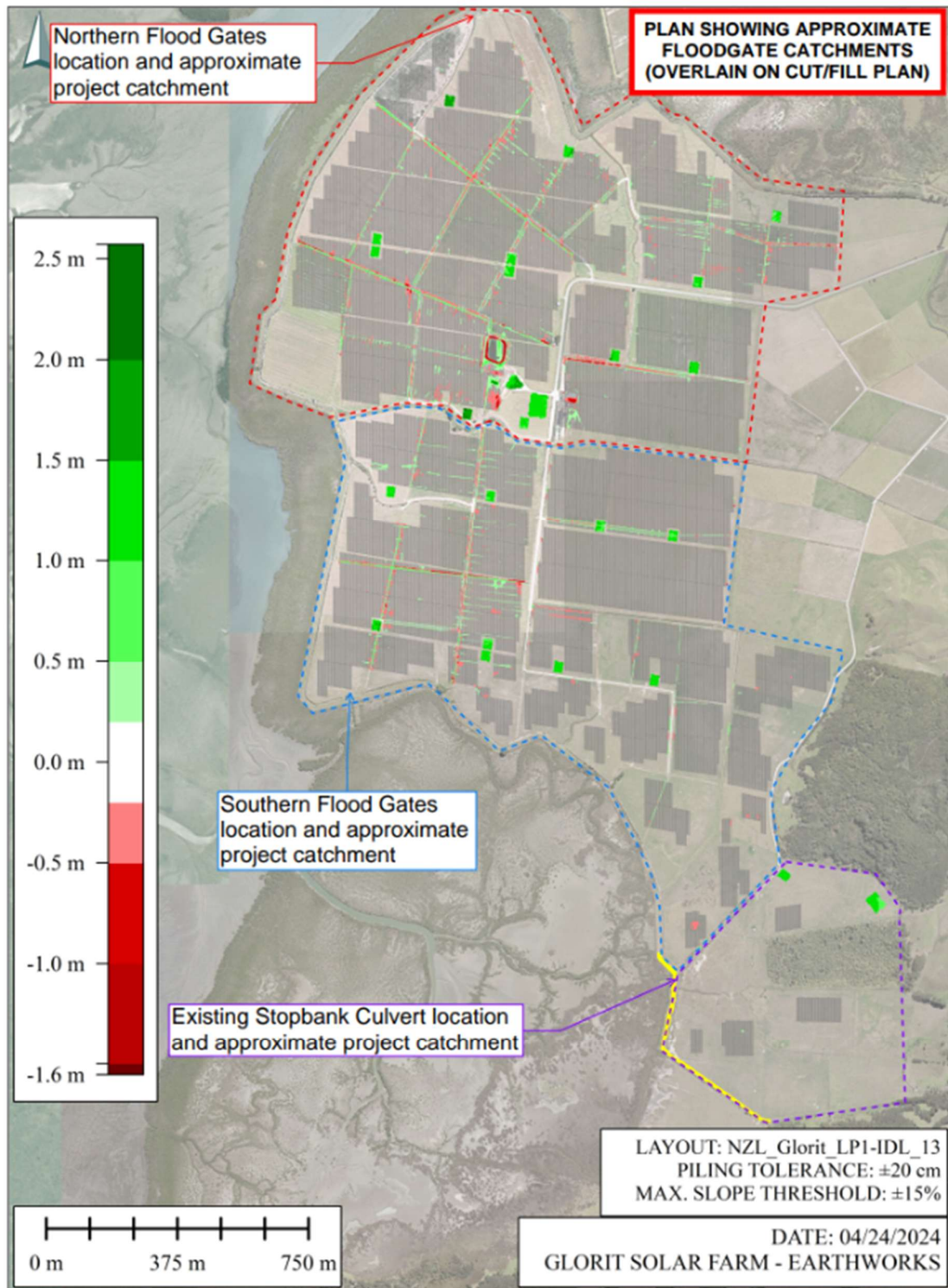


Figure 6: Indicative Floodgate Catchments

Glorit Substation Conditions

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Transpower Designation Conditions

PURPOSE OF THE DESIGNATION

Electricity Transmission – Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland)

Requiring Authority: Transpower New Zealand Limited

Designated land:



CONDITIONS

No.	Condition
1	The initial works to give effect to this designation, being the site works, construction of the platform and drainage, site access, substation facilities, establishment of line connections and landscaping, must be undertaken in general accordance with the information submitted in the documentation entitled 'Glorit Substation – Assessment of Effects on the Environment', prepared by Beca Limited, dated November 2024 (AEE).

2	This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.
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Outline Plan(s) of the Works

3	Prior to the commencement of construction, an outline plan (or plans) of the project or works to be constructed on the designated land must be submitted, in accordance with section 176A of the RMA. The outline plan (or plans) must include the following plans (or such parts of these plans as are relevant to the project or works to be constructed): - the Construction Management Plan (CMP) required by condition 6; - the Landscape Plan (LP) required by condition 19; and - if required under condition 15, any Site-Specific Construction Noise Management Schedule (SSCNMS).
4.	The CMP required by condition 6, the LP required by condition 19 and the SSCNMS if required under condition 15 must: - be prepared and implemented in accordance with the relevant conditions; - be prepared by a suitably qualified and experienced person(s), having regard to the subject matter of the plan; - include sufficient detail relating to the management of effects associated with the relevant activities and/or stage of work to which it relates; and - otherwise be in general accordance with the material set out in the AEE. Where there is any discrepancy between the material in the AEE and the relevant management plan condition(s), the requirements of the condition(s) will prevail. For the purposes of these conditions, a suitably qualified and experienced person or persons, means persons who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter addressed in the plan or schedule, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.
5.	Following submission of an outline plans(s), the CMP, LP or SSCNMS (if required) may be amended if necessary, to reflect any changes in design, construction methods or management of effects. Any amendments to the plans are to be discussed with and submitted to the Council for information without the need for a further outline plan process unless those amendments once implemented would result in a materially different outcome to that described in the original outline plan. <u>Advice Notes:</u> <i>Consideration of the CMP, LP and any SSCNMS by the Council relates only to those aspects of the plan that are relevant under the Resource Management Act 1991 (RMA). The outline plan process does not amount to an approval or acceptance of suitability by the Council of any elements of the management plan that relate to other legislation, for example, but not limited to, the Building Act 2004, the Heritage New Zealand Pouhere Taonga Act 2014, or the Health and Safety in Employment Act 1992.</i>

	<i>The Construction Traffic Management Plan required by condition 8 does not form part of the outline plan process.</i>
6.	All management plans (including amendments to those plans) must be implemented and complied with for the duration of the relevant activity, or as specified in the relevant condition.

Cultural Values

7.	Kaitiaki Advisory Group (KAG) At least three (3) months prior to the commencement of construction, the Requiring Authority must establish a KAG comprising up to three representatives from Puatahi Marae Trust, up to two representatives from Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, and up to two representatives from the Requiring Authority. The KAG must be provided with the opportunity to have ongoing input into cultural, ecological, heritage, and landscape matters throughout the duration of construction and for the first two years of operation of the substation. The purpose of the KAG is to: - Foster and encourage mutual understanding between the Requiring Authority, Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, with Puatahi Marae Trust as the lead and for the purpose of this condition as mana whenua, on the effectiveness of the measures implemented by the Requiring Authority to avoid, remedy, or mitigate adverse effects on cultural values associated with the whenua, wetlands, wai and moana; - Facilitate ongoing engagement with mana whenua; - Enable KAG or appointed kaitiaki (being persons nominated by Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu in writing to the Requiring Authority, in the absence of a representative(s) on the KAG) to provide cultural inputs into the drafting and preparation of the LP. - Discuss access and management arrangements for sites of cultural significance to mana whenua; and - Provide mana whenua with reports, monitoring information and updates. The first meeting of the KAG must be convened prior to the commencement of any bulk earthworks. Thereafter the KAG meetings are to be convened at least twice per year (or at such lesser frequency as the KAG decides) for the duration of construction and for the first two years of operation of the substation. At least twenty (20) working days prior to each KAG meeting, the Requiring Authority must provide meeting invites to all KAG representatives including the date and time of the meeting. A record of all meetings is to be distributed to Auckland Council no later than one month after each meeting. The Requiring Authority must provide reasonable resourcing, technical and administrative support for the operation of the KAG.
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	<u>Advice Notes:</u> <i>Should any KAG representatives choose not to attend a KAG meeting, this does not constitute a non-compliance with this condition.</i> <i>A single KAG can be formed for the Glorit Solar Scheme (being comprised of the Ōmaumau solar farm authorised by separate consents held by Glorit Solar P LP, and the Glorit substation authorised by this designation).</i>
8.	Kaitiaki Monitoring Framework – (KMF) The Requiring Authority must, following consultation with the KAG, enable Puatahi Marae Trust and hapū to prepare and develop a KMF to outline how monitoring will occur across project phases for construction, and post-construction with a focus on ecological enhancement and restoration, land disturbance activities, and cultural health indicators (CHI) for the Kaipara Moana coastal edge, estuaries and associated environments including Ōmaumau reserve and tributaries. The KMF must be incorporated within the Puatahi Whakatutuki Plan required under condition 9. The objective of the KMF is to: i. Uphold kaitiakitanga; ii. Monitor effects on cultural values, ecological health and mauri of ecosystems; iii. Guide timely identification and responses to adverse effects; and iv. Inform mitigation and enhancement actions. <u>Advice Notes:</u> <i>Should the Requiring Authority invite and enable Puatahi Marae Trust and hapū to prepare and develop a KMF, and a framework is subsequently not prepared, this shall not constitute non-compliance with this condition.</i> <i>A single KMF can be prepared for the Glorit Solar Scheme.</i> <i>The Requiring Authority has provided its acknowledgement and agreement that it will endeavor to implement the principles of Te Tiriti O Waitangi in the implementation of the KMF in line with the Requiring Authorities own policies of engagement with Mana Whenua hapū, marae and post-settlement entities.</i>
9.	Mātauranga Māori - Puatahi Whakatutuki Plan (PWP) A PWP must be prepared by the Requiring Authority in collaboration with Puatahi Marae Trust (where the Trust Agrees to provide such collaboration) and must be provided to the Council for information at least twenty (20) working days prior to commencement of construction. The PWP must be provided to the KAG for comment at least twenty (20) working days prior to submitting the PWP to Council.

The PWP must set out cultural monitoring protocols, site cultural induction processes, tikanga-led monitoring of wetlands, groundwater, and culturally significant areas, and define the roles and responsibilities of Kaitiaki cultural monitors (Kaitiaki Cultural Monitors).

The purpose of the PWP is to establish a methodology to monitor and report on cultural values of the natural environment within and around the designated land for the duration of construction works.

To achieve this purpose, the PWP must include the following matters as relevant to the works authorised by this designation:

- a. A description of the Kaitiaki Cultural Monitors roles and responsibilities.
- b. A description of the Kaitiaki Cultural Monitors tasks and commitments.
- c. The KMF described in condition 8 to outline how monitoring will occur.
- d. A methodology, established with the KAG, to use Cultural Health Indicator (CHI) surveys to monitor the health of the environment.
- e. The development of CHI attributes tailored to monitoring points on the designated land.
- f. Recommendations and advice on landscape and ecological enhancement and restoration works including riparian and wetland enrichment, and planting treatment, pest flora and fauna management, and any fish passage devices.
- g. Optional initiatives that respond to the historic and cultural context of the Ōmaumau properties (Solar Farm and Glorit Substation) and its features to be developed, confirmed and implemented in association with the KAG, and the identified management plans. For example, this may include installation of interpretive signage, wayfinding devices, pouwhenua and/or artworks in suitable locations to reference the historic and cultural relationship and values of the designated land and wider setting.

Implementation of the PWP must include the following as relevant to the proposed works:

- i. An introductory hui for the KAG on the use of CHI survey and monitoring;
- ii. An initial CHI survey to be undertaken at, or within, 6 months of ecological enhancement and / or restoration works commencing; and
- iii. Ongoing CHI surveys at monitoring sites at least every five years thereafter (or at such greater frequency as the KAG may request).

Any changes proposed to the PWP, or its implementation, must be confirmed in writing to Puatahi Marae Trust by the Requiring Authority following consultation with the KAG, and prior to the implementation of any changes proposed.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for the implementation of the PWP.

Advice Notes:

A single PWP can be prepared for the Glorit Solar Scheme.

The Requiring Authority has provided its acknowledgement and agreement that it will endeavour to implement the principles of Te Tiriti O Waitangi in the development and implementation of the PWP.

10.	The Requiring Authority must, in collaboration with Puatahi Marae Trust, convene an annual (or less frequent as agreed to by Puatahi Marae Trust and the Requiring Authority) hui to review the effectiveness of cultural and environmental mitigation measures. A summary report of monitoring outcomes and management responses and capacity building must be prepared following each hui. <i><u>Advice Note:</u> A single hui can be convened for the Glorit Solar Scheme.</i>
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Construction Management Plan - CMP

11.	A Construction Management Plan (CMP) must be prepared by the Requiring Authority prior to the commencement of physical works for the construction of the facilities and line connections on the designated land, and must address the management of all construction works, including details of how the adverse effects of construction will be managed. A CMP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3. In particular, the CMP must contain details covering the following matters: - An outline construction programme for the substation construction works. - Procedures for ensuring that surrounding property owners and occupiers are given prior notice of the commencement of construction works and are informed about the expected duration of those works. - The location of notice boards that clearly identify the name, telephone number and address for service of the site manager, and procedures for ensuring that property owners and occupiers have contact details for relevant Requiring Authority representatives during construction works. - Construction noise management measures to demonstrate compliance with condition 14. - Reference to any Erosion and Sediment Control Plan prepared in accordance with any applicable regional consents applying to the construction works. - Dust management measures for construction earthworks and associated activities such as the movement of vehicles. - Measures for the protection of utility services (where present). - Measures to be adopted to maintain the land in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of building materials and similar construction activities. - Measures to ensure the safety of the general public where potentially affected by construction activities. - Relevant parts of the KMF and PWP, required under conditions 5C and 5D (for example, provisions for cultural site inductions, blessings prior to earthworks, and ongoing tikanga-led cultural monitoring during construction, developed in collaboration with Puatahi Marae Trust).
12.	The CMP must be implemented for the duration of the substation construction period.

Kaitiaki Cultural Monitoring

13. The Requiring Authority must invite each Kaitiaki Cultural Monitor to undertake cultural monitoring visits and cultural surveys of the designated land and surrounds for the duration of construction.
- The Requiring Authority must provide reasonable resourcing, technical and administrative support for Kaitiaki Cultural Monitors during construction.
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Construction Traffic Management Plan - CTMP

14. A Construction Traffic Management Plan (CTMP) must be prepared by the Requiring Authority in consultation with Waka Kotahi NZ Transport Agency and provided to Auckland Council for information at least ten (10) working days prior to the commencement of any physical works for the initial construction of the substation facilities and line connections on-site.
- The objective of the CTMP is to avoid, remedy or mitigate adverse construction traffic effects on the road network.
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15. To achieve this objective, the CTMP must include:
- Roles, responsibilities and contact details, including for public enquiries and for members of the public to communicate any traffic issues arising as a result of the construction works.
 - Expected number of vehicle movements, particularly heavy vehicle numbers during each phase of construction.
 - Hours of work.
 - The point of site access.
 - Construction traffic routes.
 - Installation of advisory warning signs for “trucks crossing ahead” for vehicles on SH16 approaching the site access, from both the north and south.
 - Monitoring of heavy vehicle movements in and out of the access to determine if any issues materialise as a result of the development, in combination with the neighbouring solar farm development.
 - Details for the transport of large equipment and structures to site including the route and measures to manage heavy and over dimension loads.
 - Details of any temporary road closures and related traffic management measures.
 - Management measures to be implemented if issues are identified as a result of the monitoring required by (g), above.
 - Location of on-site parking and loading areas for deliveries.
 - Consideration of school bus routes and stopping points on SH16, particularly any in close proximity, and measures to ensure the safety of school children using such bus services.
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16. The Requiring Authority must ensure that the CTMP required under condition 14 is implemented and maintained throughout the entire period of earthworks and construction activity on the designated land.
- Advice Note: The Requiring Authority will be responsible for ensuring all necessary permits, such as Network Access Requests (NAR) and vehicle crossing permits, are obtained from NZTA.*
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Vehicle Access

17. Prior to the commencement of initial earthworks to construct the substation platform, the Requiring Authority must complete localised seal widening of State Highway 16 (SH16) as detailed in Drawing Glorit Substation Proposed Accessway Layout Plan 4211074-TA-0001, prepared by Beca Limited, Revision A, dated 14 August 2024. The purpose of the seal widening is to provide sufficient space for vehicle tracking and safe operation, including sight distance and vehicle deceleration requirements.
18. A site vehicle access with a minimum width of 9m from SH16 Kaipara Coast Highway must be constructed to comply with the NZTA vehicle accessway standards (NZTA Planning Policy Manual, Appendix 5B).

