

Integrated Traffic Assessment

Twizel Solar Project

for Nova Energy Limited

Rev 2 - 29/05/2026

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Twizel Solar Project

for Nova Energy Limited

Expert Witness Code of Conduct Statement

The author has read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2023. The author has complied with the Code of Conduct in preparing this report. The content of the report is within the author's area of expertise and the author has not omitted to consider material facts known to them that might alter or detract from the opinions expressed in the report.

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1 INTRODUCTION

This Integrated Traffic Assessment (ITA) has been prepared on behalf of Nova Energy Limited. It supports the consent application associated with the Resource Management Act 1991 and other Acts for a proposed solar farm at Twizel, undertaken through the Fast-track Approvals Act 2024.

This solar farm project includes an upgrade to an existing vehicle accessway off State Highway 8 (Tekapo - Twizel Road). The full description of the proposal is captured in the Substantive application and not replicated in full in this report, other than for relevant aspects.

The scope of this ITA focusses on safety and efficiency related to:

- State Highway 8 in the immediate vicinity.
- Traffic generation from construction activities.
- Upgrade to the vehicle accessway and design considerations.

This report has been prepared for Nova Energy Limited in respect of its application for all approvals under the Fast-track Approvals Act 2024 for the Twizel Solar Plant. The Panel appointed to consider the application for the Twizel Solar Plant may rely on this report for the purpose of making its decision under the Fast-track Approvals Act 2024.

This report is intended to be used in support of a substantive application under the Fast Track Approvals Act 2024. The author has read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2023 and has complied with the Code of Conduct in preparing this report. The content of the report is within the author’s area of expertise, and the author has not omitted to consider material facts known to them that might alter or detract from the opinions expressed in the report.

1.1 Mackenzie District Plan

The Mackenzie District Plan (as amended by Plan Change 27 - Subdivision, Earthworks, Public Access and Transport, which is now operative) TRAN-Table 1 and TRAN-Table 2 specifies the thresholds and requirements for an ITA. These are described below.

As per TRAN-Table 1, a full ITA is required to be undertaken (Road classification) and consider all the matters outlined in TRAN-Table 2, refer Table 1.2.

Table 1.1: TRAN-Table 1 taken from the Mackenzie District Plan

TRAN-Table 1 - High Traffic Generating Activity Thresholds and Integrated Transport Assessment Requirements				
Equivalent car movements per day	Access to a road classified as:			
	Local	Collector	Arterial	Strategic
0-100	n/a	n/a	n/a	n/a
101-200	n/a	Basic	Full	Full
201-400	Basic	Basic	Full	Full
>400	Full	Full	Full	Full

Table 1.2: TRAN-Table 2 taken from the Mackenzie District Plan

TRAN-Table 2	
Basic Integrated Transport Assessment	Full Integrated Transport Assessment
<p>A Basic Integrated Transport Assessment, must, as a minimum, address the following matters:</p> <ul style="list-style-type: none"> • The estimated number of movements generated by each transport mode to and from the development (walking, cycling and private vehicles, including heavy vehicles). • The extent to which any additional vehicle movements will affect the capacity of the road network. • The extent of effects on any vehicle and pedestrian/cyclist conflicts likely to arise from vehicle movements to and from the development. • Access and manoeuvring (safety and efficiency): <ul style="list-style-type: none"> ◦ The extent to which the provision of access and on site manoeuvring area associated with the activity, including vehicle loading and servicing deliveries, affects the safety, efficiency, accessibility of the site (including for people whose mobility is restricted and for emergency service vehicles) and the transport network (including considering the classification of the frontage road). • Design and layout: <ul style="list-style-type: none"> ◦ The extent to which the design and layout of the proposed activity maximises opportunities, to the extent practicable, for travel other than by private vehicle, including providing safe and convenient access for travel by such modes. ◦ The extent to which the design of the proposed development will encourage walking and cycling. • Heavy vehicles: <ul style="list-style-type: none"> ◦ For activities that will generate 50 or more heavy vehicle movements per day, the extent to which there are any effects from these trips on the roading infrastructure. • Accessibility of the location: <ul style="list-style-type: none"> ◦ The extent to which the proposed activity has demonstrated the accessibility of the site by a range of transport modes, and the extent to which the activity's location will minimise or reduce travel to and from the activity by private vehicles and encourage active transport use. 	<p>A Full Integrated Transport Assessment, must, in addition to the matters listed for a Basic Integrated Transport Assessment, address the matters following matters:</p> <ul style="list-style-type: none"> • Network effects: <ul style="list-style-type: none"> ◦ Having particular regard to the level of additional traffic generated by the activity and the extent to which the activity is permitted by the zone in which it is located, the extent to which measures are proposed to adequately mitigate the actual or potential effects on the transport network arising from the anticipated traffic generation (for all transport modes) from the proposed activity, including consideration of cumulative effects with other activities in the vicinity, proposed infrastructure, and construction work associated with the activity. ◦ The extent to which the design and layout of the proposed development maximises opportunities, to the extent considered reasonably practicable, for travel other than by private car. ◦ The extent of effects of construction traffic on the transport network. ◦ The extent of any new or modified infrastructure required for pedestrian, cycling, private vehicles and freight. ◦ The extent of any mitigation required to improve safety issues for pedestrians, cyclists or mobility impaired users and the nature of those measures. ◦ The extent to which management tools such as travel plans are proposed to reduce vehicle movements and associated effects, influence travel mode share and offer travel choice. ◦ The extent to which there are road, walking or cycling measures to be funded by the proposed development.

1.2 Site Location and Context

The proposed Twizel solar project site is situated between the Twizel and Ōhau Rivers, on the eastern side of State Highway 8 and Twizel township, Figure 1.1 .The site is currently accessed via an established vehicle accessway on State Highway 8.



Figure 1.1: Site location

The site is currently primarily used for a dry stock farm operation.

There is a small-scale quarry operating on the site under a lease arrangement. The current consented traffic limits for this operation are a maximum of 40 vehicle movements per day, which equates to a maximum of 20 vehicles entering the site and 20 vehicles exiting the site. The footprint of the quarry is outside of the planned works area for the solar project.

The existing vehicle accessway was previously upgraded for the purpose of meeting safety standards required under an operational consent for the quarry, with internal tracks following on from the accessway to other areas through the farm, Figure 1.2. The remainder of the land is currently a dry stock farm, operated under lease.

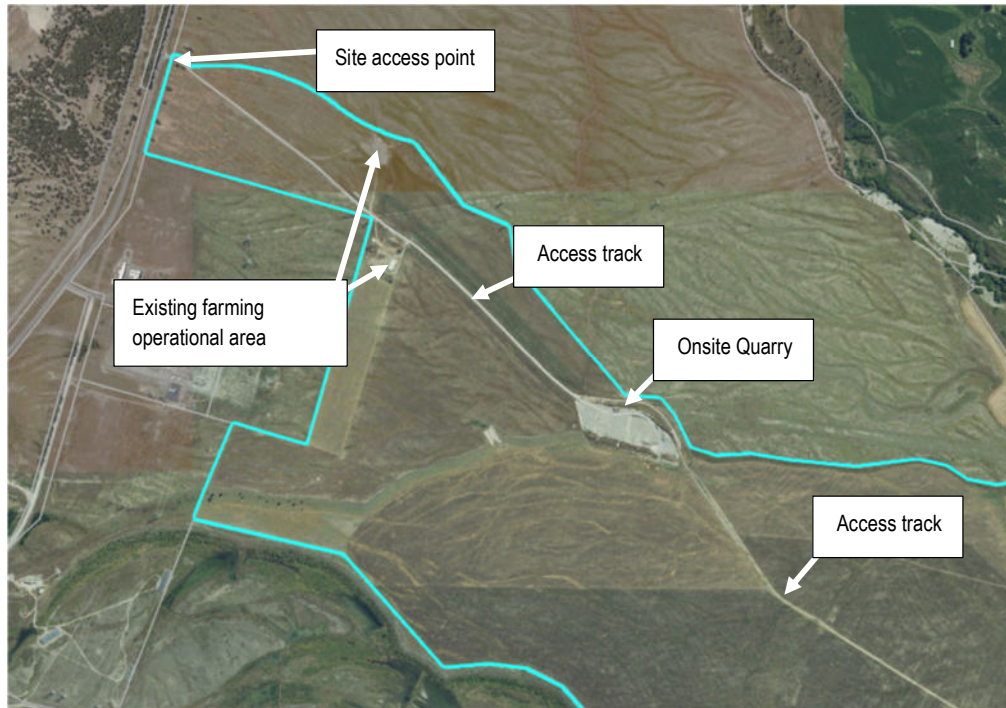


Figure 1.2: Existing site access off State Highway 8

The vehicle accessway at the existing location will be upgraded and used for construction traffic during the enabling works and main solar plant construction, during which time the consented quarry operation will continue. The upgraded accessway will then provide site access to the commissioned solar farm, quarry operations and any farming activities.

Following completion of the solar construction, sheep grazing and the associated farm activities are expected on the site for vegetation management. This will be integrated with future solar operations.

2 EXISTING ROAD ENVIRONMENT

The Site is adjacent to the Tekapo - Twizel Road (State Highway 8). The general site and surrounds are level or near level, with minor/gentle vertical gradients being a characteristic of the roads adjacent to the site.

This Road and the wider road network are described below.

2.1 State Highway 8 Tekapo – Twizel Road

State Highway 8 is one of New Zealand's eight national highways. It forms a loop through the southern scenic regions of the Mackenzie Basin and Central Otago, providing links to other Highways and Roads, starting and terminating in junctions with State Highway 1.

Traffic on State Highway 8 adjacent to the site is reported as 3,945 Annual Average Daily Traffic (AADT), with 18.5% Heavy Commercial Vehicles (HCV) (Mobile Roads) (Dec 2023). This equates to approximately 730 HCV movements on the road per day.

To the south at the Omarama intersection of State Highway 8 and State Highway 83 there is 2,728 AADT, with 10% Heavy Commercial Vehicles (HCV) (Mobile Roads) (Dec 2023), while to the north at Tekapo there is 3,755 AADT, with 18.0% Heavy Commercial Vehicles (HCV) (Mobile Roads) (Dec 2023).

At the site location, the highway is a rural sealed two-lane, two-way road with lane widths typically 3.5 metres and total seal width of 8.0 to 8.5 metres. The road corridor generally consists of sealed shoulders 0.5 m wide, with pavement formation to a feathered edge and table drain on each side of the road. A photo of a typical configuration is shown in Figure 2.1 below.



Figure 2.1: Typical road section of the Tekapo - Twizel Road (State Highway 8) at the site location

There is no street lighting generally on the highway and no flag lighting within the vicinity of the site.

2.1.1 Waka Kotahi NZTA Road Network

The Tekapo - Twizel Road (State Highway 8) generally links southern scenic regions of the Mackenzie Basin and Central Otago. The Road is a 'Arterial' highway under the Waka Kotahi NZTA One Road Classification, Figure 2.2. This is the fourth highest category in the Classification. It appears that the justification for this functional category is based on the AADT and the critical connectivity (no alternative routes) of the Highway.

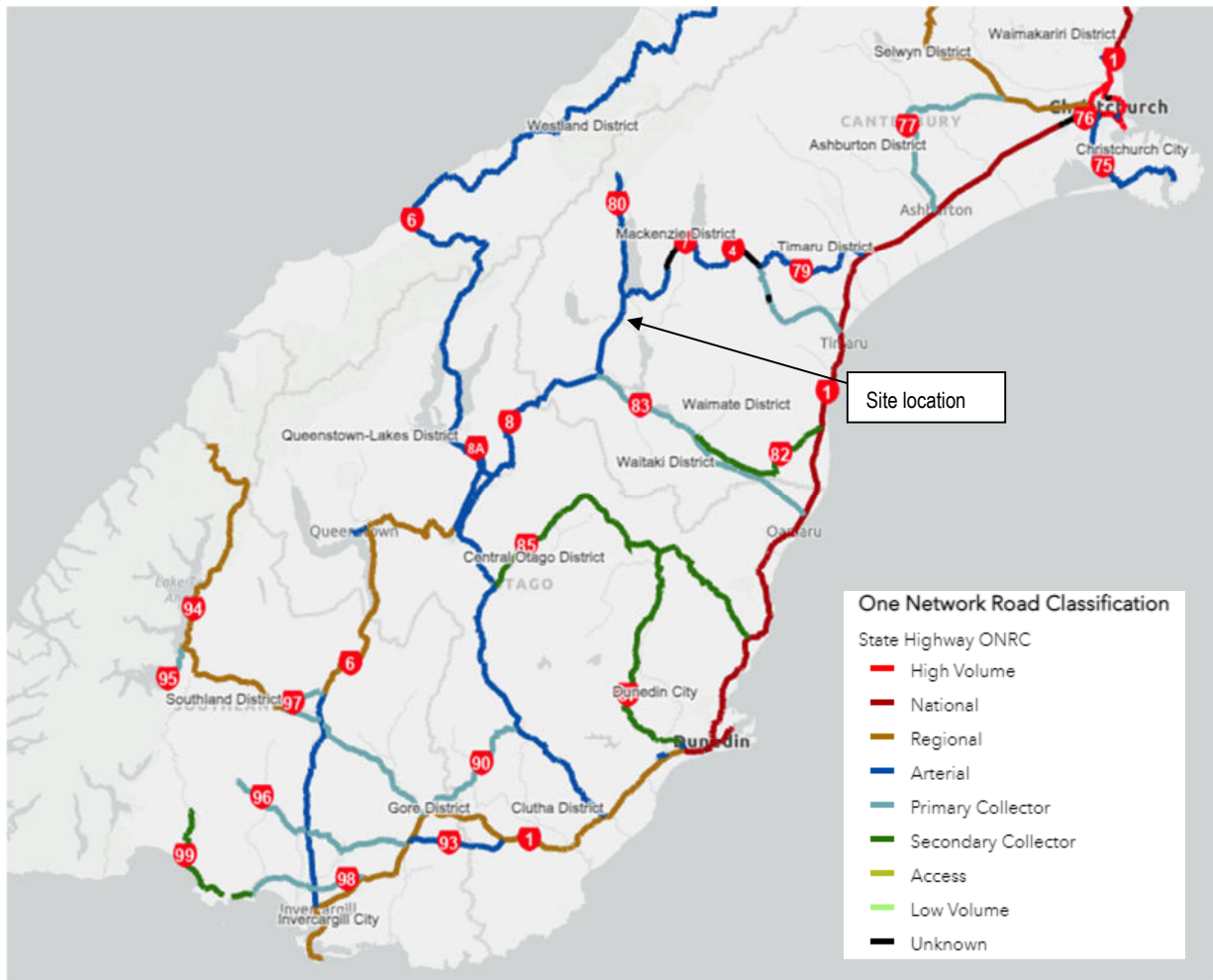


Figure 2.2: Waka Kotahi NZTA Road Network

The highway is also an approved High Productivity Motor Vehicle Route (HPMV) which means that larger trucks, up to 22 m length and 62 tonnes are permitted on State Highway 8. The HPMV network connects across the Country, linking major centres and ports, Figure 2.3.



Figure 2.3: Approved Waka Kotahi NZTA high productivity motor vehicle routes (HPMV's)

2.2 Speed Environment

State Highway 8 is posted as 100 km/hr adjacent to the proposed site.

The horizontal geometry to the north of the site is effectively straight, through to the north side of Twizel. To the south of the site there are several large radius (in excess of 900 m radius) horizontal curves. The road is near level, with gradual and minor changes in vertical geometry.

This means that the typical desired speed of drivers through the road section is 110 km/hr (Table 3.3. Austroads Design Guide to Road Design Part 3: Geometric Design). Therefore, the road environment is an open environment where vehicles typically travel faster than the posted speed limit. This has been taken into account for this assessment, including design aspects such as sight distance and taper lengths.

2.3 Crash History

A summary of the crash history of State Highway 8 is provided below.

2.3.1 State Highway 8

Within proximity of the site, along the Tekapo – Twizel Road (State Highway 8) from the Ōhau River through to the Twizel River (approximately 2 km in each direction) the Waka Kotahi NZTA Crash Analysis System (CAS) reports 42 crashes during the period from 2005 to August 2025.

These are summarised and shown in Table 2.1.

Table 2.1: Crash statistics summary

Crash Type	2005-2014	2015-2025
Fatal	0	0
Serious	0	3
Minor	3	8
Property Only	4	22
Total*	7	33

A crash map showing the location of the recorded Crashes between 2005 and 2025 is shown in Figure 2.4 below.



Figure 2.4: Crash Map – 2005 to 2025 on State Highway 8 adjacent to the site

Serious Crashes

Three serious crashes have occurred along State Highway 8 within the proximity of the site between 2005 – August 2025 (refer Figure 2.5). These are described as:

Table 2.2: Serious Crashes

Predominant Cause	Number of Crashes	Crash ID
A Ute that lost control due to the trailer it was towing fish tailing.	1	201511947
A car attempting to complete a U turn and crashed into an oncoming light vehicle.	1	2023250337
A car crossed the road centre line on a straight section of road and hit two oncoming cars.	1	2021204969

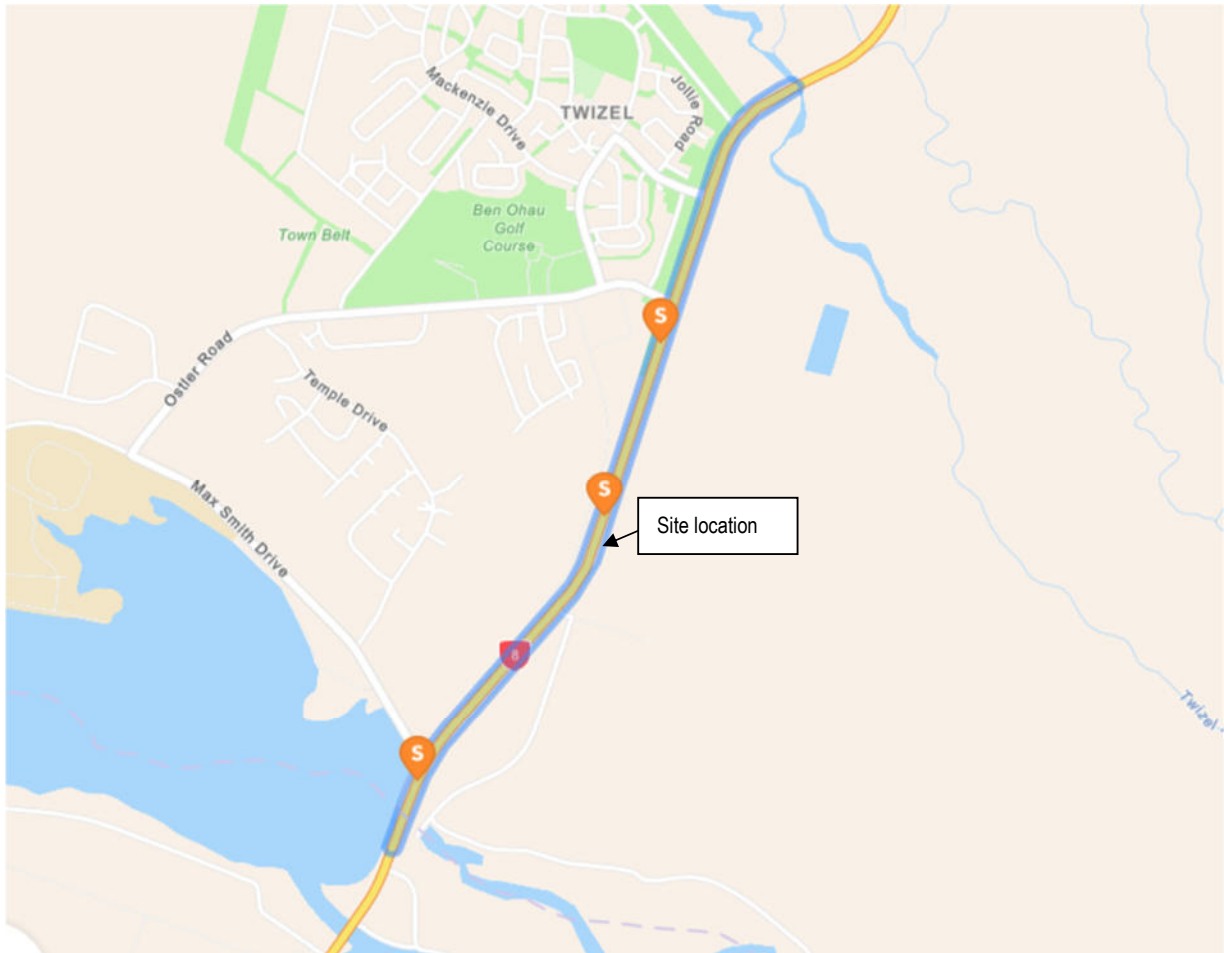


Figure 2.5: CAS location of Serious Crashes in relation to the Site location

Minor Crashes

Of the 11 minor crashes that occurred during the same period, they can be split into the following:

Table 2.3: Minor crashes

Predominant Cause	LV Driver	HCV Driver	Number of Crashes	Crash ID
Driver failing to give way entering SH 8 from a side road	2		2	201719495 & 2021197543
Driver error while performing a manoeuvre	2		2	2022210108 & 201712395
Driver behaviour causing vehicle to drift of the road	4		4	2721543, 201615841, 201321995 & 201415985
Driver lost control due to black ice on the road	1		1	2021189371
Driver crashed into fallen trees on road	1		1	2022231257
Driver failed to stop for vehicle in front	1		1	2024315019

Property Only

Of the 28 property only crashes that occurred during the same period, they can be split into the following:

Table 2.4: Property only crashes

Predominant Cause	LV Driver	HCV Driver	Number of Crashes	Crash ID
Driver attempting an overtaking manoeuvre resulting in a crash	5		5	201541133, 2024282848, 2022213593, 201450036 & 201650789
Driver lost control due to black ice on the road	1		1	2871738
Intoxication	2		2	2021185451 & 201070222
Veering off the road	2		2	2022228119 & 201371023
Driver on SH 8 turning on to side road not stopping or giving way to oncoming vehicles	4		4	201432144, 201074237 2020143609 & 201444403
Driver on side road not stopping or giving way to vehicles when entering SH 8	7	1	7	201836879, 201953178, 201833580 201962026, 201840890, 2024297083 & 2024297939
Driver on SH 8 crashing into car in front while car in front performing a manoeuvre	3	1	3	201655867, 201988620 & 201985536
Driver on SH 8 misjudging turn into side road	2		2	201967618 & 2020143676
Driver failed to stop for vehicle in front	2		2	201755776 & 201756925

Discussion

It was noted during the review of the crash history data over the 20-year period that 18 of the 42 (approximately 42%) crashes involved the five intersections in the review area. It would appear that the intersections present the highest risk to drivers over this section of road, while noting that no serious crashes occurred at any of the five intersections within proximity of the site.

2.4 Pedestrian and Cyclists

There are no dedicated cycle/pedestrian facilities on either State Highway 8 adjacent to the site, which is typical within a rural road setting. No pedestrian or cyclist count has been undertaken for this project, although, anecdotally, general volumes are considered to be low.

There appears to be some form of track along the west side of the highway (opposite side of the road to the site) close to the road reserve boundary. It is unclear if this is an informal cycle / walking track or a vehicle track. It is assumed this is an unformed track possibly utilised by cyclists / pedestrians as a loop between different access points into Twizel or the Twizel River Trail. No records can be found of this track and Mackenzie DC do not maintain it.

The Twizel River Trail (shared use track) follows the Twizel River along the north of the site, noting access off State Highway 8 is more than 2.0 km away from the site entrance, Figure 2.6.

The Alps to Ocean cycle trail crosses the highway adjacent to the Ruataniwha Road intersection and continues north, Figure 2.6 .

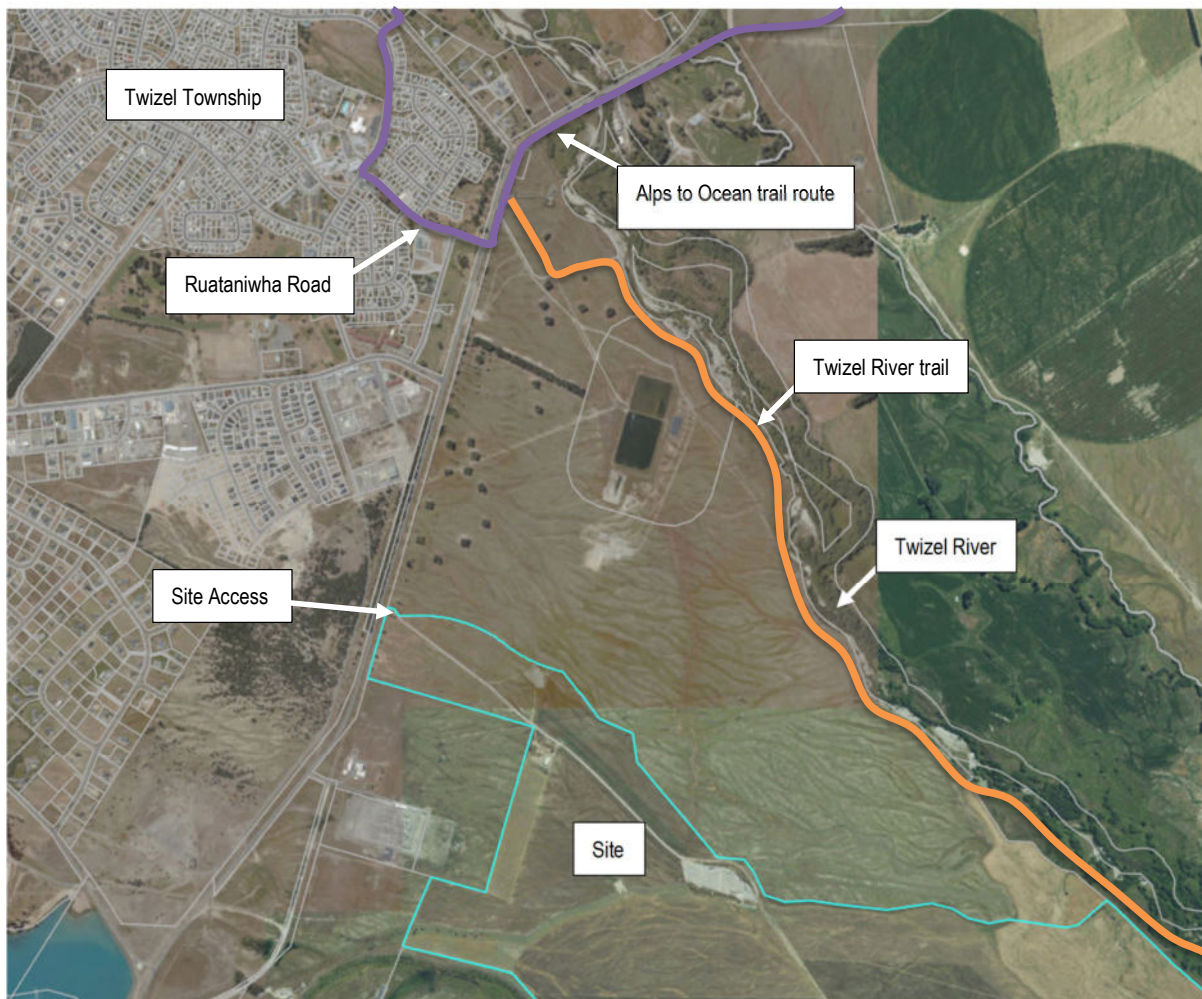


Figure 2.6: Pedestrian and cycle tracks in the vicinity of the site

2.5 Adjacent Land / Property

Within proximity of the site on the western side of State Highway 8, is the Twizel industrial area. This area is accessed via Ostler Road (approximately 850 m to the north of the site) where Ostler Road connects into the Twizel Township, and further north Ruataniwha Road and Glen Lyon Road also provide access to the Twizel township.

The Twizel oxidation ponds (on Mackenzie District Council land) are located on the same side of the road as the site, approximately 1.5 km to the north.

There is a proposed new 12.3 ha Twizel industrial zone in the vicinity of the Twizel oxidation ponds located on the same side of the State Highway as the site. The exact entrance locations into the zone are unknown at this time, but zone plans indicate the entrances will be north of Ostler Road, meaning any new intersection is expected to be at least 1.0 km to the north.

Approximately 650 m to the south of the site (on the same side of the road) is Old Iron Bridge Road which provides access to the Twizel substation, farming operations and the Ōhau River.

Approximately 1.5 km to the south is Max Smith Drive. This provides access to the Meridian Energy Ōhau A Hydro Station, Lake Ruataniwha as well as residential and mixed-use areas. Max Smith Drive connects into the Twizel Township.

On the same side of the State Highway around the site, land use on neighbouring properties is related to:

- stock farming and rural / agricultural activities
- a Department of Conservation (DOC) Kakī Captive Breeding Centre and
- various residential dwellings located in the general area, Figure 2.7 .

Approximately 2.1 km to the south is Mcaughtries Road. This provides access to the Meridian Energy Ōhau B and Ōhau C Hydro Station infrastructure, the Lake Benmore Camping Ground, Ōhau C, as well as rural properties. Mcaughtries Road becomes Falston Road, which continues along the western side of Lake Benmore.



Figure 2.7: Neighbouring Land

These are further described below.

2.5.1 Adjacent Farming Operations

The farming operations in the area adjacent to the site generally consist of dry-stock farming and cropping, with modest traffic generation as would be typically expected from farming activities. Day-on-day, most farming operations would generate nominal HCV and light vehicle movements, noting that there will be seasonal peaks and troughs in the traffic generation.

It would be reasonably assumed that traffic generation from surrounding farming operations peaks in summer and is lower in winter, consistent with typical farming operations.

2.5.2 Twizel Township

The Twizel township is located to the west of State Highway 8 and there are four access points to the township from State Highway 8, being Glen Lyon Road, Ruataniwha Road, Ostler Road and Max Smith Drive to the south of the town (Figure 2.8). Only Ruataniwha Road has formed turn bays, with the other three intersections having either (slight) seal widening or no additional provisions.