Accidental discovery / heritage and cultural including Archaeological Management Plan (AMP) and Accidental Discovery Protocol (ADP)

19. The Requiring Authority must prepare an Archaeological Management Plan (AMP) and Accidental Discovery protocol (ADP) in consultation with Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014. The AMP and ADP must include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes.

Advice Notes:

The Requiring Authority is responsible for obtaining all other necessary consents, permits, and licences, including those under the Heritage New Zealand Pouhere Taonga Act 2014. The provisions of the accidental discovery rules E11.6.1. and E12.6.1 set out in the Auckland Unitary Plan are also noted and should be referred to.

Puatahi Marae contributed to the Te Wahapū o Kaipara Manaakitanga Plan (2007) and the NMWK Environmental Management Plan (2021), whose launch at Puatahi Marae was postponed due to Covid-19. The marae also prepared an Accidental Kōiwi Discovery Protocol, which can be updated for inclusion in AMP and ADP.

Construction Noise

20. Construction noise must be measured and assessed in accordance with NZS 6803:1999 Acoustics – Construction Noise (NZS6803:1999) and must comply with the noise standards at any occupied building which contains an activity that is sensitive to noise (as defined in the AUP) as set out in the following table as far as practicable:

Table 1: Construction Noise Standards

Time of week	Time Period	Maximum noise level (dBA)	
		Leq	Lmax
Weekdays	6:30am - 7:30am	60	75
	7:30am - 6:00pm	75	90
	6:00pm - 8:00pm	70	85
	8:00pm - 6:30am	45	75
Saturdays	6:30am - 7:30am	45	75

			7:30am - 6:00pm	75	90
			6:00pm - 8:00pm	45	75
			8:00pm - 6:30am	45	75
	Sundays and public holidays		6:30am - 7:30am	45	75
			7:30am - 6:00pm	55	85
			6:00pm - 8:00pm	45	75
			8:00pm - 6:30am	45	75

21.

Where construction noise at any occupied building which contains an activity that is sensitive to noise is either predicted or measured to exceed the noise standards in Table 1, a SSNMS must be prepared by a suitably qualified and experienced person in consultation with the owners and occupiers of sites subject to the SSNMS. The objective of the SSNMS is to set out the Best Practicable Option for the management of noise effects of the construction activity. The SSNMS must include details such as:

- (i) activity location, start and finish dates
- (ii) the nearest neighbours to the activity
- (iii) a location plan
- (iv) predicted noise level for all receivers where the levels are predicted or measured to exceed the applicable standards in condition 20
- (v) the proposed Best Practicable Option mitigation for the activity/location
- (vi) the proposed communications with neighbours
- (vii) location, times and types of monitoring.

22.

Any SSNMS must be submitted to the Council for information at least ten (10) working days prior to the relevant works commencing.

Operational Noise

23.	All equipment and facilities within the designated land (except for construction works) must be designed and operated to ensure that the following noise limits are not exceeded at the notional boundary of any rural zoned site: a. 55 dB LAeq Monday to Saturday 7am to 10pm and Sunday 9am to 6pm b. 45 dB LAeq /75 dB LAFmax at all other times. Noise levels must be measured and assessed in accordance with NZS 6801:2008 Acoustics – Measurement of Environmental Sound and NZS 6802:2008 Acoustics – Environmental Noise.
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Hazardous Substances

24.	Any part of the facility containing oil must be designed to comply with Transpower New Zealand Limited's Oil Spill Management Policy (TP:GS.54.01), Issue 4, December 2014.
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Landscape Mitigation – Landscape Plan (LP)

25.	A detailed LP must be prepared by the Requiring Authority in consultation with KAG representatives (or appointed Kaitiaki under condition 7) prior to the commencement of any civil (landform modification) works, transmission line deviation works or installation of substation
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	components. The LP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3. The LP must be in general accordance with the Landscape Plans prepared by Beca Limited, dated 4 November 2024, titled Photosimulations / Landscape Plans, submitted as part of the notice of requirement, and must include: - Planting plans and written specifications detailing the plant species, plant sourcing, plant sizes at time of planting, plant locations, density of planting, and timing of planting. All indigenous planting must prioritise eco-sourced native species from nurseries in the Kaipara rohe where practicable. - Written specifications for soil preparation to ensure appropriate growing conditions for plants. - A programme of plant establishment, including identifying where planting can be undertaken prior to completion of construction. - A five year programme of post establishment protection and maintenance (fertilising, weed removal/spraying, pest control, replacement of dead/poorly performing plants, and watering to maintain soil moisture). - The location, materiality, height and design of fencing. - Details of the locations of stockproof fencing and the use of pest animal barriers (e.g. plant guards) to protect the planting; and identification of any areas where grass will be maintained by mowing rather than grazing (with such areas to be kept to a minimum). - Integration of cultural landscape values identified in the Cultural Values Assessment prepared by Puatahi Marae Trust and dated 22 May 2025.
26.	The LP prepared under condition 25 above must be implemented in the first full planting season (May to September) following completion of construction of the platform and drainage, site access and initial substation facilities.
27.	All landscaping required under the LP must be maintained for a minimum of five years following planting, and in accordance with the protection and maintenance programme submitted with the LP.
28.	Any planting required under the LP may be trimmed or removed, where: - It is necessary in order to remove or reduce any risk to the maintenance or operational integrity of the substation and line connections; or - Future development of the National Grid facilities necessitates its removal.
29.	If further development of National Grid facilities on or into the designated land necessitates the removal of any planting required under the LP (such as for new line connections), the outline plan submitted for those works must address how the adverse effects of any planting removal will be managed.
30.	Colour of building exteriors The colour finish of the external walls and roof of any buildings must be a neutral colour as defined in the BS5252 standard colour palette (greyness groups A, B or C), have a Light Reflectivity Value rating below 10%, and be green, brown or grey in tone.

Electric and Magnetic Fields (EMF)

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| 31. | Any equipment used or located on the designated land must be designed and operated to limit the electric and magnetic field exposures at or beyond the secure boundary to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time-varying electric, and magnetic fields (1Hz – 100kHz), (Health Physics 99(6): 818-836;) (ICNIRP Guidelines). Those guidelines include the public exposure reference levels of 5 kV/m for electric fields and 200 μ T for magnetic flux density at one metre above ground level under maximum normal operating conditions (ie, when there are no faults in the transmission system). |
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Radio Frequency Interference

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| 32. | Any works or equipment used or located on the designated land must be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage AC Power Systems, 0.15 to 1000 MHz. |
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Glorit Solar P LP: District Consent Conditions

These conditions apply to land use consent LUC60454888 held by Glorit Solar P LP in relation to:

- Unenclosed Substations under rule E26.2.3.1 (A21) of the AUP:OP
- Hazardous facilities that store or use up to <60 tonnes) of hazardous substance sub-class 9.1C within the Rural Production Zone under rule E31.4.2(A81)

Consent Holder: Glorit Solar P LP

No.	Condition																																																																
GENERAL CONDITIONS																																																																	
1.	The design, construction and operation of the works must be undertaken in general accordance with the information submitted in the documentation entitled 'Glorit Substation – Notice of Requirement and Application for Resource Consent', prepared by Beca Limited, dated 19 November 2024 and listed in the tables below. Where there is any discrepancy between this documentation and the conditions, the requirements of the conditions will prevail. <table><tr><th>Report title and reference</th><th>Author</th><th>Rev</th><th>Dated</th></tr><tr><td>Landscape and Visual Assessment Glorit Substation</td><td>Beca Ltd</td><td>1</td><td>14 November 2024</td></tr><tr><td>Civil Infrastructure Report Glorit Substation</td><td>Beca Ltd</td><td>1</td><td>4 November 2024</td></tr><tr><td>Traffic Impact Assessment Glorit Substation</td><td>Beca Ltd</td><td>1</td><td>6 November 2024</td></tr><tr><td>Glorit Substation Assessment of Noise and Vibration Effects</td><td>Marshall Day Acoustics Ltd</td><td>2</td><td>5 September 2024</td></tr><tr><td>Hazardous Substance Assessment Glorit Substation</td><td>Beca Ltd</td><td>3</td><td>31 October 2024</td></tr><tr><th>Drawing title and reference</th><th>Author</th><th>Rev</th><th>Dated</th></tr><tr><td>Glorit Substation: Proposed Site Layout, Drawing No. TP208194</td><td>Beca Ltd</td><td>4</td><td>October 2024</td></tr><tr><td>Glorit Substation: Locality Plan , Drawing No. TP208196</td><td>Beca Ltd</td><td>3</td><td>October 2024</td></tr><tr><td>Glorit Substation: 220/33 kV switchyard general arrangement, Drawing No. TP208197</td><td>Beca Ltd</td><td>5</td><td>October 2024</td></tr><tr><td>Glorit Substation: Isometric view, Drawing No. TP208199</td><td>Beca Ltd</td><td>4</td><td>October 2024</td></tr><tr><td>Glorit Substation: 220/33 kV switchyard elevations Sheet 1, Drawing No. TP208200</td><td>Beca Ltd</td><td>3</td><td>October 2024</td></tr><tr><td>Glorit Substation: 220/33 kV switchyard elevations Sheet 2, Drawing No. TP208200</td><td>Beca Ltd</td><td>2</td><td>October 2024</td></tr><tr><td>Glorit Substation: Drainage stormwater plan sheet 2, Drawing No. TP208206</td><td>Beca Ltd</td><td>3</td><td>October 2024</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Report title and reference	Author	Rev	Dated	Landscape and Visual Assessment Glorit Substation	Beca Ltd	1	14 November 2024	Civil Infrastructure Report Glorit Substation	Beca Ltd	1	4 November 2024	Traffic Impact Assessment Glorit Substation	Beca Ltd	1	6 November 2024	Glorit Substation Assessment of Noise and Vibration Effects	Marshall Day Acoustics Ltd	2	5 September 2024	Hazardous Substance Assessment Glorit Substation	Beca Ltd	3	31 October 2024	Drawing title and reference	Author	Rev	Dated	Glorit Substation: Proposed Site Layout, Drawing No. TP208194	Beca Ltd	4	October 2024	Glorit Substation: Locality Plan , Drawing No. TP208196	Beca Ltd	3	October 2024	Glorit Substation: 220/33 kV switchyard general arrangement, Drawing No. TP208197	Beca Ltd	5	October 2024	Glorit Substation: Isometric view, Drawing No. TP208199	Beca Ltd	4	October 2024	Glorit Substation: 220/33 kV switchyard elevations Sheet 1, Drawing No. TP208200	Beca Ltd	3	October 2024	Glorit Substation: 220/33 kV switchyard elevations Sheet 2, Drawing No. TP208200	Beca Ltd	2	October 2024	Glorit Substation: Drainage stormwater plan sheet 2, Drawing No. TP208206	Beca Ltd	3	October 2024								
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Lapse

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| 2. | Under section 125 of the RMA, this consent lapses five (5) years after the date it commences unless given effect to before that date. |
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Monitoring Deposit

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| 3. | <p>The Consent Holder must pay Auckland Council an initial consent compliance monitoring charge of \$1,170 (inclusive of GST), plus any further monitoring charge or charges to recover the actual and reasonable costs incurred to ensure compliance with the conditions attached to this consent.</p> <p><i>Advice note:</i> <i>The initial monitoring deposit is to cover the cost of inspecting the site, carrying out tests, reviewing conditions, updating files, etc., all being work to ensure compliance with the resource consent(s). In order to recover actual and reasonable costs, monitoring of conditions, in excess of those covered by the deposit, must be charged at the relevant hourly rate applicable at the time. The Consent Holder will be advised of the further monitoring charge. Only after all conditions of the resource consent have been met, will the council issue a letter confirming compliance on request of the Consent Holder.</i></p> |
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OPERATIONAL CONDITIONS

Hazardous Substances

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| 4. | Any part of the facility containing oil and authorised by this consent must be designed to comply with Transpower New Zealand Limited's Oil Spill Management Policy (TP:GS.54.01), Issue 4, dated December 2014. |
| 5. | <p>Prior to the commencement of the operational activity the Consent Holder must submit an Emergency Response Plan (ERP) to Auckland Council for information. The ERP must be prepared by a suitably qualified and experienced person.</p> <p>For the purposes of this condition, a suitably qualified and experienced person or persons, means persons who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter addressed in the plan, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.</p> |
| 6. | The Consent Holder must prepare the ERP in consultation with Transpower New Zealand Limited and Fire and Emergency New Zealand (FENZ). The Consent Holder must provide evidence to Auckland Council that engagement with these entities has occurred including evidence that any concerns raised by them have been addressed or provide reasons why they are not addressed. |
| 7. | The objective of the ERP is to outline the procedures to be followed in the event that an emergency (including a fire or the spill of hazardous substances) occurs on the site, and must provide details on the following: |
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	a. A facility description, including infrastructure details, operations, number of personnel, and operating hours. b. A site plan depicting key infrastructure: i. site access points and internal access tracks; ii. firefighting facilities; iii. water supply system; iv. drainage; and v. neighbouring properties. c. Details of emergency resources, including communication systems, personal protective equipment and first aid. d. Up-to-date contact details for facility personnel, and any relevant off-site personnel that could provide technical support during an emergency. e. Emergency procedures for all credible hazards and risks, including building, infrastructure and vehicle fire, grass fire, and flood hazard. f. How FENZ will be alerted of an emergency incident. g. Site evacuation procedures. h. An inventory of hazardous substances and the current Safety Data Sheets to be stored on site. i. Hazardous substance storage, signage and inspection requirements. j. An Oil Spill Management and Contingency Plan, including reporting to the Council within 24 hours of an incident which results in discharge of hazardous substances into the environment.
8.	The ERP is to be implemented for the life of the works authorised and established under this consent.

Operational Noise

9.	All equipment and facilities within the site authorised and established under this consent (except for construction works) must be designed and operated to ensure that the following noise limits are not exceeded at the notional boundary of any rural zoned site: a. 55 dB LAeq Monday to Saturday 7am to 10pm and Sunday 9am to 6pm b. 45 dB LAeq /75 dB LAFmax at all other times.
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ADVICE NOTES – GENERAL

1.	<i>For the purpose of compliance with the conditions of consent, “the Council” refers to the Council’s monitoring officer unless otherwise specified. Please email monitoring@aucklandcouncil.govt.nz to identify your allocated officer.</i>
2.	<i>For more information on the resource consent process with Auckland Council see the Council’s website: www.aucklandcouncil.govt.nz. General information on resource consents, including making an application to vary or cancel consent conditions can be found on the Ministry for the Environment’s website: www.mfe.govt.nz.</i>
3.	<i>The consent holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, Wildlife Act 1953 and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute</i>

<i>building consent approval. Please check whether a building consent is required under the Building Act 2004.</i>
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Transpower New Zealand Limited: Regional Consent Conditions

These conditions apply to regional consents LUC60443286, WAT60443287, and DIS60454887 (of BUN60443285), held by Transpower New Zealand Limited in relation to:

- WAT60443287: Groundwater dewatering and diversion under rule E7.4.1(A20) and (A28) of the AUP:OP
- LUC60443286: Earthworks greater than 2,500 m² where the land has a slope equal to or greater than 10 degrees, and within the Sediment Control Protection Area other than for maintenance, repair, renewal, minor infrastructure upgrading under rule E26.5.3.2 (A106) and (A107) of the AUP:OP.
- DIS60454887: Discharge of contaminants from an existing or new industrial or trade activity area not listed in Table E33.4.3 where the permitted discharge standards are not met under rule E33.4.2(A12).