The town is set back from the State Highway with traffic concentrating around Mackenzie Drive, which acts as a spine from which all areas of the Town can be accessed. The main commercial and retail area is located adjacent to Market Place which also has good access to the State Highway via Ruataniwha Road.



Figure 2.8: Proximity to Twizel Township

2.5.3 Transpower Substation

The traffic generation for the substation operations is unknown at this point in time.

When operational, substations generate very low ongoing traffic demand. Typical operational traffic would consist of:

- Infrequent maintenance and inspection visits by utility staff
- Occasional specialist vehicle access for servicing or upgrades
- Emergency access, which would be rare and unplanned

Operational traffic volumes are therefore considered negligible relative to existing traffic levels along State highway 8 outside of shutdown or maintenance periods.

3 PROJECT PROPOSAL

3.1 Project Scope

Nova Energy Limited is proposing to develop a 300 MW solar farm site on the 868 ha rural property located off State Highway 8 at Twizel. The conversion of the current dry stock farming operation to solar farm will be completed over an estimated two-and-a-half-year period.

Construction and establishment

The development at the site will include:

- Upgraded vehicle accessway off State Highway 8.
- Formation of internal access tracks.
- New laydown area / operations and maintenance shed / site offices.
- Establishment of solar panels, inverters and other equipment.
- There will be no changes to the existing consented quarry operation on the site.

No farming activities are planned during construction. Following completion of the solar construction, sheep grazing and the associated farm activities are expected on the site for vegetation management, which will be integrated with solar farm operations.

Activity on site will, therefore, be a transition involving:

- Farming activity.
- Quarry operation.
- Enabling earthworks construction.
- Plant installation.
- Solar plant commissioning and operation.
- Commencement of alternative farming operations within solar farm.

The timing of the construction works are planned as:

- From Q4 2027, early enabling works will include:
 - vehicle accessway upgrade.
 - Installation of main infrastructure.
 - main internal access track.
 - Earthworks.
 - laydown area, and camp.
 - Installation of panel arrays.
- From Q1 2028 – Q4 2030, works will include:
 - Installation of panel arrays.
 - construction of further access tracks if needed.
 - construction of onsite structures.

- service connections.
- commissioning.

This programme is subject to change until consenting is confirmed and detailed design and procurement has occurred.

Operations

Once commissioned, the site will be operated meaning that traffic associated with operations are much less than the traffic related to construction – typically involving light vehicles and occasional heavy vehicles related to periodic maintenance.

Decommissioning

At the end of the useful life of the facility, either the electrical infrastructure will be renewed, or decommissioned. The anticipated traffic activity related to any decommissioning would involve the removal from site of electrical components and arrays, and a specific plan and programme would be undertaken at that time – much like the construction process but in reverse.

It is reasonable to expect that there would be minimal traffic related to any deconstruction of internal tracks – likely any gravel materials would be reused within the site at that time for other purposes.

3.2 Vehicle accessway and internal road network

Nova Energy Limited is proposing to upgrade the existing accessway off State Highway 8 which will be the long-term permanent accessway to the site – servicing all traffic and stages of the project.

Vehicle accessway

It is proposed to upgrade the existing accessway to the site at more or less its current location, as shown in Figure 3.1 and Figure 3.2. The entrance will link by a main access track to the existing quarry operations and provide a main access track through the solar site. This will provide a main trunk for access throughout the site.

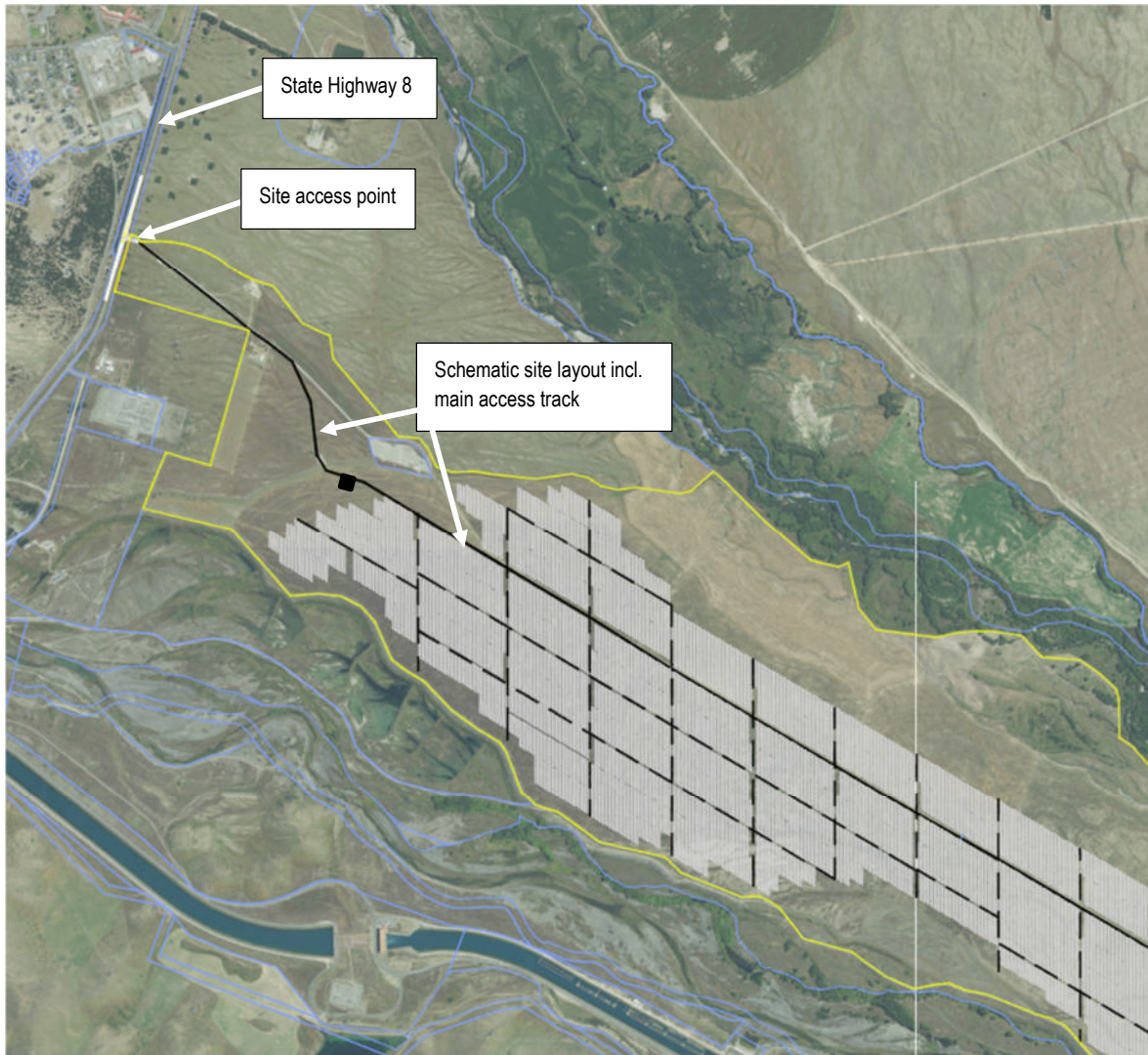


Figure 3.1: Vehicle access location

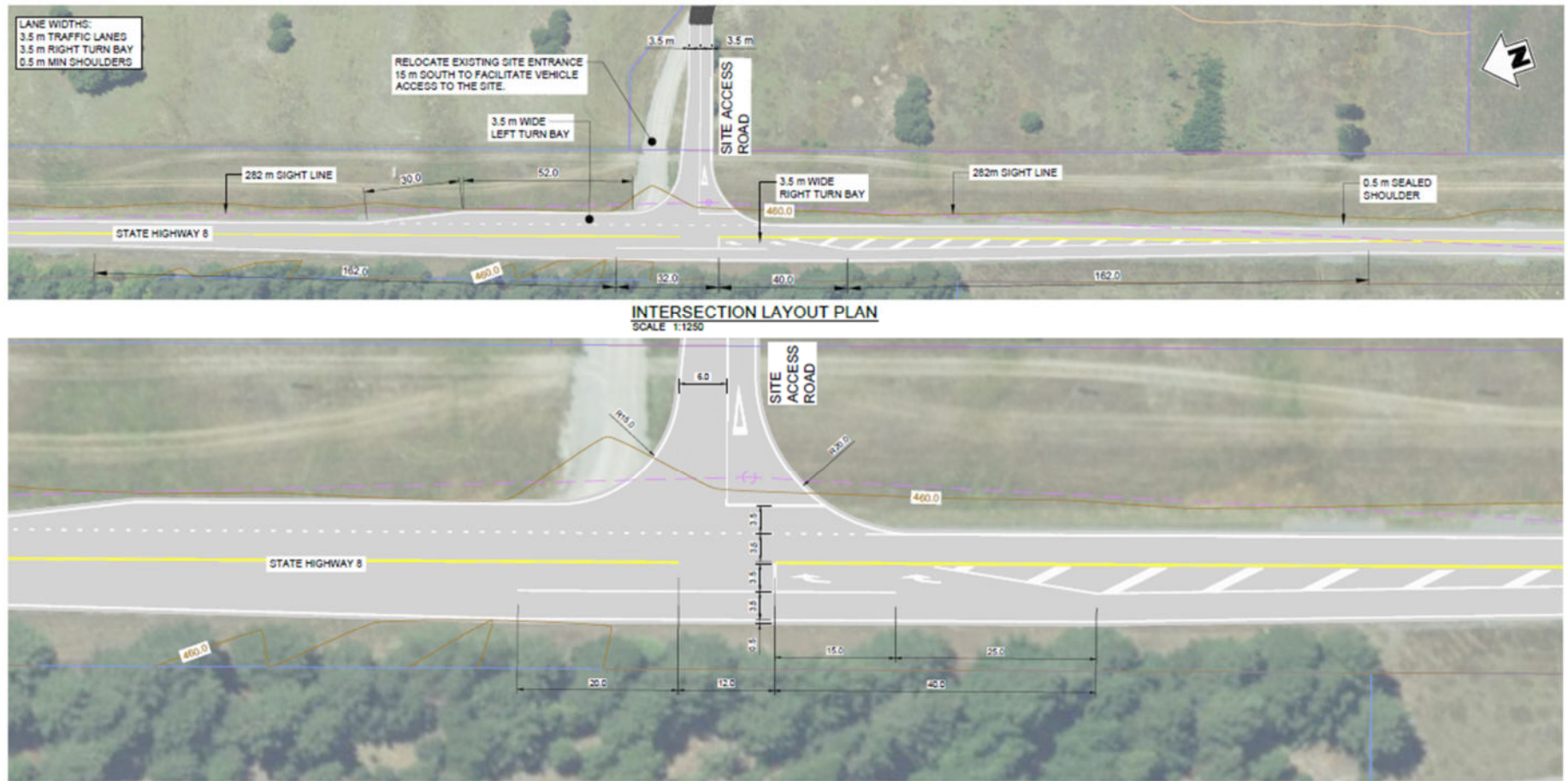


Figure 3.2: Proposed vehicle access – concept design

All traffic related to the solar project will access the site via the upgraded vehicle accessway. This is further discussed in Section 5 of this report.