Consent Holder: Transpower New Zealand Limited

No.	Condition
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GENERAL CONDITIONS – All consents

1.

The design, construction and operation of the works must be undertaken in accordance with the information submitted in the documentation entitled ‘*Glorit Substation – Notice of Requirement and Application for Resource Consent*’, prepared by Beca Limited, dated 19 November 2024 and listed in the tables below. Where there is any discrepancy between this documentation and the conditions below, the requirements of the conditions will prevail.

Report title and reference	Author	Rev	Dated
Groundwater Assessment Report Glorit Substation	Beca Ltd	1	8 November 2024
Combined Preliminary and Detailed Site Investigation (Contamination) Glorit Solar Farm	Beca Ltd	1	15 August 2024
Ecological Impact Assessment Glorit Substation	Beca Ltd	3	5 November 2024
Kaipara Solar Farm: Archaeological Assessment	CFG Heritage	-	29 April 2024
Civil Infrastructure Report Glorit Substation	Beca Ltd	1	4 November 2024
Erosion and Sediment Control Plan Glorit Substation	Beca Ltd	4	31 October 2024

Drawing title and reference	Author	Rev	Dated
Glorit Substation: Proposed Site Layout, Drawing No. TP208194	Beca Ltd	4	October 2024
Glorit Substation: Earthworks cut and fill plan, Sheet 2, Drawing No. TP208205	Beca Ltd	3	October 2024

	Glorit Substation: Drainage stormwater plan sheet 2, Drawing No. TP208206	Beca Ltd	3	October 2024
	Glorit Substation: Drainage and roading details Sheet 1 of 3	Beca Ltd	1	October 2024
	Glorit Substation: Drainage and roading details Sheet 2 of 3	Beca Ltd	1	October 2024
	Glorit Substation: Drainage and roading details Sheet 3 of 3	Beca Ltd	1	October 2024
	Glorit Substation: Surfacing plan	Beca Ltd	1	October 2024
	Glorit Substation: Construction Sequencing Plan	Beca Ltd	1	October 2024

Consent duration

2.	Consent LUC60443286 (s9(2) regional land use consent of BUN60443285) shall expire ten (10) years from the date of commencement unless surrendered or cancelled at an earlier date.
	Consent WAT60443287 (s14 water permit of BUN60443285) shall expire thirty-five (35) years from the date of commencement unless surrendered or cancelled at an earlier date.
	Consent DIS60454887 (s15 discharge permit of BUN60443285) shall expire thirty-five (35) years from the date of commencement unless surrendered or cancelled at an earlier date.

Lapse

3.	Under section 125 of the RMA, the consents shall lapse five (5) years after the date of commencement unless given effect to before that date:
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Monitoring Deposit

4.	The Consent Holder must pay Auckland Council an initial consent compliance monitoring charge of \$1,170 (inclusive of GST), plus any further monitoring charge or charges to recover the actual and reasonable costs incurred to ensure compliance with the conditions attached to this consent. <i>Advice Note:</i> <i>The initial monitoring deposit is to cover the cost of inspecting the site, carrying out tests, reviewing conditions, updating files, etc., all being work to ensure compliance with the resource consent(s). In order to recover actual and reasonable costs, monitoring of conditions, in excess of those covered by the deposit, must be charged at the relevant hourly rate applicable at the time. The Consent Holder will be advised of the further monitoring charge. Only after all conditions of the resource consent have been met, will the council issue a letter confirming compliance on request of the Consent Holder.</i>
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Management Plans

5.	All management plans required by the conditions of this consent must:
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	a. be prepared and implemented in accordance with the relevant management plan condition(s); b. be prepared by a suitably qualified and experienced person(s), having regard to the subject matter of the management plan; c. include sufficient detail relating to the management of effects associated with the relevant activities and/or stage of work to which it relates; and d. otherwise be in general accordance with the material set out in condition 1. Where there is any discrepancy between the material referenced in condition 1 and the relevant management plan condition(s), the requirements of the condition(s) will prevail. For the purposes of these conditions, a suitably qualified and experienced person or persons (SQEP), means persons who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter addressed in the plan, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.
6.	Where specified in any condition of this consent, management plans must be submitted to Auckland Council for certification in accordance with the relevant management plan condition(s). If Council's response to a lodged management plan raises discrete issues that are of minor consequence for the management of effects, the Consent Holder may request that the Council partially certify the management plan, with any residual issues subsequently addressed through certification of those outstanding issues. <u>Advice Note:</u> <i>The Council may decide, following a request from the Consent Holder and acting reasonably, whether or not a matter raises discrete issues of minor consequence for the management of effects, allowing for partial certification of a management plan. Unresolved certification matters that would require construction to be delayed are expected to be rare. These would need to relate to significant issues impacting on the construction methodology or design and which could not be 'reversed' or otherwise addressed if construction has commenced.</i>
7.	If the Auckland Council's response is that they are not able to certify the management plan, the Consent Holder must consider any reasons or recommendations provided by Auckland Council and resubmit an amended management plan for certification.
8.	If Council's response to the amendments in the resubmitted management plan raises discrete issues that are of minor consequence for the management of effects, the Consent Holder may request that the Council partially certify the management plan, with any residual issues subsequently addressed through certification of those outstanding issues.

	<u>Advice Note:</u> <i>The Council may decide, following a request from the Consent Holder and acting reasonably, whether or not a matter raises discrete issues of minor consequence for the management of effects, allowing for partial certification of a resubmitted management plan.</i>
9.	Any material amendments to any of the management plans certified by Auckland Council must be submitted to Auckland Council at least ten (10) working days before the relevant works (or relevant portion of works) are undertaken, and subject to the certification of the amendment prior to works being undertaken. Any such material amendments must also comply with condition 5.
10.	Certification of amendments to management plans must be in accordance with conditions 5 to 8 and condition 11.
11.	Certification in relation to all management plans means written confirmation from the Council that the management plan: • has been prepared by a SQEP(s); • meets its objective; • provides appropriate means to ensure that the conditions are able to be met; and • contains all the required information and specifications of the relevant condition(s) for that management plan. <u>Advice Note:</u> <i>Certification of management plans by the Council relates only to those aspects of the management plan that are relevant under the RMA. The certification does not amount to an approval or acceptance of suitability by the Council of any elements of the management plan that relate to other legislation, for example, but not limited to, the Building Act 2004, the Heritage New Zealand Pouhere Taonga Act 2014, or the Health and Safety in Employment Act 1992.</i>
11A.	The consent holder must implement and comply with all management plans (including amendments to those plans) for the duration of the relevant activity, or as otherwise specified in the relevant management plan condition(s).

CONSTRUCTION CONDITIONS – LUC60443286

Pre-start meeting

12.	Not less than five (5) working days prior to the commencement of the construction and / or earthworks activity authorised by these consents, the Consent Holder must hold a pre-start meeting that: a. is located on the subject site b. includes representation from the Council c. includes representation from the contractors and/or SQEP(s) who will undertake the works At least fifteen (15) working days prior to the meeting, the Consent Holder must invite each Kaitiaki Advisory Group representative to nominate Kaitiaki Cultural
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	Monitors to attend the pre-start meeting to provide cultural induction and cultural safety training, including tikanga protocols, for construction workers and other specialists involved in such works. <u>Advice Note:</u> <i>The Kaitiaki Advisory Group (KAG) is established under condition 5B of Transpower New Zealand Limited's designation for the Glorit substation. Kaitiaki Cultural Monitors are established under condition 9 of Transpower's designation for Glorit substation. These Kaitiaki Cultural Monitors can be changed by each KAG representative at any time.</i>
13.	The purpose of the pre-start meeting is to ensure that all relevant parties are aware of and understand the requirements for compliance with the conditions of this consent and the construction plans and management plans required under conditions 18 and 20 (Erosion and Sediment Control Plan) and 40 to 42 (Groundwater Settlement Monitoring and Contingency Plan) of this consent. It is also to ensure that cultural values, monitoring protocols, and health and safety processes are understood and agreed. The following information must be made available at the pre-start meeting: • Timeframes for key stages of the works authorised under this consent. • Resource consent conditions. • Puatahi Whakatutuki Plan (PWP) prepared for the project under condition 9 of Transpower New Zealand Limited's designation for the Glorit substation. • Erosion & Sediment Control Plan (ESCP), required by conditions 18 and 20. • Chemical Treatment Plan (ChTMP), required by conditions 22A and B. • Groundwater Settlement Monitoring and Contingency Plan, required by conditions 40 to 42. <u>Advice Note:</u> <i>To arrange the pre-start meeting please contact the Council on email at monitoring@aucklandcouncil.govt.nz.</i>
14.	A pre-start meeting must be held prior to the commencement of the earthworks activity authorised by this consent in each period between October 1 and April 30 of any year that this consent is exercised.
Earthworks	
15.	The Council must be notified at least five (5) working days prior to earthworks activity authorised by this consent commencing on the site.
16.	All imported fill used must: a. comply with the definition for 'cleanfill material' in the Auckland Unitary Plan (Operative in Part) – Chapter J1 Definitions; b. be solid material of a stable, inert nature; and c. not contain hazardous substances or contaminants above recorded natural background levels of the receiving site.

17.	All machinery associated with the earthworks activity must be operated in a way, which ensures that spillages of hazardous substances such as fuel, oil, grout, concrete products and any other contaminants are prevented. <u>Advice Note:</u> <i>Refuelling and lubrication activities associated with earthworks machinery should be carried out away from any water body and using methods so that any spillage that does occur can be contained and does not enter the water body.</i>
18.	Prior to the commencement of earthworks activity, a finalised Erosion and Sediment Control Plan (ESCP) based on the ESCP prepared by Beca Ltd, dated November 2024, must be prepared by a suitably qualified and experienced person (s) in accordance with Auckland Council Guideline Document GD2016/005 (GD005) and submitted to Auckland Council for certification. The objective of the finalised ESCP is to describe how earthworks authorised by this consent can be effectively managed to mitigate the risk of a potential sediment discharge and subsequent adverse impact on the environment during construction.
19.	No earthworks activity on the subject site must commence until the Council has certified that the ESCP satisfactorily meets the requirements of GD005.
20.	The ESCP required by condition 18 must contain sufficient detail to address the following matters: - specific erosion and sediment control works including the location and design details for stabilised entranceways, clean and dirty water diversions, silt and super silt fencing, sediment retention ponds and decanting earth bunds - location and extent of earthworks zones and staging - maximum open area of 5-hectares over the entire site at any given time - supporting calculations and design drawings - catchment boundaries and contour information - details of construction methods, including stockpile locations - timing and duration of construction and operation of control works (in relation to the staging and sequencing of earthworks) - details relating to the management of exposed areas (e.g. grassing, mulching) - monitoring and maintenance requirements.
21.	The operational effectiveness and efficiency of all erosion and sediment control measures specifically required by the finalised ESCP prepared under condition 18 must be maintained throughout the duration of the earthworks activity, or until the site is permanently stabilised against erosion.
22.	Immediately upon completion or abandonment of earthworks, all areas of bare earth must be permanently stabilised against erosion to the satisfaction of Auckland Council.
22A.	Prior to the commencement of earthworks activity authorised by this consent requiring chemical treatment as detailed in the finalised ESCP required by condition 18, a Chemical Treatment Management Plan (ChTMP) must be prepared in

	accordance with GD005 and submitted to Council for certification. No earthwork activities may commence until certification is provided by Council that the ChTMP meets the requirements of GD005, and the measures referred to in the ChTMP have been put in place.
22B.	The ChTMP required by condition 22A must include as a minimum: - Specific design details of chemical treatment system based on a rainfall activated dosing methodology for the site's sediment retention ponds, decanting earth bunds or other impoundment devices utilised throughout the earthworks; - Monitoring, maintenance (including post-storm) and contingency programme (including a record sheet); - Details of optimum dosage (including assumptions); - Results of initial chemical treatment trial - Provision for ongoing bench to accommodate any changes in the nature of fill throughout the managed fill activity; - A spill contingency plan; and - Details of the person or bodies that will hold responsibility for long term operation and maintenance of the chemical treatment system and the organisational structure which will support this system.
22C.	All sediment retention ponds and decanting earth bunds (or other impoundment devices) utilised throughout the earthworks, must be chemically treated in accordance with the certified ChTMP. All measures required by the ChTMP must be put in place prior to commencement of the earthworks activity and be maintained for the duration of the earthworks activity.
22D.	All water discharged from the site during dewatering and from associated sediment control devices during the earthworks operation must achieve a minimum 100mm depth of clarity prior to discharge in accordance with GD005.
22E.	Prior to the commencement of any earthworks authorised by this consent, including the installation of erosion and sediment controls, a freshwater ecologist that is a SQEP must identify the 10m setback from the natural inland wetland present on the site, as shown on <i>Figure 3. Draft Erosion and Sediment Control Plan (ESCP) for the substation site</i> to the Ecological Impact Assessment Glorit Substation, prepared by Beca Limited and dated 5 November 2024. A protection fence must be installed at the 10m setback and must remain in place until the completion of all earthworks on the site.
23.	Earthworks must be managed to avoid deposition of earth, mud, dirt or other debris on any public road resulting from earthworks activity on the site. In the event that such deposition does occur, it must immediately be removed.
24.	Earthworks on the site must not be undertaken between 01 May and 30 September in any year, without the submission of a 'Request for winter works' for approval to Council. All requests must be renewed annually prior to the approval expiring and no works must occur until written approval has been received from Council. All winter works will be re-assessed monthly or as required to ensure that adverse

	effects are not occurring in the receiving environment and approval may be revoked by Council upon written notice to the Consent Holder. Advice Note: Any 'Request for winter works' will be assessed against criteria in line with the information required to assess a comprehensive application. Principally that will focus on the level of risk, the propensity to manage that risk with contingency planning and a 'track record' of good compliance with consent requirements. Each 'Request for winter works' submitted should include the following: • Description of works proposed to be undertaken between 01 May and 30 September and the duration of those works. • Details of proposed measures to prevent sediment discharge from these specific works, particularly during periods of heavy rainfall. • Details of area(s) already stabilised. • Revised erosion and sediment control plan detailing stabilisation to date and timeline/staging boundaries showing proposed progression of stabilisation. • Contact details for contractor who will undertake stabilisation of the site including date(s) expected on site. • Alternatives/contingencies proposed if the contractor referred to above becomes unavailable. • Details of site responsibilities, specifically who is responsible for erosion and sediment controls and stabilisation processes over the specified period.
25.	The ESCP may: - be submitted in parts or in stages to address particular activities (e.g. design or construction aspects), a stage of work, or to address specific activities authorised by resource consents; and - except for material changes, may be amended to reflect any changes in design, construction methods or management of effects without further process.

Stormwater management works

25A	The following stormwater management works must be constructed for the following design requirements, and must be completed prior to discharges commencing from the site: <table border="1"> <thead> <tr> <th>Works to be undertaken</th><th>Design requirement(s)</th></tr> </thead> <tbody> <tr> <td>Oil/Water Separator</td><td> • In accordance with Transpower New Zealand Limited's Oil Containment Standard TP.DS 54.01 (or any subsequent version), which requires the primary containment tank to be sized for a 1-in-100 year storm event, or the largest transformer oil volume plus firefighting water volume, whichever is larger. • In offline configuration </td></tr> </tbody> </table>	Works to be undertaken	Design requirement(s)	Oil/Water Separator	• In accordance with Transpower New Zealand Limited's Oil Containment Standard TP.DS 54.01 (or any subsequent version), which requires the primary containment tank to be sized for a 1-in-100 year storm event, or the largest transformer oil volume plus firefighting water volume, whichever is larger. • In offline configuration
Works to be undertaken	Design requirement(s)				
Oil/Water Separator	• In accordance with Transpower New Zealand Limited's Oil Containment Standard TP.DS 54.01 (or any subsequent version), which requires the primary containment tank to be sized for a 1-in-100 year storm event, or the largest transformer oil volume plus firefighting water volume, whichever is larger. • In offline configuration				

Maintenance Contract

25B.	A written maintenance contract for the on-going maintenance of the oil/water separator described in condition 25A must be entered into with an appropriate stormwater management system operator, prior to the operation of the device. A written maintenance contract must be in place and maintained for the duration of the activity.
25C.	A signed copy of the contract required under condition 25B must be forwarded to Council prior to the operation of the oil/water separator described in condition 25A.