The exact route of site traffic within the wider State Highway Network is not yet known, therefore the volume / split of traffic from north or south to the site cannot be meaningfully assessed. It is expected that most traffic will enter and exit the site toward the North (Twizel direction).

The following considerations of the design will be made when traffic splits are known:

- Need for a left turn (out) acceleration lane – not expected to be required with low / very low traffic volumes to the south expected
- The design intent is to have suitable design layout that allows construction traffic to operate safely without the need for Temporary Traffic Management or Temporary Speed Restriction.
- Design standards of the vehicle access – if above 100 ecm/day, then Austroads intersection design standards will be adopted. Regardless, a longer left turn lane (in) than shown in the concept design (85 m) may be considered to allow lane change and deceleration (approx. 220 m) to facilitate the desire to avoid Temporary Traffic Management or Temporary Speed Restriction, once likely splits of traffic are known .

Internal Road Layout

The internal road layout, Figure 3.3, provides for a Main Access Track to allow access on a formed track the length of the site.

It is intended that other internal access around the remainder of the site will be largely formed / unformed using existing ground, noting that the underlying ground is expected to be generally (trafficable) gravels with little topsoil, meaning existing onsite underlying materials are planned to be utilised for the construction of internal service tracks – noting that for traffic volumes, this assessment assumes conservatively that all pavement materials will be imported for all access tracks.

Grading and shaping to achieve this will be considered during the detailed design stage and is expected to require little or no shaping to achieve service roads. A concept design showing the proposed layout of the site is provided in Figure 3.3 below. This shows the key infrastructure locations and expected main access track location.

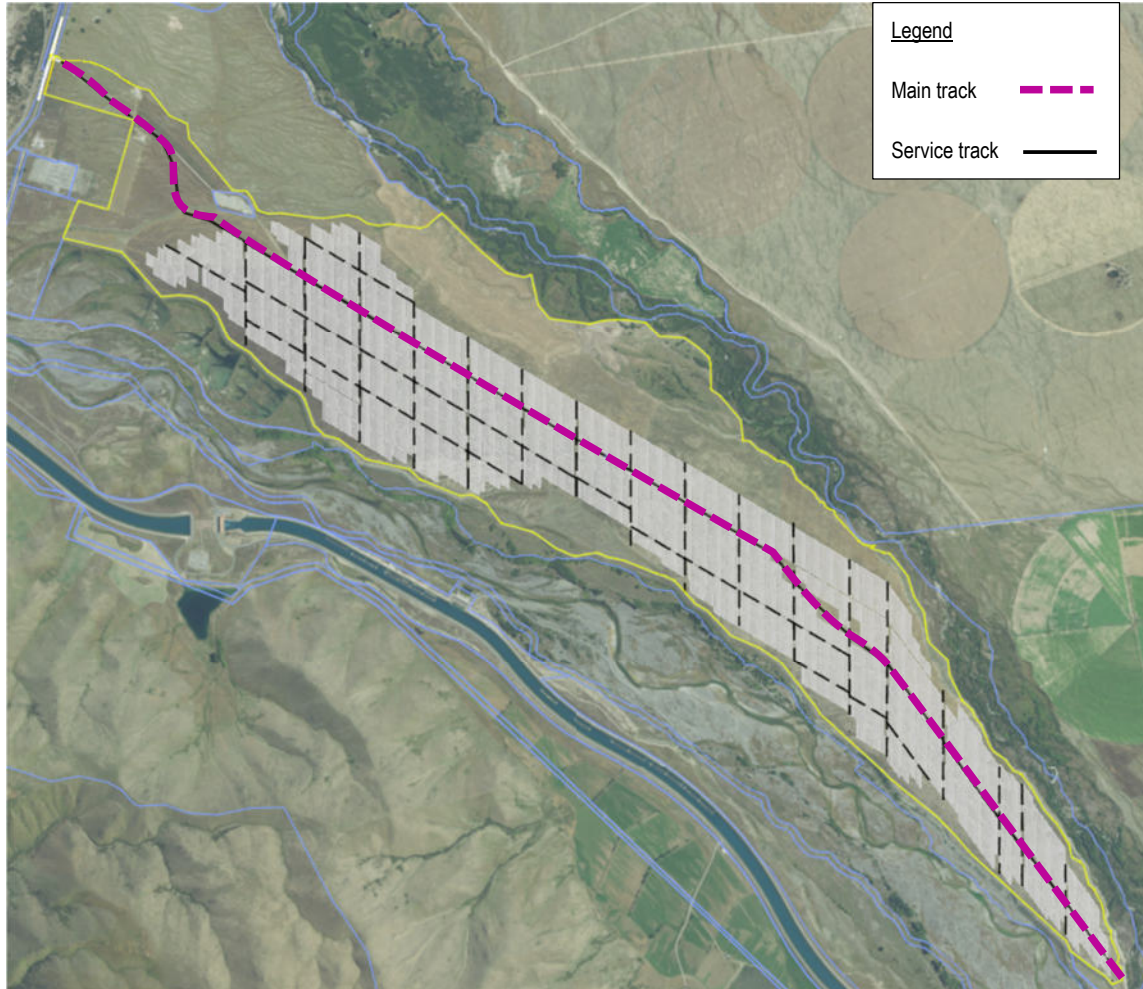


Figure 3.3: Internal Track Network – concept design

The vehicle accessway will be sealed for a distance of no less than 60 m (to be confirmed during the detailed design process) from the existing edge of seal on state highway 8, the main access track from this point is proposed as 6.0 m wide unsealed, two-way carriageway. The service tracks are proposed as unformed clear ways.

The horizontal curves along the main access track will have suitable provision for vehicle tracking to meet the Semi-Trailer and similar large truck units, as defined by Waka Kotahi NZTA RTS18 New Zealand on road tracking curves for heavy vehicles (2007).

Laydown Area / Construction Offices

A laydown / construction offices area will be constructed for the purposes of facilitating the construction activities. This is approximately 5,000 m² in area and large enough for a security hut and construction area which in turn will be used to store equipment, truck parking, loading, unloading and turnaround. The location for this area is shown below on Figure 3.4 labelled laydown area A. The location and size of the laydown area will be confirmed during the detailed design process. Laydown area B shown below on Figure 3.4 is a temporary construction laydown area that will relocate along the main access track as the work front progresses, noting this will be

a smaller area to accommodate key construction items. The size of the laydown area will be confirmed during the detailed design process.

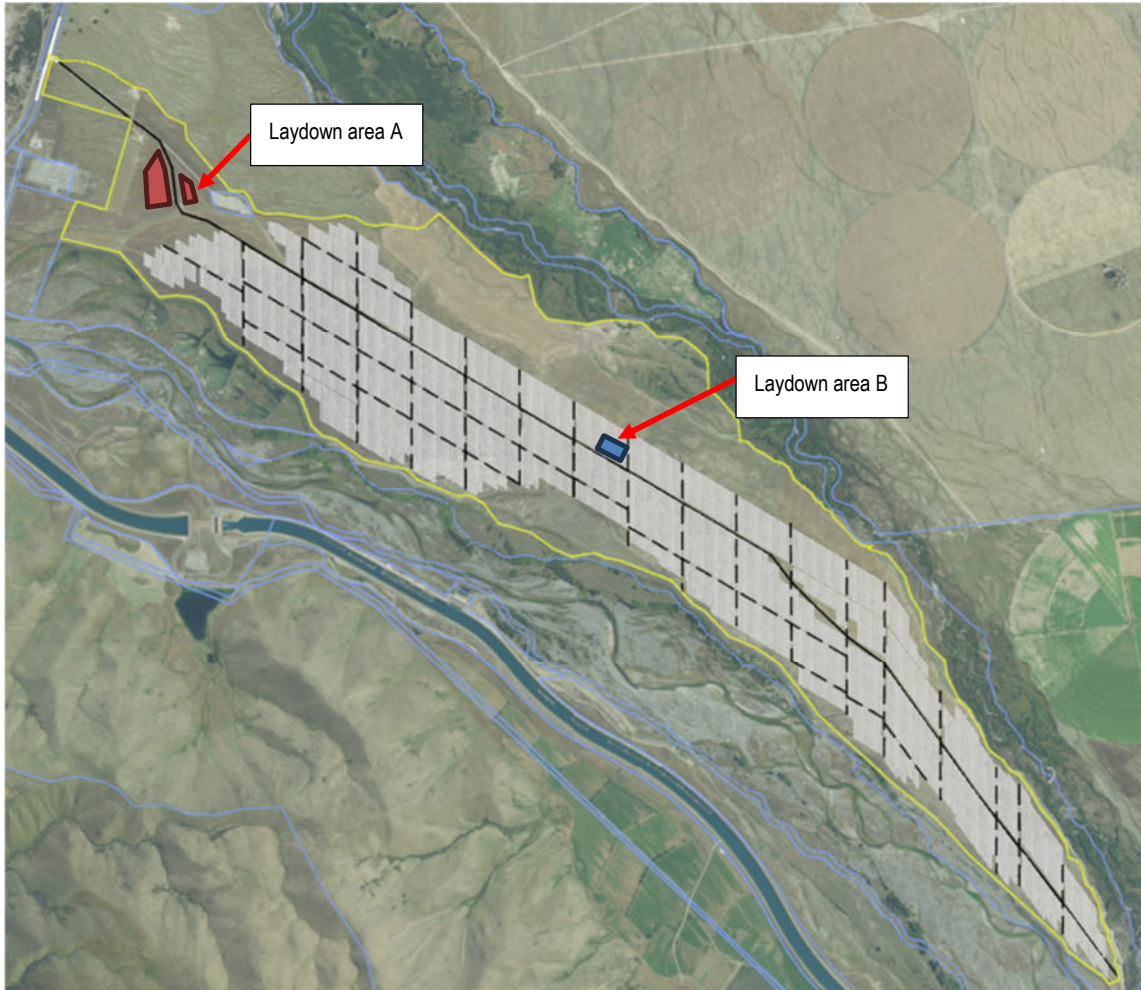


Figure 3.4: Proposed laydown area

3.3 Retention of Existing Access Point and Existing Traffic

The site currently operates as a dry stock farm with related infrastructure and a small quarry operation. The current traffic associated with this site is related to these operations:

- staff and contractor work vehicles.
- farm machinery and other vehicles related to the farming activity.
- quarry trucks and staff vehicles.

The project is planning to stop farming activities prior to construction commencing. The existing quarry operation will be maintained period of approximately two and a half years during construction. Following completion of the solar construction, sheep grazing and the associated farm activities are expected on the site for vegetation management, this will be integrated with future solar farm operations. There are no residential dwellings onsite.

Access to Farming Operations

During the accessway upgrade construction works, access to the farm and quarry could be hindered and it is envisioned that a temporary site access management plan will need to be created to ensure the site can be accessed during construction of the accessway upgrade.

Access to Quarry Operations

During the accessway upgrade construction works, access to the quarry will be maintained. It is envisioned that a temporary site access management plan will be required to ensure the site can be accessed and continue operation during construction.

Once construction is complete, the quarry, solar operations and farm will have a shared access track for the first 900 m from State Highway 8 before splitting into separate access tracks, Figure 3.5.

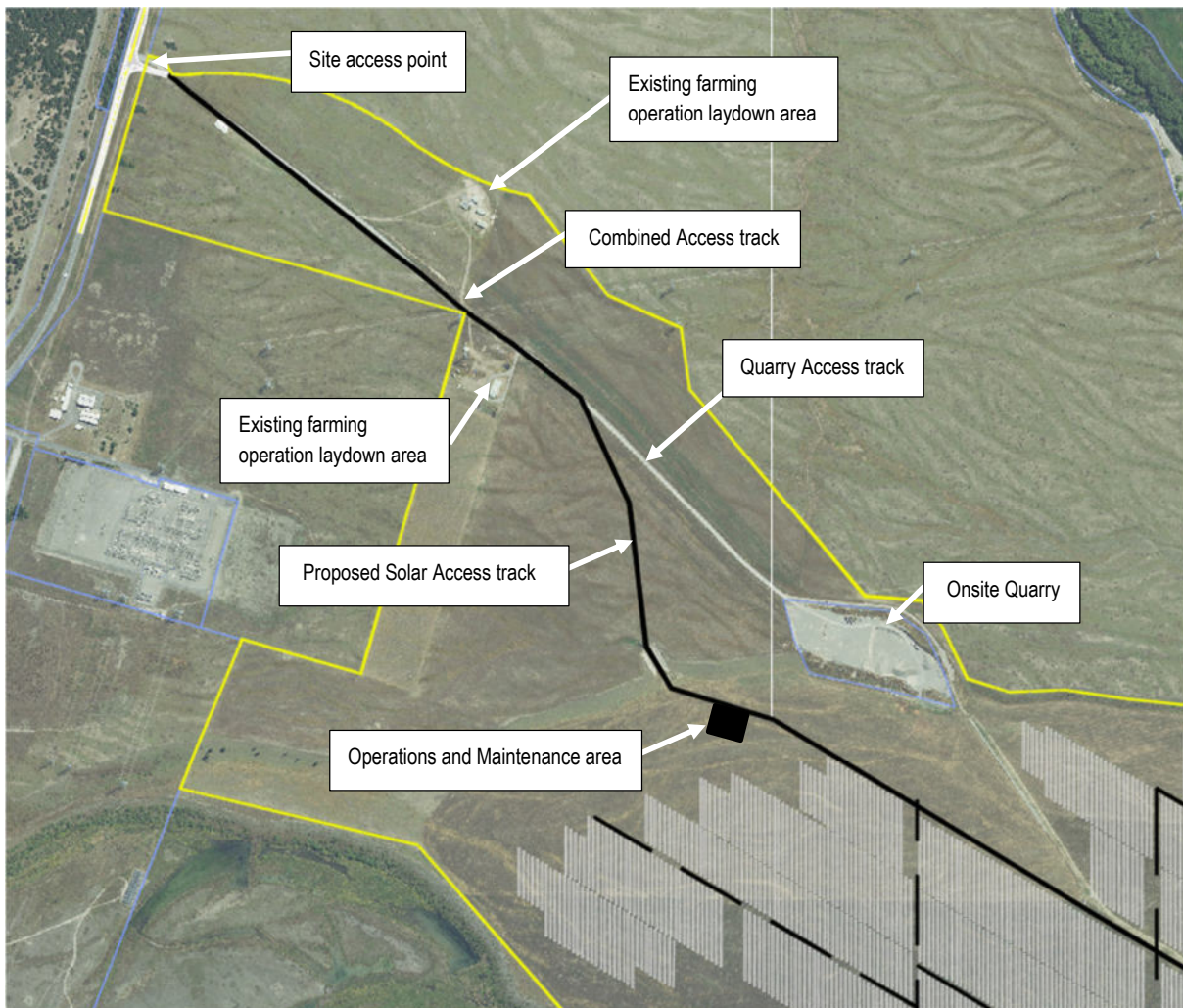


Figure 3.5: Access track configuration

4 TRAFFIC GENERATION

Traffic generation for the solar project and other activities comprises the following main traffic categories:

- Construction of the upgraded site access, access track and other enabling earthworks.
- Installation of the solar plant itself, including the transportation of all solar panels and related equipment to site.
- Ongoing solar plant operation and maintenance.
- Dry stock farming operation phased down in parallel with the installation of solar and commencement of farming management operations.
- Quarry operations.

These are further explained below

Construction Scope

The construction of the facility will be undertaken over approximately two and a half years. This can be described generally as:

- Stage 1: Early enabling works including vehicle accessway, main internal access track, installation of main infrastructure related to the laydown / construction camp.
- Stage 2: Installation of panel arrays. This work will include construction of supporting structures, earthworks, recontouring, trenching and connection into the neighbouring substation.

Construction of Vehicle Accessway, Access, Internal Tracks and Civil Enabling Works

The construction of access and internal tracks includes the construction traffic for the new accessway, the site establishment construction traffic and the bulk materials movement on to site for track, laydown and trench bedding materials as well as dust management water trucks.

Nova Energy Limited will explore the suitability and availability of materials at the onsite quarry to use for the accessway, internal track and trenching and to reach an agreeable commercial arrangement. If the onsite quarry was used, it would significantly reduce the importation of materials to site and therefore construction traffic volumes. This traffic assessment conservatively assumes that the onsite quarry will not be utilised and all tracks will require pavement materials be trucked to site.

Table 4.1 provides civil construction traffic volumes.

Table 4.1: Estimated Traffic volumes per stage

	Totals	Daily Max	Daily Average
Site Establishment and Access Way Construction	80 Truck and trailer units	15 Truck and trailer units	8 Truck and trailer units
Movement of Gravel and Sand Materials to Site*	1980 Truck and trailer units	25 Truck and trailer units	15 Truck and trailer units
Water for Dust Management	500 Water trucks		

*assumes a conservative quantity of offsite imported gravel for track building and trench materials

Notes:

- It is assumed that the existing subgrade material underlying the tracks is suitable and that only an additional (higher quality) subbase topping layer will be required for the Main Access Track.
- It is currently unknown where materials will be sourced for trench bedding sand.
- Assumes a truck and trailer capacity of 16 m³.
- The traffic numbers and volumes are based on a high-level site layout plan.
- Water trucks assumed capacity of 6 m³, operating during summer per (3 months), at an average of 6 hours a day, 3 days per working week.

Solar Plant Installation

In conjunction with Nova Energy Limited, an assessment of the transportation logistics for the plant has been carried out. This includes estimates for the number of site staff. Table 4.2 summarises installation traffic volumes.

Table 4.2: Estimated installation traffic volumes per stage

	Total	Daily Max	Daily Average
Plant installation	1280 Container trucks (40 ft)	10 Trucks	5 Trucks
Construction personnel on site	150 staff maximum on site at a time	80 Vehicles	40 Vehicles

The traffic estimates presented in Table 4.2 are based on a high-level logistics assessment undertaken in conjunction with Nova Energy Limited and reflect the level of detail available at the consenting stage. While detailed construction sequencing will be confirmed at a later stage, the assumptions adopted are intentionally conservative and are considered appropriate for assessing potential transportation effects on State Highway 8. All containerised plant and equipment deliveries have been assumed to occur via individual 40-foot container trucks, providing a clear and robust basis for estimating heavy vehicle movements and avoiding reliance on shared or back-loaded freight scenarios that could under-represent traffic demand. The total number of container deliveries has been derived from the indicative solar plant layout and installation methodology, ensuring that the full scale of freight activity is captured for assessment purposes.

Although the precise timing of bulk transport movements is not yet known, the assessment assumes that long-haul freight deliveries, including container trucks, will generally be spaced at a minimum of approximately 10 minutes between arrivals. This reflects standard construction logistics practice and provides a realistic but conservative basis for assessing peak-hour traffic effects on the State Highway network. The daily maximum truck numbers presented in Table 4.2 represent upper-bound estimates and are not expected to occur on a continuous daily basis. As such, the assessment is based on a credible worst-case scenario rather than average operating conditions.

Construction workforce numbers have similarly been estimated using peak on-site staffing levels derived from the installation programme. Associated vehicle trip numbers assume a conservative mode share, capturing a mix of private vehicles and light commercial vehicles without relying on carpooling or shift staggering to reduce vehicle movements. This approach ensures that the

potential effects of construction personnel travel on State Highway 8 are not understated and can be confidently assessed in terms of safety, access, and network performance.