Maintenance Report

25D.	Details of all inspections and maintenance for the stormwater management system must be retained by the Consent Holder for a minimum of the preceding three years. The maintenance report must include the following information: a. details of who is responsible for maintenance of the stormwater management system. b. details of any maintenance undertaken; and c. details of any inspections completed.
25E.	A maintenance report must be provided to the Council on request.

Accidental discovery / heritage and cultural

25F.	The Consent Holder must prepare an Archaeological Management Plan (AMP) and Accidental Discovery Protocol (ADP) in consultation with Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014. The AMP and ADP must include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes. <u>Advice Note:</u> <i>The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Heritage New Zealand Pouhere Taonga Act 2014. The provisions of the accidental discovery rules E11.6.1. and E12.6.1 set out in the Auckland Unitary Plan are also noted and should be referred to.</i>
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SPECIFIC CONDITIONS - WAT60443287

Definitions

Words in the dewatering conditions, have the specific meanings as outlined below:

Term	Meaning
Alert Level	Specific levels at which actions are required as described in the relevant conditions.

Bulk Excavation	Includes all excavation that affects groundwater excluding minor enabling works and piling less than 1.5m in diameter.
Commencement of Dewatering	Means commencement of Bulk Excavation and/or the commencement of the taking or diversion of groundwater, other than for initial state monitoring purposes.
Completion of Dewatering	Means, in the case of a drained building or structure, the stage where permanent drainage system(s) are in place and no further groundwater is being taken for the construction.
Commencement of Excavation	Means commencement of Bulk Excavation.
Completion of Construction	Means when the Certificate of Completion (CCC) is issued by Auckland Council
Completion of Excavation	Means when all bulk excavation has been completed.
Condition Survey	Means an external visual inspection or a detailed condition survey (as defined in the relevant conditions).
Damage	Includes Aesthetic, Serviceability, Stability, but does not include Negligible Damage. Damage as described in the table below.
External visual inspection	A condition survey undertaken for the purpose of detecting any new external Damage or deterioration of existing external Damage. Includes as a minimum a visual inspection of the exterior and a dated photographic record of all observable exterior Damage.
GSMCP	Means Groundwater and Settlement Monitoring and Contingency Plan
Monitoring Station	Means any monitoring instrument including a ground or building deformation station, inclinometer, groundwater monitoring bore, retaining wall deflection station, or other monitoring device required by this consent.
RL	Means Reduced Level.
Seasonal Low Groundwater Level	Means the annual lowest groundwater level – which typically occurs in summer.
Services	Include fibre optic cables, sanitary drainage, stormwater drainage, gas and water mains, power and telephone installations and infrastructure, road infrastructure assets such as footpaths, kerbs, catch-pits, pavements and street furniture.
SQEP	Means Suitably Qualified Engineering Professional
SQBS	Means Suitably Qualified Building Surveyor

Table 1: Building Damage Classification

Category of Damage	Normal Degree of Severity	Description of Typical Damage <i>(Building Damage Classification after Burland (1995), and Mair et al (1996))</i>	General Category <i>(after Burland 1995)</i>
0	Negligible	Hairline cracks.	Aesthetic

1	Very Slight	Fine cracks easily treated during normal redecoration. Perhaps isolated slight fracture in building. Cracks in exterior visible upon close inspection. Typical crack widths up to 1mm.	Damage
2	Slight	Cracks easily filled. Redecoration probably required. Several slight fractures inside building. Exterior cracks visible, some repainting may be required for weather-tightness. Doors and windows may stick slightly. Typically crack widths up to 5mm.	
3	Moderate	Cracks may require cutting out and patching. Recurrent cracks can be masked by suitable linings. Brick pointing and possible replacement of a small amount of exterior brickwork may be required. Doors and windows sticking. Utility services may be interrupted. Weather tightness often impaired. Typical crack widths are 5mm to 15mm or several greater than 3mm.	Serviceability Damage
4	Severe	Extensive repair involving removal and replacement of walls especially over door and windows required. Window and door frames distorted. Floor slopes noticeably. Walls lean or bulge noticeably. Some loss of bearing in beams. Utility services disrupted. Typical crack widths are 15mm to 25mm but also depend on the number of cracks.	
5	Very Severe	Major repair required involving partial or complete reconstruction. Beams lose bearing, walls lean badly and require shoring. Windows broken by distortion. Danger of instability. Typical crack widths are greater than 25mm but depend on the number of cracks.	Stability Damage

Advice Note: In the table above the column headed “Description of Typical Damage” applies to masonry buildings only and the column headed “General Category” applies to all buildings.

Activity in accordance with plans

26.	The take (dewatering) and diversion of groundwater associated with the construction of the substation platform must be carried out in accordance with the plans and all information submitted with the application, detailed above in condition 1, and all referenced by the Council as consent number WAT60443287 (of BUN60443285) including in particular: a. <i>Groundwater Assessment Report: Glorit Substation</i>, prepared by Beca Ltd, dated November 2024 (2024 Beca Groundwater Assessment Report), as referenced in condition 1.
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Review under section 128

28.	Under section 128 of the RMA, the conditions of this consent may be reviewed by the Council at the Consent Holder's cost within six months after Completion of Dewatering and subsequently at intervals of not less than five years thereafter in order to take account of information, including the results of previous monitoring and changed environmental knowledge on: a. ground conditions b. aquifer parameters; c. groundwater levels; and d. ground surface movement.
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Notice of commencement of dewatering

29.	The Council must be advised in writing at least ten (10) working days prior to the date of the commencement of dewatering.
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Design of the substation platform and associated cut face of the hillside

30.	The design and construction of the substation platform, and associated cut face of the hillside, must be undertaken in accordance with the specifications contained in the 2024 Beca Groundwater Assessment Report.
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Excavation limit

31.	Bulk Excavation must not extend below the levels shown in drawing TP208205 dated 10.24 prepared by Beca Limited and referenced in condition 1.
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Damage avoidance

32.	All excavation, dewatering systems and works associated with the diversion or taking of groundwater, must be designed, constructed and maintained so as to avoid Damage to buildings, structures and Services on the site or adjacent properties, outside that considered as part of the application process unless otherwise agreed in writing with the asset owner.
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Alert and Alarm Levels

33.	The activity must not cause any settlement or movement greater than the Alarm Level thresholds specified in Table 2 below. Alert and Alarm Levels are triggered when the following Alert and Alarm Trigger thresholds are exceeded: <i>[Table on following page:]</i>
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Table 2: Alert Levels

Movement	Trigger Thresholds (+/-)	
	Alarm	Alert
Distance below the pre-dewatering Seasonal Low Groundwater Level and any subsequent groundwater reading at any groundwater monitoring bore (the Groundwater Alert Levels 1 & 2):	N/A	(1) 80% of calculated drawdown (2) 100% of calculated drawdown

Note: The locations of groundwater monitoring bores listed in Schedule A are contained in the 2024 Beca Groundwater Assessment Report.

Advice Note: *These levels may be amended subject to approval by the Council as part of the Groundwater Settlement Monitoring and Contingency Plan (GSMCP) approval process, and, after the receipt of pre-dewatering monitoring data, building condition surveys and recommendations from a SQEP, but only to the extent that avoidance of Damage to building, structures and Services can still be achieved.*

[Intentionally blank – no condition 34]

35.

There are conditions below that must be complied with when the Alert Level triggers are exceeded. These include actions that must be taken immediately including seeking the advice of a SQEP.

Alert level actions

36.

- In the event of any Alert Level being exceeded the Consent Holder must:
- Notify the Council within 24 hours.
 - Re-measure all Monitoring Stations within 50 metres of the affected monitoring location(s) to confirm the extent of apparent movement.
 - Ensure the data is reviewed, and advice provided, by a SQEP on the need for mitigation measures or other actions necessary to avoid further deformation. Where mitigation measures or other actions are recommended those measures must be implemented.
 - Submit a written report, prepared by the SQEP responsible for overviewing the monitoring, to the Council within five working days of Alert Level exceedance. The report must provide an analysis of all monitoring data (including wall deflection) relating to the exceedance, actions taken to date to address the issue, recommendations for additional monitoring (i.e. the need for increased frequency or repeat condition survey(s) of building or structures) and recommendations for future remedial actions necessary to prevent Alarm Levels being exceeded.
 - Measure and record all Monitoring Stations within 50 metres of the location of any Alert Level exceedance every two days until such time the written report referred to above has been submitted to the Council.

Baseline Monitoring

37.	One groundwater monitoring bore is to be installed at the location indicated in the 2024 Beca Groundwater Assessment Report. The monitoring bore must have a screened depth ranging between 6 and 9 m below ground level.
38.	Baseline groundwater levels at the groundwater monitoring bore referenced in condition 37 are to be measured on a weekly basis for at least three months prior to the commencement of dewatering. The groundwater monitoring bore must have a diameter of at least 50 mm, and have a slotted screen set over the basement interval. <u>Advice Note:</u> <i>The purpose of the monitoring is to confirm whether the actual groundwater levels across the proposed substation platform are similar to the conservative assumptions adopted in the 2024 Beca Groundwater Assessment Report.</i>
39.	At the completion of monitoring required by condition 38, and at least 20 days prior to the Commencement of Dewatering, the Consent Holder must provide a report containing all baseline monitoring data required by condition 38 to Council. The report must be prepared by a SQEP, and make a conclusion on whether the groundwater levels are similar to those adopted in the 2024 Beca Groundwater Assessment Report and whether there is therefore a residual risk of settlement to the State Highway 16 and stormwater culvert beneath State Highway 16 (SAP ID 2000587989).
40.	If the report required by condition 39 confirms that groundwater levels are similar to those presented in the 2024 Beca Groundwater Assessment Report, and that there is a residual risk of settlement to the State Highway 16 and stormwater culvert, then ongoing monitoring of groundwater levels is required to continue during construction, and a Groundwater Settlement Monitoring and Contingency Plan (GSMCP) must be prepared in accordance with conditions 41 and 42 and submitted to the Council for certification.

Groundwater Settlement Monitoring and Contingency Plan (GSMCP)

41.	If required by condition 40, then at least 10 days prior to the Commencement of Dewatering, a GSMCP prepared by a SQEP, must be submitted to the Council for certification. Any later proposed amendment of the GSMCP must also be submitted to the Council for certification.
42.	The overall objective of the GSMCP must be to set out the practices and procedures to be adopted to ensure compliance with the consent conditions and must include, at a minimum, the following information: a. A summary of the baseline groundwater level measurements and implications for the excavation design and risk of effects. b. A monitoring location plan, showing the location and type of all Monitoring Stations including groundwater monitoring bores and ground deformation pins. The monitoring plan must be based on Figure 9-1 of the 2024 Beca Groundwater Assessment Report. In any case where the location of a Monitoring Station differs substantively from that shown in the 2024 Beca Groundwater Assessment Report a written explanation for the difference must be provided at the same time that the GSMCP is provided.

	c. Final completed Table 3 (as per condition 48 below) for monitoring of groundwater levels (including any proposed changes to the monitoring frequency) as required by the conditions below. d. All monitoring data, the identification of Services susceptible to Damage and all building/Service condition surveys undertaken to date, and required by the conditions below. e. A bar chart or a schedule, showing the timing and frequency of condition surveys, visual inspections and all other monitoring required by this consent, and a sample report template for the required two monthly monitoring. f. All Alert Level Triggers (including reasons if changes to such are proposed, for example as a result of recommendations in the building condition surveys or data obtained from pre-dewatering monitoring). g. Details of the contingency actions to be implemented if Alert Levels are exceeded.
43.	All construction, dewatering, monitoring and contingency actions must be carried out in accordance with the approved GSMCP. No Bulk Excavation (that may affect groundwater levels) or other dewatering activities must commence until the GSMCP is approved in writing by the Council.

Pre-Dewatering Services Condition Survey

44.	Prior to the Commencement of Dewatering, a condition survey of potentially affected stormwater services and of the State Highway 16 must be undertaken in consultation with the NZ Transport Agency Waka Kotahi. This condition survey does not apply to any service where written evidence is provided to the Council that the owner of that service has confirmed they do not require a condition survey.
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Completion of Dewatering - Building, Structure and Services Condition Surveys

45.	Between six and twelve months after Completion of Dewatering a detailed condition survey of all previously surveyed stormwater Services and the State Highway 16 must be undertaken by a SQEP or SQBS and a written report must be prepared. The report is to be reviewed by the SQEP responsible for overseeing the monitoring and then submitted to the Council, within one month of completion of the survey.
46.	The condition survey report required by condition 45 must make specific comment on those matters identified in the pre-dewatering condition survey. It must also identify any new Damage that has occurred since the pre-dewatering condition survey was undertaken and provide an assessment of the likely cause of any such Damage. <u>Advice Note:</u> Contingency actions are required as set out in condition 51 if damage is identified.
47.	Conditions 45 and 46 do not apply to any Service or the State Highway 16 where written evidence is provided to the Council confirming that the owner of that Service or the State Highway 16 does not require a condition survey to be undertaken.

Groundwater Monitoring

48. If required by condition 40, groundwater monitoring is to be undertaken at the groundwater monitoring bore locations shown on Figure 9-1 of the 2024 Beca Groundwater Assessment Report, or in the approved GSMCP. Groundwater level monitoring is to be undertaken in accordance with Table 3 below:

Table 3: Groundwater Monitoring Frequency

Approximate location		Groundwater level monitoring frequency (to an accuracy of 10mm)			
Easting (mE) (NZTM)	Northing (mN) (NZTM)	From bore construction until one month before Commencement of Dewatering	One month before Commencement of Dewatering to Commencement of Dewatering	Commencement of Dewatering to Completion of Dewatering	From Completion of Dewatering until 24 months later.
1729643.3	5963065.1	Weekly (for a minimum of two months)	Weekly	Monthly	Monthly

Advice Note: The NZTM location of the bores are approximate and are to be confirmed once the bores are drilled in the locations shown on Figure 9-1 of the 2024 Beca Groundwater Assessment Report.

49. The monitoring frequency may be changed if approved by the Council. Any change must be specified in the GSMCP. In addition, the 24 month monitoring period post Completion of Dewatering may be extended, by the Council, if measured groundwater levels are not consistent with inferred seasonal trends or predicted groundwater movement.

Advice Note: If groundwater level measurements show an inconsistent pattern immediately prior to the Commencement of Dewatering (for example varying more than +/-200mm during a month), then further readings may be required to ensure that an accurate groundwater level baseline is established before dewatering commences.

Access to Third Party Property

50. Where any monitoring, inspection or condition survey in this consent requires access to property/ies owned by a third party, and access is declined or subject to what the Consent Holder fairly considers to be unreasonable terms, the Consent Holder must provide a report to the Council prepared by a SQEP identifying an alternative monitoring programme. The report must describe how the monitoring will provide sufficient early detection of deformation to enable measures to be implemented to prevent Damage to buildings, structures or Services. Certification from the Council must be obtained before an alternative monitoring option is implemented.

Contingency Actions

51. If the Consent Holder becomes aware of any Damage to buildings, structures or Services potentially caused wholly, or in part, by the exercise of this consent, the Consent Holder must:
- Notify the Council and the asset owner within two working days of the consent holder becoming aware of the Damage.
 - Provide a report prepared by a SQEP (engaged by the Consent Holder at their cost) that describes the Damage; identifies the cause of the Damage; identifies methods to remedy and/or mitigate the Damage that has been caused; identifies the potential for further Damage to occur, and describes actions that will be taken to avoid further Damage.
 - Provide a copy of the report prepared under (b) above, to the Council and the asset owner within 10 working days of notification under (a) above.

Advice Note: *It is anticipated the Consent Holder will seek the permission of the damaged asset to access the property and asset to enable the inspection/investigation. It is understood that if access is denied the report will be of limited extent.*

Building, Structure, and Services Surveys and Inspections

52. A copy of all pre-dewatering building, structure condition surveys, and Service condition surveys and photographic records of external visual inspections required by this consent must be submitted to the Council with the GSMCP. All other condition surveys and photographic records required by this consent must be provided to the Council upon request.
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Reporting of Monitoring Data

53. At two monthly intervals, a report containing all monitoring data required by conditions of this consent must be submitted to Council. This report must include a construction progress timeline, the monitoring data (including the results of condition surveys) recorded in that period, and a comparison of that data with previously recorded data and with the Alert and Alarm Levels for each Monitoring Station.
54. Upon Completion of Construction, one electronic data file (excel workbook) containing digital data for all groundwater monitoring bores must be provided to the Council. Data should include the monitoring bore name, type, location (NZTM easting / northing and elevation), screened depth for groundwater monitoring bores, absolute and relative readings (and their units of measure) and the date / time of each reading. The worksheets should contain data values only (no formulas, circular references or links to other sheets).
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Notice of Completion

55. The Council must be advised in writing within 10 working days of when excavation and dewatering has been completed.
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56.	After Completion of Construction, any permanent backfill or drainage systems installed below the platform or in cut slope faces must not cause groundwater levels adjacent to the site to be reduced below the calculated design levels (as defined by the Groundwater Alert Level (2)).
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Groundwater Maintenance Programme

57.	At the Completion of Dewatering, the Council must be provided with a maintenance program for any permanent groundwater drainage system used to manage groundwater levels. <u>Advice Note:</u> <i>The Consent Holder is advised that the discharge of pumped groundwater to a stormwater system or waterbody will need to comply with any other regulations, bylaws or discharge rules that may apply.</i>
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ADVICE NOTES – GENERAL

1.	<i>For the purpose of compliance with the conditions of consent, “the Council” refers to the Council’s monitoring officer unless otherwise specified. Please email monitoring@aucklandcouncil.govt.nz to identify your allocated officer.</i>
2.	<i>For more information on the resource consent process with Auckland Council see the Council’s website: www.aucklandcouncil.govt.nz. General information on resource consents, including making an application to vary or cancel consent conditions can be found on the Ministry for the Environment’s website: www.mfe.govt.nz.</i>
3.	<i>The Consent Holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, Wildlife Act 1953 and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.</i>

SCHEDULE TWO

Avifauna matters hearing – witnesses experience and qualifications

1 For Glorit Solar P LP:

Mr Brendan Clarke

1.1 Mr Clarke is a Principal Environmental Planner at Lightsource BP (one of the two partner companies in Glorit Solar P LP). Mr Clarke has held this role since 2022 and is responsible for the planning and environmental aspects of the Glorit Solar Farm Project.

1.2 While Mr Clarke is a qualified planner, his evidence was prepared in his capacity as an employee of Lightsource BP (a joint venture partner in Glorit Solar). His experience includes 13 years working as a planner on large scale infrastructure projects, including (relevantly) solar farm projects in the United Kingdom and Australia.

Ms Claire Webb

1.3 Ms Webb²⁴⁷ is a Principal Ecologist at Beca. Ms Webb has worked in New Zealand as a professional ecologist for 17 years, with her area of specialisation being coastal ecology, particularly ecosystem and species interactions in the coastal environment. A number of the projects that she has previously worked on have included avifauna values and effects.

1.4 Ms Webb has been involved in this Project since 2022, including overseeing ecological assessment work and authoring the avifauna effects section of the Ecological Impact Assessment (Beca, 2023), and co-authoring the material prepared to respond to avifauna matters raised in comments.

Dr Leigh Bull

1.5 Dr Bull²⁴⁸ is a consultant ecologist (self-employed Director at BlueGreen Ecology Limited) with her area of specialisation being ornithology, the study of birds. Dr Bull has experience assessing the risk of bird strikes and collisions with structures such as wind farms, solar farms, transmission lines and airplanes, and particular experience with respect to Tara iti.

1.6 From 2012 to 2022 Dr Bull was involved with two large coastal development projects at Te Arai where the potential impacts on Tara iti were the main concern, and in respect of which she undertook numerous ecological assessments for various resource consent applications. That development site was located immediately adjacent to the Mangawhai Wildlife Refuge, the main Tara iti breeding ground, to its north, and its eastern boundary included the Te Arai Stream mouth, another breeding (on occasion), feeding and roosting site for Tara iti. Dr Bull also undertook fortnightly monitoring of the coastal avifauna (including Tara iti) at Mangawhai Wildlife Refuge, as well as the Te Arai and Poutawa Stream mouths during the breeding seasons between 2012/13 and

²⁴⁷ BSc. (botany & zoology), BSc (Hons) Environmental Science (botany and geography) and a MSc (Botany).

²⁴⁸ Bachelor of Science (BSc, Zoology), Master of Science with Honours (MSc, Ecology) and Doctor of Philosophy (PhD, Ecology) from Victoria University of Wellington.

2020/21. During that time, she also undertook a joint study with the Ornithological Society and DOC investigating the foraging behaviour of Tara iti at the Te Arai Stream during the chick-rearing period.

- 1.7 Dr Bull currently serves in a voluntary role as a subject matter expert to the Shorebirds Trust, which is a registered charitable trust that invests in scientific research, and funds and co-ordinates conservation efforts aimed to improve coastal biodiversity, including Tara iti.
- 1.8 Dr Bull was engaged by Glorit Solar P LP in early June 2025 to provide specialist knowledge with regard to Tara iti and the potential impacts of the proposed solar farm.

Ms Lesley Hopkins

- 1.9 Ms Hopkins²⁴⁹ is a Senior Technical Director and Technical Fellow – Planning at Beca, and has 27 years' experience as a planner working for local government and in consultancy. She has been involved in a number of infrastructure projects seeking designations and resource consents throughout New Zealand, including as lead planner and expert witness for the NZ Transport Agency on the East West Link Proposal.

2 For the Director-General of Conservation:

Dr Colin O'Donnell

- 2.1 Dr O'Donnell²⁵⁰ is employed as Principal Science Advisor with the DOC Terrestrial Biodiversity Group in Christchurch where he leads DOC's Threatened Species Research Workstream. He has been employed full time as a wildlife scientist from 1982 onwards and by DOC since its creation in 1987.
- 2.2 His work areas largely focus on the research of forest birds, lizards, bats, wetland birds, the impacts of predators on them, and developing conservation management prescriptions to reverse population declines. He has published more than 200 peer reviewed scientific papers, book chapters, best practice reports and management reports in a wide range of national and international media related to the conservation and management of New Zealand wildlife. He has contributed as a member of three World Conservation Union specialist groups for threatened species and was New Zealand's representative on the Wetlands and Waterbirds Taskforce. He is a member of two of DOC's threatened species Recovery Groups and three national Technical Advisory Groups (Southern NZ dotterel, Braided Rivers and Arawai Kākāriki Wetland Restoration Programme) that advise on sites for national habitat restoration projects.
- 2.3 Dr O'Donnell also holds experience in rating habitats for their regional, national and international significance for wildlife throughout New Zealand. This includes rating Sites of Special Wildlife Significance and Wetlands of International Importance, conducting an inventory of indigenous birdlife on Canterbury's

²⁴⁹ Bachelor of Planning with Honours from the University of Auckland and a Post Graduate Diploma in Development Studies.

²⁵⁰ BSc (Honours) in Zoology from Canterbury University (1980) and a PhD in Zoology from Otago University (1999).

waterways for RMA processes, and evaluating the significance of wildlife communities and potential impacts of development schemes for Water Conservation Orders, and irrigation and power schemes.

- 2.4 He has also provided specific advice to the Director-General, and to applicants for potential projects, in relation to potential adverse effects on wildlife for 30 renewable energy projects including nine solar farms over the last two years. This work included giving detailed advice to Contact Energy in 2021 on the significant bird issues, including risks to Tara iti and Australasian Bittern, in relation to collision risks associated with proposed wind turbines in Northland.
- 2.5 Dr O'Donnell was made an Officer of the Order of New Zealand Merit in 2024 for services to wildlife conservation including recognition of his studies of the distribution, habitat use and populations of aquatic birds and aquatic systems such as braided rivers and for his leadership of DOC's Threatened Species Research workstream. He has been awarded the New Zealand Ecological Society's premier award (Te Tohu Taiao) for ecological excellence, and the Ornithological Society of New Zealand's premier award (the Robert Falla Memorial Award) for contributions to the study of birds.

Dr Antony Beauchamp

- 2.6 Dr Beauchamp²⁵¹ is employed by DOC in Northland as a Senior Advisor in the Terrestrial Biodiversity Group. He has worked for DOC since 2001, and is currently a Technical Advisor – Biosecurity. He has provided technical advice and support for DOC's Tara iti Programme since 2006, and is a member of the Tara iti Recovery Group and Research Advisory Group. He is the Regional Recorder of Birds in the region for the Whangarei Branch of the Ornithological Society of New Zealand (Birds New Zealand), a role he has held since 2010.
- 2.7 Dr Beauchamp has published 38 scientific papers on birds (including in relation to Tara iti feeding at Mangawhai), and has provided expert ecological and avifauna evidence in many resource management proceedings over the last decade, including giving evidence on Tara iti and wading birds in the Northland region.
- 2.8 Dr Beauchamp's description of his relevant experience in his statements of evidence rather downplayed (or at least did not refer in detail to) his evident 'on the ground' and extensive knowledge of Tara iti, given the details he was able to provide to the Panel regarding their habitat, behaviour, the threats they face, and details surrounding the Tara iti captive rearing programme.

Dr Ilse Corkery

- 2.9 Dr Corkery²⁵² is a Senior Technical Advisor with DOC, based in Whangārei, within the Terrestrial Biodiversity Group and has worked for the Department since 2018. Dr Corkery holds a national-level advisory role, specialising in biodiversity offsetting and compensation and providing expert guidance on resource consents, regional and district planning processes, and other statutory frameworks. She has served on the Scientific Committee of the Ornithological

²⁵¹ PhD in Zoology, and a post graduate diploma in Environmental Health.

²⁵² BSc (Hons) in Zoology from University College Cork, Ireland (2006), and a PhD in Ecology from Victoria University of Wellington (2012).

Society of New Zealand since 2019, regularly evaluating research proposals and contributing to advancing ornithological science. She has authored several peer-reviewed scientific publications.

- 2.10 Previously Dr Corkery led the national Kōkako Recovery Group, and currently leads both the Tara Iti (New Zealand Fairy Tern) Research Advisory Group and the Southern New Zealand Dotterel Technical Advisory Group - two of the country's most critically endangered bird species. Currently she is also leading the development of a biodiversity offsetting and compensation tool, an accounting model and user interface designed to address biodiversity loss challenges.

Ms Ayla Wiles

- 2.11 Ms Wiles²⁵³ is a conservation biologist, employed by DOC as a Tara iti Ranger, Auckland Mainland/Tāmaki Makaurau. She has held this position since March 2022, supporting implementation of the Tara iti Operational Programme across Auckland and Northland. Before her current role she was a Biodiversity Ranger, and led the Tara iti Operational Programme in the Northland Region (2019-2022), and prior to that completed three field seasons as a Tara iti Site Ranger, monitoring and protecting Tara iti nests at Waipū and Papakānui.
- 2.12 Ms Wiles has over 10 years' experience in the field of ecology and wildlife management, with experience working in a range of threatened species research and management programmes including Tara iti, pāteke, kiwi and the kakerakau skink.

Associate Professor Kristal Cain

- 2.13 Associate Professor Cain²⁵⁴ is an Integrative Organismal Biologist, employed by the University of Auckland as an Associate Professor in the Faculty of Science, School of Biological Sciences. She has worked for the University since 2016, and teaches at the undergraduate and postgraduate level in vertebrate zoology, physiology, evolution, ecology, and animal behaviour.
- 2.14 Associate Professor Cain has authored numerous papers and presented at symposiums on a range of topics. Her research experience relevant to the issues before us included expertise in the biology of bird vision (especially UV vision), how differences in species sensory ecology can shape risk to anthropogenic sources, New Zealand bird species' biology evolution and ecology, and the role of sensory systems in shaping a bird's behaviour and response to stimuli.
- 2.15 Associate Professor Cain has also published studies examining the role of colouration (including UV) in social communication and predation risk, and on the role of species sensory ecology in vulnerability to threats from anthropogenic sources (such as plastic consumption and groundings due to artificial light at night).
- 2.16 Amongst a number of roles, she is currently an Associate Editor for The Journal of Avian Biology, Journal of Experimental Zoology – A. Ecological and

²⁵³ Master of Conservation Biology, Victoria University, 2016.

²⁵⁴ BSc in Wildlife Sciences from Texas A&M University and a PhD in Biology from Indiana University.

Integrative Physiology and The New Zealand Journal of Zoology. She is the former President and Vice-President of The Australasian Society of the Study of Animal Behaviour (23-25, VP 21-23), a member of DOC's Bird Banding Advisory Committee and the Tara iti Science Advisory Group.

Mr Murray Brass

- 2.17 Mr Brass²⁵⁵ is employed by DOC in Dunedin as a Senior Resource Management Planner and has worked for DOC since 2019. Prior to this he has over twenty years' experience in resource management, including senior and management roles in both consenting and plan development. His experience includes providing local government perspective input to the Ministry for the Environment in the development of various national direction documents, including the NPS:REG and, in his role with DOC, contributing to numerous DOC responses to fast-track applications under the COVID-19 Recovery (Fast-track Consenting) Act 2020, including for solar farms.
- 3 Of the above experts, Ms Webb, Dr Beauchamp, Dr O'Donnell and Dr Corkery attended expert conferencing on avifauna matters, and were therefore signatories to the JWS (21 May 2025). The other experts were either not involved at that time, or did not attend expert conferencing.

²⁵⁵ Bachelor of Science degree (Geology, 1984) and a Diploma for Graduates (Ecology / Environment, 1991), both from the University of Otago.