Overall, the assumptions underpinning the installation traffic estimates have been deliberately framed to err on the side of caution, consistent with Waka Kotahi guidance for assessing construction traffic effects on the State Highway network. While these assumptions may overstate traffic demand relative to actual construction outcomes, they provide a sufficiently robust and transparent basis for identifying potential effects and determining appropriate mitigation measures. This conservative approach ensures that the conclusions of the traffic effects assessment remain valid even as construction methodologies and programming are refined at later stages of the project.

Ongoing Solar Operation / Maintenance

Once installation of the solar plant is installed and commissioned, the solar project will begin operation. A significant amount of monitoring is completed remotely. Nova Energy Limited has provided the following assumptions for operational traffic movements in Table 4.3.

Table 4.3: Estimated solar operational traffic movements

Item	Vehicle type	Times per week	Vehicle movement per 7 days
Operations	Light	10	20
Maintenance	Light	10	20
Maintenance	Medium	5	10
Support services	Light	5	10
Support services	Medium	3	6
Farming activities	Light	7	14
Farming activities	Medium	3	6
TOTAL			100

Notes:

- The operational staffing requirements are based on a day shift plant operation and maintenance regime.
- Site visits will be required for operational checks and maintenance activities which are expected to be provided by a range of staff and/or contractors based in the surrounding region.
- As part of the solar plant operation, to maintain grass coverage and growth, grazing activity is expected to occur on the site. Traffic associated with stock movements and animal health activities are not expected to increase from the current farming operational levels.

4.1 Farming Operation

It is the intention that the cropping and dry stock farming will stop prior to construction activities commencing. Following completion of the solar construction, sheep grazing and the associated farm activities are expected on the site for vegetation management, this will be integrated with future solar farm operations.

Any farm vehicles will still be entering the site at the existing farm accessway and access track.

4.2 Quarry Operation

The current consented traffic limits for the quarry (RM210021) are a maximum of 40 vehicle movements per day, which equates to a maximum of 20 vehicles entering the site and 20 vehicles exiting the site.

During the construction works for the upgrade of the accessway, access to the quarry will be maintained. It is envisioned that a temporary site access management plan will need to be created to ensure the site can be accessed and continue operation during construction.

Once construction is complete the quarry, farm and solar operations have a shared access road for the first 900 m from State Highway 8 before splitting into separate access roads.

The Quarry is expected to continue at its consented traffic limits for the duration of the approved land use consent.

5 TRAFFIC ASSESSMENT

5.1 General

The proposed project and traffic effects on the road network's safety and efficiency have been considered and assessed broadly. The assessment detailed below covers the points that warrant specific mention, design or management.

Overall, the proposed project will span two and a half years, commencing with establishment of an upgraded, purpose-built accessway to Waka Kotahi NZTA standards. The establishment of this accessway and creation of onsite access tracks and laydown areas allows for suitable access to and from the State Highway. This will be of appropriate standard to accommodate the traffic generated by this project.

The proposed upgraded accessway will be designed and constructed to accommodate project traffic from either direction along the highway (once final transport routes are chosen) and the decision regarding the Port of Origin (Port of Timaru, Christchurch or Dunedin for example) for the transport trucks does not affect this traffic impact assessment.

5.1.1 Internal Loading, Parking and Manoeuvring

Within the site, the access track geometry and laydown area provide suitable onsite queuing and manoeuvring. The laydown methodology is sufficient that, even with a large number of containers onsite, trucks will be able to arrive, load/unload, manoeuvre and depart without effect on the existing State Highway network.

The main access track is 6 m width (minimum) and will allow for freight transport through the site, refer Figure 3.3 for access track alignment. The components for the arrays will arrive in ISO containers and will be stored at the laydown areas around the site until required.

Freight shall be managed through transport planning – namely a Construction Traffic Management Plan (CTMP). Requirements of a recommended CTMP are provided later in this assessment.

5.2 Consultation

A project overview has been shared and discussed with Waka Kotahi NZTA (NZTA) and some initial feedback was received in January 2025. This is set out in Appendix A. NZTA did not raise any concerns about the proposal.

Following on from the initial consultation with NZTA an additional meeting was held in February 2026 for the purpose of giving NZTA a project update and to confirm the initial NZTA feedback was still applicable. There was no additional feedback from NZTA. This is documented in meeting minutes that NZTA has reviewed which are provided in Appendix A

No site visit with NZTA has been undertaken to date.

Further information will be shared with NZTA as the site design progresses. This includes details of the project and site design specifically including the location and geometry of the proposed accessway. A condition of consent is proposed that requires evidence to be provided of NZTA's approval of a detailed design for the accessway.

5.3 Sunlight Glint and Glare

Generally, one consideration for solar panel arrays is potential sunlight reflection from the panel surfaces toward drivers which could cause driver distraction or safety issues if not appropriately avoided or mitigated.

Solar panels are designed to capture sunlight and to have low reflectivity. The potential reflectivity of solar panels generally is described in the Sunpower report 'PV Systems: Low Levels of Glare and Reflectance vs. Surrounding Environment' (Sunpower 2010). The Sunpower study concludes that modern solar panels have a reflective potential lower than smooth water, as would be expected on freshwater lakes for example. See Appendix **Error! Reference source not found.** for the full report.

The proposed panels are orientated in a north to south alignment, with an ability to rotate through a range of 60° from horizontal in the east to west axis to capture the sun path in a normal plane. The panel tracking means that generally the panels are aimed perpendicular (as best possible) toward the sun, meaning that any potential reflection is limited.

5.3.1 Glint and Glare Assessment

An assessment has been conducted by ITP Renewables - Twizel Solar Plant Glint and Glare Study using specialist Glare Assessment Software. The assessment is considered conservative, as it assumes clear skies at all times and does not allow for any existing trees or other existing objects that will act as screening. This assessment has analysed the glare for drivers along State Highway 8 and the surrounding roading network.

The assessment has found that glare could be encountered for short periods by road users along State Highway 8 and Mcaughtries Road.

The report recommends the following glare mitigation options:

- Screening (either through vegetation and / or constructed barriers in non-glare recessive colours); or
- Altering the rest angle of the panel trackers - programming tracking array profiles to avoid glare angles.

The Project includes a condition of consent which requires that the panels have a backtracking limit angle of 5°. The glint and glare analysis has demonstrated that this requirement will ensure that glare effects on road users on Mcaughtries Road are avoided.

5.4 Headlight Glare

The internal access track network within the site is orientated generally north-south and east-west to match the required panel configuration.

One potential effect that needs to be managed during detailed design is ensuring that vehicles on the internal access tracks during hours of low light / darkness do not startle or confuse drivers on State Highway 8 or Mcaughtries Road. The main risk to be mitigated through design is to ensure that drivers on the public roads do not perceive the incorrect direction of the road in front of them.

The solar panels will generally obscure vehicle headlights within the site to a level where drivers on the public road network will not be easily confused. The panels are also set a minimum of 1100 m from State Highway 8 and 800 m from Mcaughtries Road, so any headlight glare will be distant.

Construction is planned to be during daylight hours, with operational activities also typically occurring during the day. It will be very rare a vehicle will be onsite outside of daylight hours.

There are no proposed internal access tracks in the concept design shown to run parallel with the public roads, within 1 km. The detailed design should confirm and maintain this feature.

5.5 Proposed Upgraded Vehicle Accessway

The proposed vehicle accessway upgrades have been designed with a right turn bay, generally following the requirements of Waka Kotahi NZTA. While the specific frequency and direction of site traffic is still to be confirmed, the accessway has been designed conservatively to allow for significant traffic volumes from the north or south direction approaching the site. Hence the provision of the right turn bay in the accessway design.

The proposed vehicle accessway upgrade works will comply with both with suitable visibility and configuration when using the Waka Kotahi NZTA Policy and Planning Manual (PPM) and the Manual of Traffic Signs and Markings (Part 2) (MOTSAM).

Waka Kotahi NZTA requirements, are set out as follows:

- PPM (110 km/hr = posted speed plus 10km/hr) include:
 - Minimum sight distance standard – 282 m (300 m SISD used instead)
 - Minimum accessway / intersection spacing – 200 m
- MOTSAM
 - Turning bay lane width – 3.0 m (minimum) 3.5 m (desirable)
 - Through lane(s) width – 3.5 m
 - Stacking length – 20 m (minimum)
 - Merge / Diverge taper – 178 m

5.5.1 Concept Design

The concept design proposes to relocate the crossing point approximately 15 m to the south along State Highway 8. The concept upgrade design has been undertaken using the MOTSAM and PPM requirements, Figure 5.1.

Suitable separation of the proposed accessway, in excess of 200m from existing access points along the highway to the north and south is achieved.

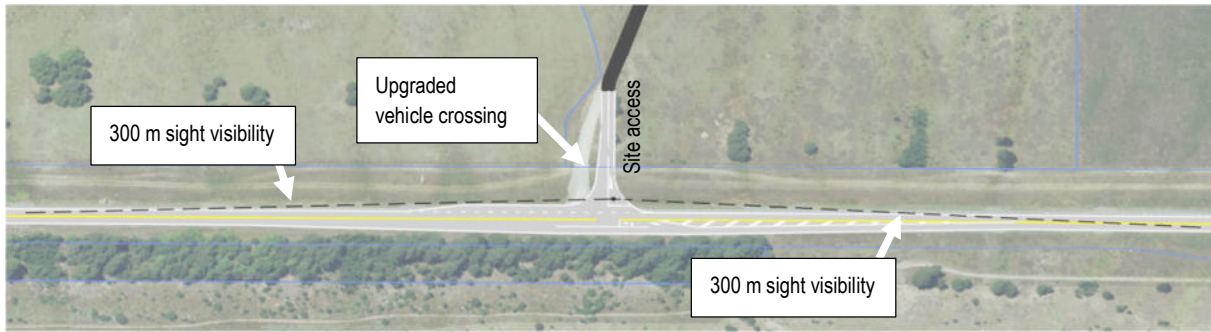


Figure 5.1: Proposed accessway design showing separation and sight distances.

Southbound Approach

The Southbound approach easily achieves suitable sight distance. See Figure 5.2 below is located approximately 300 m from the proposed accessway.