Attachment 2

**Transpower New Zealand Limited Designation Schedule
and conditions 8535 Glorit Substation
(Strikethrough/underscore)**

Designation Schedule - Transpower New Zealand Ltd

Number	Purpose	Location
8500	Electricity transmission - electricity transmission tower site and associated overhead transmission lines...	161 Ash Street, Avondale
8501	Electricity transmission - Penrose electricity substation	19 Gavin Street, Penrose
8502	Electricity transmission - overhead electricity transmission lines ...	Gavin Street (opposite No. 19), Ellerslie to Tamaki River (Panmure Bridge), Panmure
8503	Electricity transmission - Mount Roskill electricity substation	11-39 White Swan Road, Mount Roskill
8504	Electricity transmission - overhead electricity transmission lines ...	37 Boundary Road, Avondale
8505	Electricity transmission - tower site and associated overhead lines ...	39 Haycock Avenue, Mount Roskill
8506	Electricity transmission - tower site and associated overhead lines ...	135A, 137 and 137A Barrack Road, Mount Wellington
8507	Electricity transmission - the construction, operation and maintenance of underground transmission lines ...	19 Gavin Street to 109 Golfland Drive, Pakuranga
8508	Electricity transmission - tower site and associated overhead transmission lines ...	716 Richardson Road, Mount Roskill
8509	Electricity transmission - tower site (Tower 9) and associated overhead transmission lines ...	Luke Street (adjoins State Highway 1), Otahuhu
8510	Electricity transmission - Glenbook electricity substation	Whitham Road, Glenbrook
8511	Electricity transmission - Bombay electricity substation	153 Barber Road, Bombay
8512	Electricity transmission - the construction, operation and maintenance of that part of a 400kV capable transmission line ...	231 Whitford Park Road, Whitford to the vicinity of Paparimu Road (Waikato District Council Boundary), Pokeno
8513	Electricity transmission - the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 220kV substation, installation of 220kV underground cable circuits ...	1 Gridco Road and 2 Helabys Road, Otara
8514	Electricity transmission - the ongoing use, maintenance and operation of the Pakuranga Electricity Substation, the development of the substation site ...	109 Golfland Drive, Pakuranga
8515	Electricity Transmission - the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines ...	16 Umbria Lane (near Brownhill Road), Whitford
8516	Electricity Transmission - the construction, operation and maintenance of a double circuit underground 220kV cable ...	143 Brownhill Road, Whitford to 109 Golfland Drive, Howick
8517	Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable ...	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
8518	Electricity transmission - Albany electricity substation	29 Bass Road, Albany
8519	Electricity transmission - the installation, maintenance, repair, replacement, inspection and operation of two 220kV underground electricity transmission lines ...	410 Albany Highway to State Highway 1 (Constellation Drive), Rosedale
8520	Electricity transmission - Takanini electricity substation	65 Airfield Road, Takanini
8521	Electricity transmission - the construction, operation, maintenance, replacement, renewal and upgrading of a	261 Quarry Road, Drury

	220kV switchyard, transmission lines, and ancillary facilities	
8522	Electricity transmission - Wellsford electricity substation	69 School Road, Wellsford
8523	Electricity transmission - Silverdale electricity substation	83-91 Foundry Road, Silverdale
8524	Electricity transmission - Huapai electricity substation	108 Matua Road, Huapai
8525	Electricity transmission - Henderson electricity substation	1-12 and 41-47 Lincoln Park Avenue, Massey
8526	Electricity transmission - Hepburn Road electricity substation	167-217 Hepburn Road, Glendene
8527	Electricity transmission - Rua o te Whenua telecommunications facility	600 Scenic Drive, Waiatarua
8528	Transferred to Vector Limited March 2024	
8529	Electricity transmission - Mangere electricity substation	11, 14 and 16 Driver Road and 307 Massey Road, Mangere
8530	Electricity transmission - Hobson Street electricity substation	13-21 Hobson Street, Auckland City
8531	Electricity transmission - Wairau Road electricity substation	4A Wairau Road, Takapuna
8532	Electricity Transmission - the operation, maintenance and upgrading of underground transmission lines comprising of two 110kV cable circuits and termination structures to convey electricity between Otahuhu and Penrose	Highbrook Business Park, Highbrook
8533	Electricity transmission - Wiri electricity substation	656 Great South Road, Manukau
8534	Electricity transmission – Flat Bush Sub Precinct C	36 Tir Conaill Avenue, 125 Murphys Road, 23 Murphys Park Drive, 125B Murphys Road Flat Bush
<u>8535</u>	<u>Electricity Transmission – Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland)</u>	<u>2791 Kaipara Coast Highway, Glorit 0984</u>

8535 Glorit Substation

<u>Designation Number</u>	8535
<u>Requiring Authority</u>	Transpower New Zealand Limited
<u>Location</u>	2791 Kaipara Coast Highway, Glorit 0984
<u>Lapse Date</u>	This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.

Purpose

Electricity Transmission – Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland)

Conditions

Designated Land:



1. The initial works to give effect to this designation, being the site works, construction of the platform and drainage, site access, substation facilities, establishment of line connections and landscaping, must be undertaken in general accordance with the information submitted in the documentation entitled 'Glorit Substation – Assessment of Effects on the Environment', prepared by Beca Limited, dated November 2024 (AEE).

2. This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.

Outline Plan(s) of the Works

3. Prior to the commencement of construction, an outline plan (or plans) of the project or works to be constructed on the designated land must be submitted, in accordance with section 176A of the RMA. The outline plan (or plans) must include the following plans (or such parts of these plans as are relevant to the project or works to be constructed):
- a. the Construction Management Plan (CMP) required by condition 6;
 - b. the Landscape Plan (LP) required by condition 19; and
 - c. if required under condition 15, any Site-Specific Construction Noise Management Schedule (SSCNMS).
4. The CMP required by condition 6, the LP required by condition 19 and the SSCNMS if required under condition 15 must:
- a. be prepared and implemented in accordance with the relevant conditions;
 - b. be prepared by a suitably qualified and experienced person(s), having regard to the subject matter of the plan;
 - c. include sufficient detail relating to the management of effects associated with the relevant activities and/or stage of work to which it relates; and
 - d. otherwise be in general accordance with the material set out in the AEE. Where there is any discrepancy between the material in the AEE and the relevant management plan condition(s), the requirements of the condition(s) will prevail.

For the purposes of these conditions, a suitably qualified and experienced person or persons, means persons who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter addressed in the plan or schedule, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.

5. Following submission of an outline plans(s), the CMP, LP or SSCNMS (if required) may be amended if necessary, to reflect any changes in design, construction methods or management of effects. Any amendments to the plans are to be discussed with and submitted to the Council for information without the need for a further outline plan process unless those amendments once implemented would result in a materially different outcome to that described in the original outline plan.

Advice Notes:

Consideration of the CMP, LP and any SSCNMS by the Council relates only to those aspects of the plan that are relevant under the Resource Management Act 1991 (RMA). The outline plan process does not amount to an approval or acceptance of suitability by the Council of any elements of the management plan that relate to other legislation, for example, but not limited to, the Building Act 2004, the Heritage New Zealand Pouhere Taonga Act 2014, or the Health and Safety in Employment Act 1992.

The Construction Traffic Management Plan required by condition 8 does not form part of the outline plan process.

6. All management plans (including amendments to those plans) must be implemented and complied with for the duration of the relevant activity, or as specified in the relevant condition.

Cultural Values

7. Kaitiaki Advisory Group (KAG)

At least three (3) months prior to the commencement of construction, the Requiring Authority must establish a KAG comprising up to three representatives from Puatahi Marae Trust, up to two representatives from Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, and up to two representatives from the Requiring Authority.

The KAG must be provided with the opportunity to have ongoing input into cultural, ecological, heritage, and landscape matters throughout the duration of construction and for the first two years of operation of the substation.

The purpose of the KAG is to:

- a. Foster and encourage mutual understanding between the Requiring Authority, Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, with Puatahi Marae Trust as the lead and for the purpose of this condition as mana whenua, on the effectiveness of the measures implemented by the Requiring Authority to avoid, remedy, or mitigate adverse effects on cultural values associated with the whenua, wetlands, wai and moana;
- b. Facilitate ongoing engagement with mana whenua;
- c. Enable KAG or appointed kaitiaki (being persons nominated by Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu in writing to the Requiring Authority, in the absence of a representative(s) on the KAG) to provide cultural inputs into the drafting and preparation of the LP.
- d. Discuss access and management arrangements for sites of cultural significance to mana whenua; and
- e. Provide mana whenua with reports, monitoring information and updates.

The first meeting of the KAG must be convened prior to the commencement of any bulk earthworks. Thereafter the KAG meetings are to be convened at least twice per year (or at such lesser frequency as the KAG decides) for the duration of construction and for the first two years of operation of the substation.

At least twenty (20) working days prior to each KAG meeting, the Requiring Authority must provide meeting invites to all KAG representatives including the date and time of the meeting. A record of all meetings is to be distributed to Auckland Council no later than one month after each meeting.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for the operation of the KAG.

Advice Notes:

Should any KAG representatives choose not to attend a KAG meeting, this does not constitute a non-compliance with this condition.

A single KAG can be formed for the Glorit Solar Scheme (being comprised of the Ōmaumau solar farm authorised by separate consents held by Glorit Solar P LP, and the Glorit substation authorised by this designation).

8. Kaitiaki Monitoring Framework – (KMF)

The Requiring Authority must, following consultation with the KAG, enable Puatahi Marae Trust and hapū to prepare and develop a KMF to outline how monitoring will occur across project phases for construction, and post-construction with a focus on ecological enhancement and restoration, land disturbance activities, and cultural health indicators (CHI) for the Kaipara Moana coastal edge, estuaries and associated environments including Ōmaumau reserve and tributaries.

The KMF must be incorporated within the Puatahi Whakatutuki Plan required under condition 9.

The objective of the KMF is to:

- i. Uphold kaitiakitanga;
- ii. Monitor effects on cultural values, ecological health and mauri of ecosystems;
- iii. Guide timely identification and responses to adverse effects; and
- iv. Inform mitigation and enhancement actions.

Advice Notes:

Should the Requiring Authority invite and enable Puatahi Marae Trust and hapū to prepare and develop a KMF, and a framework is subsequently not prepared, this shall not constitute non-compliance with this condition.

A single KMF can be prepared for the Glorit Solar Scheme.

The Requiring Authority has provided its acknowledgement and agreement that it will endeavor to implement the principles of Te Tiriti O Waitangi in the implementation of the KMF in line with the Requiring Authorities own policies of engagement with Mana Whenua hapū, marae and post-settlement entities.

9. Mātauranga Māori - Puatahi Whakatutuki Plan (PWP)

A PWP must be prepared by the Requiring Authority in collaboration with Puatahi Marae Trust (where the Trust Agrees to provide such collaboration) and must be provided to the Council for information at least twenty (20) working days prior to commencement of construction.

The PWP must be provided to the KAG for comment at least twenty (20) working days) prior to submitting the PWP to Council.

The PWP must set out cultural monitoring protocols, site cultural induction processes, tikanga- led monitoring of wetlands, groundwater, and culturally significant areas, and define the roles and responsibilities of Kaitiaki cultural monitors (Kaitiaki Cultural Monitors).

The purpose of the PWP is to establish a methodology to monitor and report on cultural values of the natural environment within and around the designated land for the duration of construction works.

To achieve this purpose, the PWP must include the following matters as relevant to the works authorised by this designation:

- a. A description of the Kaitiaki Cultural Monitors roles and responsibilities.
- b. A description of the Kaitiaki Cultural Monitors tasks and commitments.
- c. The KMF described in condition 8 to outline how monitoring will occur.
- d. A methodology, established with the KAG, to use Cultural Health Indicator (CHI) surveys to monitor the health of the environment.
- e. The development of CHI attributes tailored to monitoring points on the designated land.
- f. Recommendations and advice on landscape and ecological enhancement and restoration works including riparian and wetland enrichment, and planting treatment, pest flora and fauna management, and any fish passage devices.
- g. Optional initiatives that respond to the historic and cultural context of the Ōmaumau properties (Solar Farm and Glorit Substation) and its features to be developed, confirmed and implemented in association with the KAG, and the identified management plans. For example, this may include installation of interpretive signage, wayfinding devices, pouwhenua and/or artworks in suitable locations to reference the historic and cultural relationship and values of the designated land and wider setting.

Implementation of the PWP must include the following as relevant to the proposed works:

- i. An introductory hui for the KAG on the use of CHI survey and monitoring;
- ii. An initial CHI survey to be undertaken at, or within, 6 months of ecological enhancement and / or restoration works commencing; and
- iii. Ongoing CHI surveys at monitoring sites at least every five years thereafter (or at such greater frequency as the KAG may request).

Any changes proposed to the PWP, or its implementation, must be confirmed in writing to Puatahi Marae Trust by the Requiring Authority following consultation with the KAG, and prior to the implementation of any changes proposed.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for the implementation of the PWP.

Advice Notes:

A single PWP can be prepared for the Glorit Solar Scheme.

The Requiring Authority has provided its acknowledgement and agreement that it will endeavour to implement the principles of Te Tiriti O Waitangi in the development and implementation of the PWP.

10. The Requiring Authority must, in collaboration with Puatahi Marae Trust, convene an annual (or less frequent as agreed to by Puatahi Marae Trust and the Requiring Authority) hui to review the effectiveness of cultural and environmental mitigation measures.

A summary report of monitoring outcomes and management responses and capacity building must be prepared following each hui.

Advice Note:

A single hui can be convened for the Glorit Solar Scheme.

Construction Management Plan - CMP

11. A Construction Management Plan (CMP) must be prepared by the Requiring Authority prior to the commencement of physical works for the construction of the facilities and line connections on the designated land, and must address the management of all construction works, including details of how the adverse effects of construction will be managed. A CMP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3.

In particular, the CMP must contain details covering the following matters:

- a. An outline construction programme for the substation construction works.
- b. Procedures for ensuring that surrounding property owners and occupiers are given prior notice of the commencement of construction works and are informed about the expected duration of those works.
- c. The location of notice boards that clearly identify the name, telephone number and address for service of the site manager, and procedures for ensuring that property owners and occupiers have contact details for relevant Requiring Authority representatives during construction works.
- d. Construction noise management measures to demonstrate compliance with condition 14.
- e. Reference to any Erosion and Sediment Control Plan prepared in accordance with any applicable regional consents applying to the construction works.
- f. Dust management measures for construction earthworks and associated activities such as the movement of vehicles.
- g. Measures for the protection of utility services (where present).
- h. Measures to be adopted to maintain the land in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of building materials and similar construction activities.
- i. Measures to ensure the safety of the general public where potentially affected by construction activities.
- j. Relevant parts of the KMF and PWP, required under conditions 5C and 5D (for example, provisions for cultural site inductions, blessings prior to earthworks, and ongoing tikanga- led cultural monitoring during construction, developed in collaboration with Puatahi Marae Trust).

12. The CMP must be implemented for the duration of the substation construction period.

Kaitiaki Cultural Monitoring

13. The Requiring Authority must invite each Kaitiaki Cultural Monitor to undertake cultural monitoring visits and cultural surveys of the designated land and surrounds for the duration of construction.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for Kaitiaki Cultural Monitors during construction.

Construction Traffic Management Plan - CTMP

14. A Construction Traffic Management Plan (CTMP) must be prepared by the Requiring Authority in consultation with Waka Kotahi NZ Transport Agency and provided to Auckland Council for information at least ten (10) working days prior to the commencement of any physical works for the initial construction of the substation facilities and line connections on-site.

The objective of the CTMP is to avoid, remedy or mitigate adverse construction traffic effects on the road network.

15. To achieve this objective, the CTMP must include:
- a. Roles, responsibilities and contact details, including for public enquiries and for members of the public to communicate any traffic issues arising as a result of the construction works.
 - b. Expected number of vehicle movements, particularly heavy vehicle numbers during each phase of construction.
 - c. Hours of work.
 - d. The point of site access.
 - e. Construction traffic routes.
 - f. Installation of advisory warning signs for “trucks crossing ahead” for vehicles on SH16 approaching the site access, from both the north and south.
 - g. Monitoring of heavy vehicle movements in and out of the access to determine if any issues materialise as a result of the development, in combination with the neighbouring solar farm development.
 - h. Details for the transport of large equipment and structures to site including the route and measures to manage heavy and over dimension loads.
 - i. Details of any temporary road closures and related traffic management measures.
 - j. Management measures to be implemented if issues are identified as a result of the monitoring required by (g), above.
 - k. Location of on-site parking and loading areas for deliveries.
 - l. Consideration of school bus routes and stopping points on SH16, particularly any in close proximity, and measures to ensure the safety of school children using such bus services.
16. The Requiring Authority must ensure that the CTMP required under condition 14 is implemented and maintained throughout the entire period of earthworks and construction activity on the designated land.

Advice Note:

The Requiring Authority will be responsible for ensuring all necessary permits, such as Network Access Requests (NAR) and vehicle crossing permits, are obtained from NZTA.

Vehicle Access

17. Prior to the commencement of initial earthworks to construct the substation platform, the Requiring Authority must complete localised seal widening of State Highway 16 (SH16) as detailed in Drawing Glorit Substation Proposed Accessway Layout Plan

4211074-TA-0001, prepared by Beca Limited, Revision A, dated 14 August 2024. The purpose of the seal widening is to provide sufficient space for vehicle tracking and safe operation, including sight distance and vehicle deceleration requirements.

18. A site vehicle access with a minimum width of 9m from SH16 Kaipara Coast Highway must be constructed to comply with the NZTA vehicle accessway standards (NZTA Planning Policy Manual, Appendix 5B).

Accidental discovery / heritage and cultural including Archaeological Management Plan (AMP) and Accidental Discovery Protocol (ADP)

19. The Requiring Authority must prepare an Archaeological Management Plan (AMP) and Accidental Discovery protocol (ADP) in consultation with Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014. The AMP and ADP must include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes.

Advice Notes:

The Requiring Authority is responsible for obtaining all other necessary consents, permits, and licences, including those under the Heritage New Zealand Pouhere Taonga Act 2014. The provisions of the accidental discovery rules E11.6.1. and E12.6.1 set out in the Auckland Unitary Plan are also noted and should be referred to.

Puatahi Marae contributed to the Te Wahapū o Kaipara Manaakitanga Plan (2007) and the NMWK Environmental Management Plan (2021), whose launch at Puatahi Marae was postponed due to Covid-19. The marae also prepared an Accidental Koiwi Discovery Protocol, which can be updated for inclusion in AMP and ADP.

Construction Noise

20. Construction noise must be measured and assessed in accordance with NZS 6803:1999 Acoustics – Construction Noise (NZS6803:1999) and must comply with the noise standards at any occupied building which contains an activity that is sensitive to noise (as defined in the AUP) as set out in the following table as far as practicable:

Table 1: Construction Noise Standards

<u>Time of week</u>	<u>Time Period</u>	<u>Maximum noise level (dBA)</u>	
		<u>Leg</u>	<u>Lmax</u>
<u>Weekdays</u>	<u>6:30am - 7:30am</u>	<u>60</u>	<u>75</u>
	<u>7:30am - 6:00pm</u>	<u>75</u>	<u>90</u>
	<u>6:00pm - 8:00pm</u>	<u>70</u>	<u>85</u>
	<u>8:00pm - 6:30am</u>	<u>45</u>	<u>75</u>
<u>Saturdays</u>	<u>6:30am - 7:30am</u>	<u>45</u>	<u>75</u>
	<u>7:30am - 6:00pm</u>	<u>75</u>	<u>90</u>
	<u>6:00pm - 8:00pm</u>	<u>45</u>	<u>75</u>
	<u>8:00pm - 6:30am</u>	<u>45</u>	<u>75</u>
<u>Sundays and public holidays</u>	<u>6:30am - 7:30am</u>	<u>45</u>	<u>75</u>
	<u>7:30am - 6:00pm</u>	<u>55</u>	<u>85</u>
	<u>6:00pm - 8:00pm</u>	<u>45</u>	<u>75</u>
	<u>8:00pm - 6:30am</u>	<u>45</u>	<u>75</u>

21. Where construction noise at any occupied building which contains an activity that is sensitive to noise is either predicted or measured to exceed the noise standards in Table 1, a SSNMS must be prepared by a suitably qualified and experienced person in consultation with the owners and occupiers of sites subject to the SSNMS. The objective of the SSNMS is to set out the Best Practicable Option for the management of noise effects of the construction activity. The SSNMS must include details such as:
- (i) activity location, start and finish dates
 - (ii) the nearest neighbours to the activity
 - (iii) a location plan
 - (iv) predicted noise level for all receivers where the levels are predicted or measured to exceed the applicable standards in condition 20
 - (v) the proposed Best Practicable Option mitigation for the activity/location
 - (vi) the proposed communications with neighbours
 - (vii) location, times and types of monitoring.
22. Any SSNMS must be submitted to the Council for information at least ten (10) working days prior to the relevant works commencing.

Operational Noise

23. All equipment and facilities within the designated land (except for construction works) must be designed and operated to ensure that the following noise limits are not exceeded at the notional boundary of any rural zoned site:
- a. 55 dB LAeq Monday to Saturday 7am to 10pm and Sunday 9am to 6pm
 - b. 45 dB LAeq /75 dB LAFmax at all other times.

Noise levels must be measured and assessed in accordance with NZS 6801:2008 Acoustics - Measurement of Environmental Sound and NZS 6802:2008 Acoustics - Environmental Noise.

Hazardous Substances

24. Any part of the facility containing oil must be designed to comply with Transpower New Zealand Limited's Oil Spill Management Policy (TP:GS.54.01), Issue 4, December 2014.

Landscape Mitigation – Landscape Plan (LP)

25. A detailed LP must be prepared by the Requiring Authority in consultation with KAG representatives (or appointed Kaitiaki under condition 7) prior to the commencement of any civil (landform modification) works, transmission line deviation works or installation of substation components. The LP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3. The LP must be in general accordance with the Landscape Plans prepared by Beca Limited, dated 4 November 2024, titled Photosimulations / Landscape Plans, submitted as part of the notice of requirement, and must include:
- a. Planting plans and written specifications detailing the plant species, plant sourcing, plant sizes at time of planting, plant locations, density of planting, and timing of planting. All indigenous planting must prioritise eco-sourced native species from nurseries in the Kaipara rohe where practicable.

- b. Written specifications for soil preparation to ensure appropriate growing conditions for plants.
 - c. A programme of plant establishment, including identifying where planting can be undertaken prior to completion of construction.
 - d. A five year programme of post establishment protection and maintenance (fertilising, weed removal/spraying, pest control, replacement of dead/poorly performing plants, and watering to maintain soil moisture).
 - e. The location, materiality, height and design of fencing.
 - f. Details of the locations of stockproof fencing and the use of pest animal barriers (e.g. plant guards) to protect the planting; and identification of any areas where grass will be maintained by mowing rather than grazing (with such areas to be kept to a minimum).
 - g. Integration of cultural landscape values identified in the Cultural Values Assessment prepared by Puatahi Marae Trust and dated 22 May 2025.
26. The LP prepared under condition 25 above must be implemented in the first full planting season (May to September) following completion of construction of the platform and drainage, site access and initial substation facilities.
27. All landscaping required under the LP must be maintained for a minimum of five years following planting, and in accordance with the protection and maintenance programme submitted with the LP.
28. Any planting required under the LP may be trimmed or removed, where:
- a. It is necessary in order to remove or reduce any risk to the maintenance or operational integrity of the substation and line connections; or
 - b. Future development of the National Grid facilities necessitates its removal.
29. If further development of National Grid facilities on or into the designated land necessitates the removal of any planting required under the LP (such as for new line connections), the outline plan submitted for those works must address how the adverse effects of any planting removal will be managed.
30. **Colour of building exteriors**
- The colour finish of the external walls and roof of any buildings must be a neutral colour as defined in the BS5252 standard colour palette (greyness groups A, B or C), have a Light Reflectivity Value rating below 10%, and be green, brown or grey in tone.

Electric and Magnetic Fields (EMF)

31. Any equipment used or located on the designated land must be designed and operated to limit the electric and magnetic field exposures at or beyond the secure boundary to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time- varying electric, and magnetic fields (1Hz – 100kHz), (Health Physics 99(6): 818-836;) (ICNIRP Guidelines). Those guidelines include the public exposure

reference levels of 5 kV/m for electric fields and 200 μ T for magnetic flux density at one metre above ground level under maximum normal operating conditions (ie, when there are no faults in the transmission system).

Radio Frequency Interference

32. Any works or equipment used or located on the designated land must be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High- Voltage AC Power Systems, 0.15 to 1000 MHz.

Attachments

No attachments.

Attachment 3
Transpower New Zealand Limited Designation Schedule
and conditions 8535 Glorit Substation
(Clean text)

Designation Schedule - Transpower New Zealand Ltd

Number	Purpose	Location
8500	Electricity transmission - electricity transmission tower site and associated overhead transmission lines...	161 Ash Street, Avondale
8501	Electricity transmission - Penrose electricity substation	19 Gavin Street, Penrose
8502	Electricity transmission - overhead electricity transmission lines ...	Gavin Street (opposite No. 19), Ellerslie to Tamaki River (Panmure Bridge), Panmure
8503	Electricity transmission - Mount Roskill electricity substation	11-39 White Swan Road, Mount Roskill
8504	Electricity transmission - overhead electricity transmission lines ...	37 Boundary Road, Avondale
8505	Electricity transmission - tower site and associated overhead lines ...	39 Haycock Avenue, Mount Roskill
8506	Electricity transmission - tower site and associated overhead lines ...	135A, 137 and 137A Barrack Road, Mount Wellington
8507	Electricity transmission - the construction, operation and maintenance of underground transmission lines ...	19 Gavin Street to 109 Golfland Drive, Pakuranga
8508	Electricity transmission - tower site and associated overhead transmission lines ...	716 Richardson Road, Mount Roskill
8509	Electricity transmission - tower site (Tower 9) and associated overhead transmission lines ...	Luke Street (adjoins State Highway 1), Otahuhu
8510	Electricity transmission - Glenbook electricity substation	Whitham Road, Glenbrook
8511	Electricity transmission - Bombay electricity substation	153 Barber Road, Bombay
8512	Electricity transmission - the construction, operation and maintenance of that part of a 400kV capable transmission line ...	231 Whitford Park Road, Whitford to the vicinity of Paparimu Road (Waikato District Council Boundary), Pokeno
8513	Electricity transmission - the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 220kV substation, installation of 220kV underground cable circuits ...	1 Gridco Road and 2 Helabys Road, Otara
8514	Electricity transmission - the ongoing use, maintenance and operation of the Pakuranga Electricity Substation, the development of the substation site ...	109 Golfland Drive, Pakuranga
8515	Electricity Transmission - the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines ...	16 Umbria Lane (near Brownhill Road), Whitford
8516	Electricity Transmission - the construction, operation and maintenance of a double circuit underground 220kV cable ...	143 Brownhill Road, Whitford to 109 Golfland Drive, Howick
8517	Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable ...	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
8518	Electricity transmission - Albany electricity substation	29 Bass Road, Albany
8519	Electricity transmission - the installation, maintenance, repair, replacement, inspection and operation of two 220kV underground electricity transmission lines ...	410 Albany Highway to State Highway 1 (Constellation Drive), Rosedale
8520	Electricity transmission - Takanini electricity substation	65 Airfield Road, Takanini
8521	Electricity transmission - the construction, operation, maintenance, replacement, renewal and upgrading of a	261 Quarry Road, Drury

	220kV switchyard, transmission lines, and ancillary facilities	
8522	Electricity transmission - Wellsford electricity substation	69 School Road, Wellsford
8523	Electricity transmission - Silverdale electricity substation	83-91 Foundry Road, Silverdale
8524	Electricity transmission - Huapai electricity substation	108 Matua Road, Huapai
8525	Electricity transmission - Henderson electricity substation	1-12 and 41-47 Lincoln Park Avenue, Massey
8526	Electricity transmission - Hepburn Road electricity substation	167-217 Hepburn Road, Glendene
8527	Electricity transmission - Rua o te Whenua telecommunications facility	600 Scenic Drive, Waiatarua
8528	Transferred to Vector Limited March 2024	
8529	Electricity transmission - Mangere electricity substation	11, 14 and 16 Driver Road and 307 Massey Road, Mangere
8530	Electricity transmission - Hobson Street electricity substation	13-21 Hobson Street, Auckland City
8531	Electricity transmission - Wairau Road electricity substation	4A Wairau Road, Takapuna
8532	Electricity Transmission - the operation, maintenance and upgrading of underground transmission lines comprising of two 110kV cable circuits and termination structures to convey electricity between Otahuhu and Penrose	Highbrook Business Park, Highbrook
8533	Electricity transmission - Wiri electricity substation	656 Great South Road, Manukau
8534	Electricity transmission – Flat Bush Sub Precinct C	36 Tir Conaill Avenue, 125 Murphys Road, 23 Murphys Park Drive, 125B Murphys Road Flat Bush
8535	Electricity Transmission – Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland)	2791 Kaipara Coast Highway, Glorit 0984

8535 Glorit Substation

Designation Number	8535
Requiring Authority	Transpower New Zealand Limited
Location	2791 Kaipara Coast Highway, Glorit 0984
Lapse Date	This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.

Purpose

Electricity Transmission – Glorit Substation (construction, operation, maintenance, and upgrade of a new substation in Glorit, Auckland)

Conditions

Designated Land:



1. The initial works to give effect to this designation, being the site works, construction of the platform and drainage, site access, substation facilities, establishment of line connections and landscaping, must be undertaken in general accordance with the information submitted in the documentation entitled 'Glorit Substation – Assessment of Effects on the Environment', prepared by Beca Limited, dated November 2024 (AEE).

2. This designation shall lapse 10 years after the date on which it is included in the Auckland Unitary Plan (Operative in Part) unless it is given effect to before that date.

Outline Plan(s) of the Works

3. Prior to the commencement of construction, an outline plan (or plans) of the project or works to be constructed on the designated land must be submitted, in accordance with section 176A of the RMA. The outline plan (or plans) must include the following plans (or such parts of these plans as are relevant to the project or works to be constructed):
 - a. the Construction Management Plan (CMP) required by condition 6;
 - b. the Landscape Plan (LP) required by condition 19; and
 - c. if required under condition 15, any Site-Specific Construction Noise Management Schedule (SSCNMS).
4. The CMP required by condition 6, the LP required by condition 19 and the SSCNMS if required under condition 15 must:
 - a. be prepared and implemented in accordance with the relevant conditions;
 - b. be prepared by a suitably qualified and experienced person(s), having regard to the subject matter of the plan;
 - c. include sufficient detail relating to the management of effects associated with the relevant activities and/or stage of work to which it relates; and
 - d. otherwise be in general accordance with the material set out in the AEE. Where there is any discrepancy between the material in the AEE and the relevant management plan condition(s), the requirements of the condition(s) will prevail.

For the purposes of these conditions, a suitably qualified and experienced person or persons, means persons who individually or collectively hold the professional qualifications, training, and experience relevant to the particular task or subject matter addressed in the plan or schedule, and are recognised as a professional (or professionals) with the expertise necessary to make sound judgments relating to that task or subject.

5. Following submission of an outline plans(s), the CMP, LP or SSCNMS (if required) may be amended if necessary, to reflect any changes in design, construction methods or management of effects. Any amendments to the plans are to be discussed with and submitted to the Council for information without the need for a further outline plan process unless those amendments once implemented would result in a materially different outcome to that described in the original outline plan.

Advice Notes:

Consideration of the CMP, LP and any SSCNMS by the Council relates only to those aspects of the plan that are relevant under the Resource Management Act 1991 (RMA). The outline plan process does not amount to an approval or acceptance of suitability by the Council of any elements of the management plan that relate to other legislation, for example, but not limited to, the Building Act 2004, the Heritage New Zealand Pouhere Taonga Act 2014, or the Health and Safety in Employment Act 1992.

The Construction Traffic Management Plan required by condition 8 does not form part of the outline plan process.

6. All management plans (including amendments to those plans) must be implemented and complied with for the duration of the relevant activity, or as specified in the relevant condition.

Cultural Values

7. Kaitiaki Advisory Group (KAG)

At least three (3) months prior to the commencement of construction, the Requiring Authority must establish a KAG comprising up to three representatives from Puatahi Marae Trust, up to two representatives from Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, and up to two representatives from the Requiring Authority.

The KAG must be provided with the opportunity to have ongoing input into cultural, ecological, heritage, and landscape matters throughout the duration of construction and for the first two years of operation of the substation.

The purpose of the KAG is to:

- a. Foster and encourage mutual understanding between the Requiring Authority, Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu, with Puatahi Marae Trust as the lead and for the purpose of this condition as mana whenua, on the effectiveness of the measures implemented by the Requiring Authority to avoid, remedy, or mitigate adverse effects on cultural values associated with the whenua, wetlands, wai and moana;
- b. Facilitate ongoing engagement with mana whenua;
- c. Enable KAG or appointed kaitiaki (being persons nominated by Puatahi Marae Trust and Ngā Maunga Whakahii o Kaipara Kaitiaki te Taiao Roopu in writing to the Requiring Authority, in the absence of a representative(s) on the KAG) to provide cultural inputs into the drafting and preparation of the LP.
- d. Discuss access and management arrangements for sites of cultural significance to mana whenua; and
- e. Provide mana whenua with reports, monitoring information and updates.

The first meeting of the KAG must be convened prior to the commencement of any bulk earthworks. Thereafter the KAG meetings are to be convened at least twice per year (or at such lesser frequency as the KAG decides) for the duration of construction and for the first two years of operation of the substation.

At least twenty (20) working days prior to each KAG meeting, the Requiring Authority must provide meeting invites to all KAG representatives including the date and time of the meeting. A record of all meetings is to be distributed to Auckland Council no later than one month after each meeting.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for the operation of the KAG.

Advice Notes:

Should any KAG representatives choose not to attend a KAG meeting, this does not constitute a non-compliance with this condition.

A single KAG can be formed for the Glorit Solar Scheme (being comprised of the Ōmaumau solar farm authorised by separate consents held by Glorit Solar P LP, and the Glorit substation authorised by this designation).

8. **Kaitiaki Monitoring Framework – (KMF)**

The Requiring Authority must, following consultation with the KAG, enable Puatahi Marae Trust and hapū to prepare and develop a KMF to outline how monitoring will occur across project phases for construction, and post-construction with a focus on ecological enhancement and restoration, land disturbance activities, and cultural health indicators (CHI) for the Kaipara Moana coastal edge, estuaries and associated environments including Ōmaumau reserve and tributaries.

The KMF must be incorporated within the Puatahi Whakatutuki Plan required under condition 9.

The objective of the KMF is to:

- i. Uphold kaitiakitanga;
- ii. Monitor effects on cultural values, ecological health and mauri of ecosystems;
- iii. Guide timely identification and responses to adverse effects; and
- iv. Inform mitigation and enhancement actions.

Advice Notes:

Should the Requiring Authority invite and enable Puatahi Marae Trust and hapū to prepare and develop a KMF, and a framework is subsequently not prepared, this shall not constitute non-compliance with this condition.

A single KMF can be prepared for the Glorit Solar Scheme.

The Requiring Authority has provided its acknowledgement and agreement that it will endeavor to implement the principles of Te Tiriti O Waitangi in the implementation of the KMF in line with the Requiring Authorities own policies of engagement with Mana Whenua hapū, marae and post-settlement entities.

9. **Mātauranga Māori - Puatahi Whakatutuki Plan (PWP)**

A PWP must be prepared by the Requiring Authority in collaboration with Puatahi Marae Trust (where the Trust Agrees to provide such collaboration) and must be provided to the Council for information at least twenty (20) working days prior to commencement of construction.

The PWP must be provided to the KAG for comment at least twenty (20) working days) prior to submitting the PWP to Council.

The PWP must set out cultural monitoring protocols, site cultural induction processes, tikanga-led monitoring of wetlands, groundwater, and culturally significant areas, and define the roles and responsibilities of Kaitiaki cultural monitors (Kaitiaki Cultural Monitors).

The purpose of the PWP is to establish a methodology to monitor and report on cultural values of the natural environment within and around the designated land for the duration of construction works.

To achieve this purpose, the PWP must include the following matters as relevant to the works authorised by this designation:

- a. A description of the Kaitiaki Cultural Monitors roles and responsibilities.
- b. A description of the Kaitiaki Cultural Monitors tasks and commitments.
- c. The KMF described in condition 8 to outline how monitoring will occur.
- d. A methodology, established with the KAG, to use Cultural Health Indicator (CHI) surveys to monitor the health of the environment.
- e. The development of CHI attributes tailored to monitoring points on the designated land.
- f. Recommendations and advice on landscape and ecological enhancement and restoration works including riparian and wetland enrichment, and planting treatment, pest flora and fauna management, and any fish passage devices.
- g. Optional initiatives that respond to the historic and cultural context of the Ōmaumau properties (Solar Farm and Glorit Substation) and its features to be developed, confirmed and implemented in association with the KAG, and the identified management plans. For example, this may include installation of interpretive signage, wayfinding devices, pouwhenua and/or artworks in suitable locations to reference the historic and cultural relationship and values of the designated land and wider setting.

Implementation of the PWP must include the following as relevant to the proposed works:

- i. An introductory hui for the KAG on the use of CHI survey and monitoring;
- ii. An initial CHI survey to be undertaken at, or within, 6 months of ecological enhancement and / or restoration works commencing; and
- iii. Ongoing CHI surveys at monitoring sites at least every five years thereafter (or at such greater frequency as the KAG may request).

Any changes proposed to the PWP, or its implementation, must be confirmed in writing to Puatahi Marae Trust by the Requiring Authority following consultation with the KAG, and prior to the implementation of any changes proposed.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for the implementation of the PWP.

Advice Notes:

A single PWP can be prepared for the Glorit Solar Scheme.

The Requiring Authority has provided its acknowledgement and agreement that it will endeavour to implement the principles of Te Tiriti O Waitangi in the development and implementation of the PWP.

- 10. The Requiring Authority must, in collaboration with Puatahi Marae Trust, convene an annual (or less frequent as agreed to by Puatahi Marae Trust and the Requiring Authority) hui to review the effectiveness of cultural and environmental mitigation measures.

A summary report of monitoring outcomes and management responses and capacity building must be prepared following each hui.

Advice Note:

A single hui can be convened for the Glorit Solar Scheme.

Construction Management Plan - CMP

11. A Construction Management Plan (CMP) must be prepared by the Requiring Authority prior to the commencement of physical works for the construction of the facilities and line connections on the designated land, and must address the management of all construction works, including details of how the adverse effects of construction will be managed. A CMP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3.

In particular, the CMP must contain details covering the following matters:

- a. An outline construction programme for the substation construction works.
 - b. Procedures for ensuring that surrounding property owners and occupiers are given prior notice of the commencement of construction works and are informed about the expected duration of those works.
 - c. The location of notice boards that clearly identify the name, telephone number and address for service of the site manager, and procedures for ensuring that property owners and occupiers have contact details for relevant Requiring Authority representatives during construction works.
 - d. Construction noise management measures to demonstrate compliance with condition 14.
 - e. Reference to any Erosion and Sediment Control Plan prepared in accordance with any applicable regional consents applying to the construction works.
 - f. Dust management measures for construction earthworks and associated activities such as the movement of vehicles.
 - g. Measures for the protection of utility services (where present).
 - h. Measures to be adopted to maintain the land in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of building materials and similar construction activities.
 - i. Measures to ensure the safety of the general public where potentially affected by construction activities.
 - j. Relevant parts of the KMF and PWP, required under conditions 5C and 5D (for example, provisions for cultural site inductions, blessings prior to earthworks, and ongoing tikanga- led cultural monitoring during construction, developed in collaboration with Puatahi Marae Trust).
12. The CMP must be implemented for the duration of the substation construction period.

Kaitiaki Cultural Monitoring

13. The Requiring Authority must invite each Kaitiaki Cultural Monitor to undertake cultural monitoring visits and cultural surveys of the designated land and surrounds for the duration of construction.

The Requiring Authority must provide reasonable resourcing, technical and administrative support for Kaitiaki Cultural Monitors during construction.

Construction Traffic Management Plan - CTMP

14. A Construction Traffic Management Plan (CTMP) must be prepared by the Requiring Authority in consultation with Waka Kotahi NZ Transport Agency and provided to Auckland Council for information at least ten (10) working days prior to the commencement of any physical works for the initial construction of the substation facilities and line connections on-site.

The objective of the CTMP is to avoid, remedy or mitigate adverse construction traffic effects on the road network.

15. To achieve this objective, the CTMP must include:
 - a. Roles, responsibilities and contact details, including for public enquiries and for members of the public to communicate any traffic issues arising as a result of the construction works.
 - b. Expected number of vehicle movements, particularly heavy vehicle numbers during each phase of construction.
 - c. Hours of work.
 - d. The point of site access.
 - e. Construction traffic routes.
 - f. Installation of advisory warning signs for “trucks crossing ahead” for vehicles on SH16 approaching the site access, from both the north and south.
 - g. Monitoring of heavy vehicle movements in and out of the access to determine if any issues materialise as a result of the development, in combination with the neighbouring solar farm development.
 - h. Details for the transport of large equipment and structures to site including the route and measures to manage heavy and over dimension loads.
 - i. Details of any temporary road closures and related traffic management measures.
 - j. Management measures to be implemented if issues are identified as a result of the monitoring required by (g), above.
 - k. Location of on-site parking and loading areas for deliveries.
 - l. Consideration of school bus routes and stopping points on SH16, particularly any in close proximity, and measures to ensure the safety of school children using such bus services.
16. The Requiring Authority must ensure that the CTMP required under condition 14 is implemented and maintained throughout the entire period of earthworks and construction activity on the designated land.

Advice Note:

The Requiring Authority will be responsible for ensuring all necessary permits, such as Network Access Requests (NAR) and vehicle crossing permits, are obtained from NZTA.

Vehicle Access

17. Prior to the commencement of initial earthworks to construct the substation platform, the Requiring Authority must complete localised seal widening of State Highway 16 (SH16) as detailed in Drawing Glorit Substation Proposed Accessway Layout Plan

4211074-TA-0001, prepared by Beca Limited, Revision A, dated 14 August 2024. The purpose of the seal widening is to provide sufficient space for vehicle tracking and safe operation, including sight distance and vehicle deceleration requirements.

18. A site vehicle access with a minimum width of 9m from SH16 Kaipara Coast Highway must be constructed to comply with the NZTA vehicle accessway standards (NZTA Planning Policy Manual, Appendix 5B).

Accidental discovery / heritage and cultural including Archaeological Management Plan (AMP) and Accidental Discovery Protocol (ADP)

19. The Requiring Authority must prepare an Archaeological Management Plan (AMP) and Accidental Discovery protocol (ADP) in consultation with Puatahi Marae Trust prior to any application for an authority under the Heritage New Zealand Pouhere Taonga Act 2014. The AMP and ADP must include Puatahi tikanga protocols for cultural material discovery, archaeological works, and post-discovery processes.

Advice Notes:

The Requiring Authority is responsible for obtaining all other necessary consents, permits, and licences, including those under the Heritage New Zealand Pouhere Taonga Act 2014. The provisions of the accidental discovery rules E11.6.1. and E12.6.1 set out in the Auckland Unitary Plan are also noted and should be referred to.

Puatahi Marae contributed to the Te Wahapū o Kaipara Manaakitanga Plan (2007) and the NMWK Environmental Management Plan (2021), whose launch at Puatahi Marae was postponed due to Covid-19. The marae also prepared an Accidental Koiwi Discovery Protocol, which can be updated for inclusion in AMP and ADP.

Construction Noise

20. Construction noise must be measured and assessed in accordance with NZS 6803:1999 Acoustics – Construction Noise (NZS6803:1999) and must comply with the noise standards at any occupied building which contains an activity that is sensitive to noise (as defined in the AUP) as set out in the following table as far as practicable:

Table 1: Construction Noise Standards

Time of week	Time Period	Maximum noise level (dBA)	
		Leq	Lmax
Weekdays	6:30am - 7:30am	60	75
	7:30am - 6:00pm	75	90
	6:00pm - 8:00pm	70	85
	8:00pm - 6:30am	45	75
Saturdays	6:30am - 7:30am	45	75
	7:30am - 6:00pm	75	90
	6:00pm - 8:00pm	45	75
	8:00pm - 6:30am	45	75
Sundays and public holidays	6:30am - 7:30am	45	75
	7:30am - 6:00pm	55	85
	6:00pm - 8:00pm	45	75
	8:00pm - 6:30am	45	75

21. Where construction noise at any occupied building which contains an activity that is sensitive to noise is either predicted or measured to exceed the noise standards in Table 1, a SSNMS must be prepared by a suitably qualified and experienced person in consultation with the owners and occupiers of sites subject to the SSNMS. The objective of the SSNMS is to set out the Best Practicable Option for the management of noise effects of the construction activity. The SSNMS must include details such as:
- (i) activity location, start and finish dates
 - (ii) the nearest neighbours to the activity
 - (iii) a location plan
 - (iv) predicted noise level for all receivers where the levels are predicted or measured to exceed the applicable standards in condition 20
 - (v) the proposed Best Practicable Option mitigation for the activity/location
 - (vi) the proposed communications with neighbours
 - (vii) location, times and types of monitoring.
22. Any SSNMS must be submitted to the Council for information at least ten (10) working days prior to the relevant works commencing.

Operational Noise

23. All equipment and facilities within the designated land (except for construction works) must be designed and operated to ensure that the following noise limits are not exceeded at the notional boundary of any rural zoned site:
- a. 55 dB LAeq Monday to Saturday 7am to 10pm and Sunday 9am to 6pm
 - b. 45 dB LAeq /75 dB LAFmax at all other times.

Noise levels must be measured and assessed in accordance with NZS 6801:2008 Acoustics - Measurement of Environmental Sound and NZS 6802:2008 Acoustics - Environmental Noise.

Hazardous Substances

24. Any part of the facility containing oil must be designed to comply with Transpower New Zealand Limited's Oil Spill Management Policy (TP:GS.54.01), Issue 4, December 2014.

Landscape Mitigation – Landscape Plan (LP)

25. A detailed LP must be prepared by the Requiring Authority in consultation with KAG representatives (or appointed Kaitiaki under condition 7) prior to the commencement of any civil (landform modification) works, transmission line deviation works or installation of substation components. The LP (or such parts as are relevant to the project or works to be constructed) must accompany an outline plan (or plans) submitted under condition 3. The LP must be in general accordance with the Landscape Plans prepared by Beca Limited, dated 4 November 2024, titled Photosimulations / Landscape Plans, submitted as part of the notice of requirement, and must include:
- a. Planting plans and written specifications detailing the plant species, plant sourcing, plant sizes at time of planting, plant locations, density of planting, and timing of planting. All indigenous planting must prioritise eco-sourced native species from nurseries in the Kaipara rohe where practicable.

- b. Written specifications for soil preparation to ensure appropriate growing conditions for plants.
 - c. A programme of plant establishment, including identifying where planting can be undertaken prior to completion of construction.
 - d. A five year programme of post establishment protection and maintenance (fertilising, weed removal/spraying, pest control, replacement of dead/poorly performing plants, and watering to maintain soil moisture).
 - e. The location, materiality, height and design of fencing.
 - f. Details of the locations of stockproof fencing and the use of pest animal barriers (e.g. plant guards) to protect the planting; and identification of any areas where grass will be maintained by mowing rather than grazing (with such areas to be kept to a minimum).
 - g. Integration of cultural landscape values identified in the Cultural Values Assessment prepared by Puatahi Marae Trust and dated 22 May 2025.
26. The LP prepared under condition 25 above must be implemented in the first full planting season (May to September) following completion of construction of the platform and drainage, site access and initial substation facilities.
27. All landscaping required under the LP must be maintained for a minimum of five years following planting, and in accordance with the protection and maintenance programme submitted with the LP.
28. Any planting required under the LP may be trimmed or removed, where:
- a. It is necessary in order to remove or reduce any risk to the maintenance or operational integrity of the substation and line connections; or
 - b. Future development of the National Grid facilities necessitates its removal.
29. If further development of National Grid facilities on or into the designated land necessitates the removal of any planting required under the LP (such as for new line connections), the outline plan submitted for those works must address how the adverse effects of any planting removal will be managed.
30. **Colour of building exteriors**

The colour finish of the external walls and roof of any buildings must be a neutral colour as defined in the BS5252 standard colour palette (greyness groups A, B or C), have a Light Reflectivity Value rating below 10%, and be green, brown or grey in tone.

Electric and Magnetic Fields (EMF)

31. Any equipment used or located on the designated land must be designed and operated to limit the electric and magnetic field exposures at or beyond the secure boundary to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time-varying electric, and magnetic fields (1Hz – 100kHz), (Health Physics 99(6): 818-836;) (ICNIRP Guidelines). Those guidelines include the public exposure

reference levels of 5 kV/m for electric fields and 200 μ T for magnetic flux density at one metre above ground level under maximum normal operating conditions (ie, when there are no faults in the transmission system).

Radio Frequency Interference

32. Any works or equipment used or located on the designated land must be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High- Voltage AC Power Systems, 0.15 to 1000 MHz.

Attachments

No attachments.

Attachment 4
Auckland Unitary Plan (OIP) GIS Viewer
Designation 8535 Glorit Substation
(Before/After)

BEFORE



 Notice of Requirement

AFTER



 Designation

0 20 40 80 M

Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.

Date: 4/11/2025

**Electricity Transmission – Glorit Substation
(construction, operation, maintenance,
and upgrade of a new substation in Glorit, Auckland),
(Glorit Substation), Transpower New Zealand Limited**