Figure 5.2: Southbound approach (Arrow indicates approximate limit line location in the throat of the accessway)
(Source: Google Streetview 2024)

Northbound Approach

The northbound approach easily achieves suitable sight distance. The view from Figure 5.3 below is located approximately 300 m from the proposed accessway.



Figure 5.3: Northbound approach (Arrow indicates approximate limit line location in the throat of the accessway) (Source: Google Streetview 2024)

The concept accessway design achieves the requirements of the Waka Kotahi NZTA requirements as detailed in the PPM and MOTSAM.

5.6 Approach to the Site – Each Direction

The approach to the site along State Highway 8, both south and northbound, have differing first views of the Solar farm.

A plan showing the indicative locations of the first sections of road that allow drivers to see the solar farm is shown below in Figure 5.4.

The long narrow nature of the site, the short road frontage and that the panels are set back a minimum of 1100 m from State Highway 8, result in partial distant views of the site for short durations.

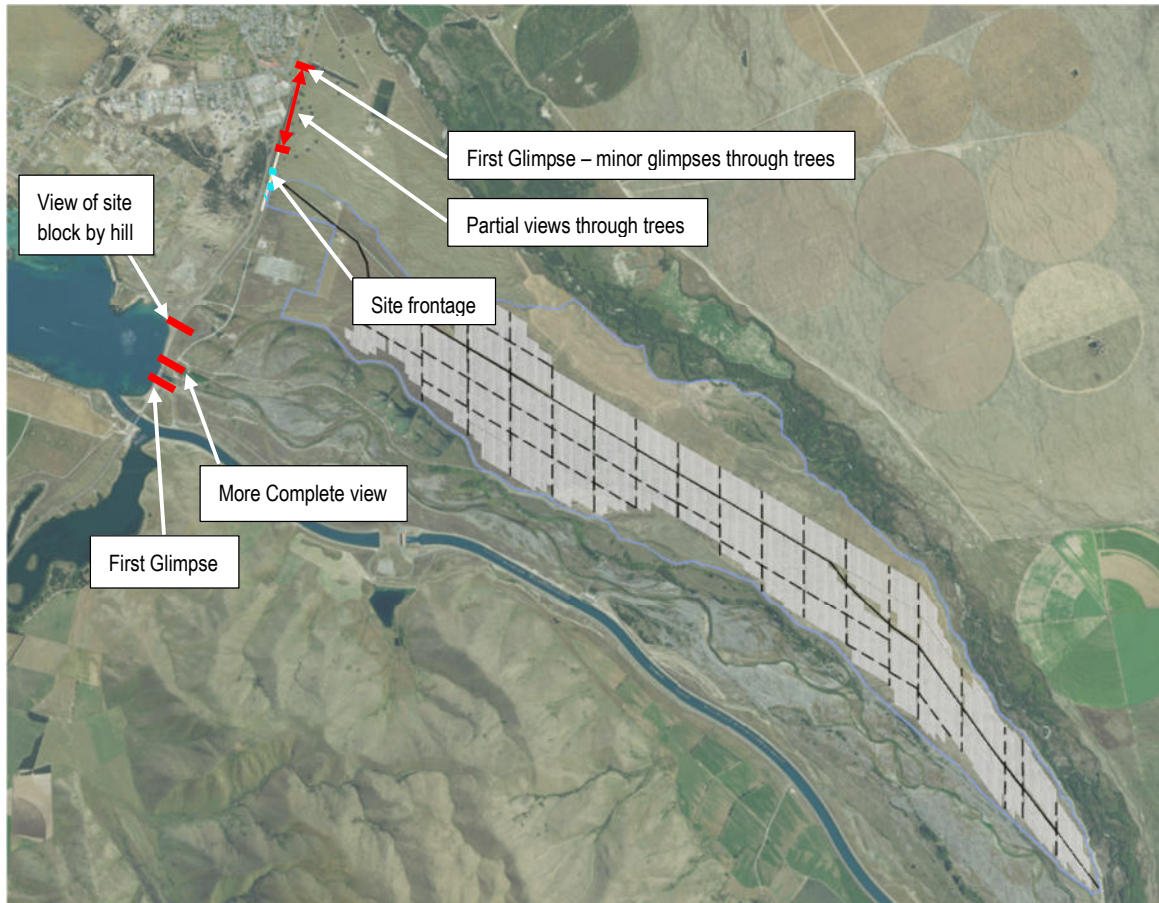


Figure 5.4: Plan view – locations of driver sighting of solar farm from each approach

The respective views from each approach are shown in the following figures and include respective commentary.

Southbound Approach

Approaching the site from the North (southbound) the initial views are somewhat intermittent with mature trees lining the highway on the approach from Twizel. The driver view from the southbound approach shown in Figure 5.5, shows the site in the distance, and does not have potential to confuse approaching drivers.



Figure 5.5: Distant views of site – Southbound approaching site (Source: Google Streetview 2024)

As the site comes into fuller view there is no additional viewpoint that would confuse or distract drivers (Figure 5.6 and Figure 5.7). There are trees along the full approach length from Twizel to the site frontage, so the views remain consistent. It is also noted that the panels are set a minimum of 1100 m from State Highway 8, so the views of the site remain distant.



Figure 5.6: Partial view – Southbound approaching site (Source: Google Streetview 2024)



Figure 5.7: Complete view – Southbound approaching site (Source: Google Streetview 2024)

Northbound Approach

Approaching from the South (northbound), the site comes into view after the Mcaughtries Road intersection with State Highway 8. The progressive field of view would be comparable to any other large-scale site with repetitive features, such as a vineyard (Figure 5.8).



Figure 5.8: Emergent view – Northbound approaching site (Source: Google Streetview Jan 2021)

As the driver comes closer to the site the solar arrays come into fullest view possible from the road, as shown in Figure 5.9 below. The panels are set a minimum of 1100 m from State Highway 8, so the views of the site remain distant.

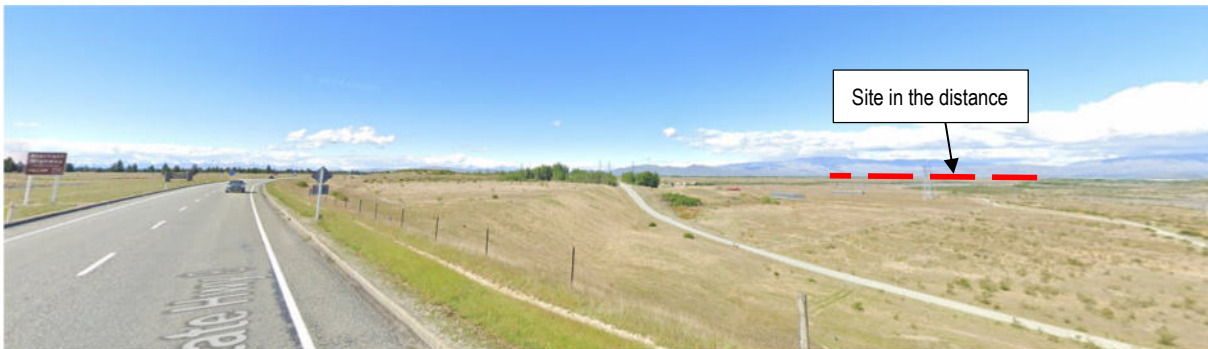


Figure 5.9: More complete view – Northbound approaching site (Source: Google Streetview Jan 2021)

While no specific view is likely to confuse or distract a driver, it is recommended that information signs, in advance of the site are installed for the period of construction. These should be placed in a suitable location not less than 500 m from the site on the left side of each respective approach.

5.7 Roadside Hazards

The approach to the site in both directions is a relatively straight and flat section of road. Power poles on both sides of the road are set back close to the road reserve boundary. There are multiple information signs located on State Highway 8, within the vicinity of the site.

Depending on the final Waka Kotahi NZTA approved layout of the upgraded accessway, some power poles might require relocation.

Due to the distance of setback of the new solar arrays, there are no new roadside hazards introduced as part of the solar infrastructure.

6 CONCLUSION AND RECOMMENDATIONS

Based on the assessment of the existing and proposed project traffic, the following conclusions and recommendations are made.

6.1 Conclusion

6.1.1 Access

The existing site traffic associated to the quarry operation and dry stock farm will continue to utilise the existing vehicle access way while the accessway upgrades works are undertaken. Once the upgraded entrance is formed 15 m to the south, this will provide sole access to the site for all activities.

All traffic associated with the new solar facility will access the site via the new vehicle accessway. This will be located as shown in BTW Drawing 210982-02, in Appendix C . The detailed design and installation of the upgraded accessway can be undertaken to meet the requirements of the Waka Kotahi NZTA, including suitable design through the detailed design phase of the project, and ultimately a design that is reviewed and approved by Waka Kotahi NZTA prior to construction commencement.

The proposed accessway is located off a State Highway that has appropriate configuration and geometry to accommodate the number and type of vehicles that will be required to facilitate the construction activities.

6.1.2 Driver Distraction

Glare from the new solar facility is not anticipated to present any safety issues related to lack of visibility or driver distraction. Views of the solar facility are unlikely to distract drivers. The appearance of the facility will be similar to approaching or travelling adjacent to a large vineyard, noting the development is at least 1100 metres from the highway.

6.1.3 Safety and Efficiency

Should the project be designed and implemented as documented within this assessment, including the recommended management plans, the project will appropriately mitigate any adverse effects on the road transportation network. The mitigation includes:

- A new vehicle accessway from State Highway 8, including a right turn bay and design location meeting the requirements of the Road Controlling Authority Waka Kotahi NZTA.
- Internal access track network and laydown with suitable standing and manoeuvring space. The internal network provides suitable access for construction and maintenance of the facility from within the site, using only the one proposed accessway.
- Suitable distance of the new infrastructure from the edge of the carriageway meaning that there are no new hazards within the design corridor.
- Other recommendations are detailed further in the next section of this report.

6.2 Recommendations

The majority of the project's traffic generation is related to the construction activities. Once operational, the project has minimal ongoing traffic.

6.2.1 Site Construction and Disestablishment

Construction traffic related to transport of bulk items will occur over a period of years, with the most intensive daily traffic movements related to the establishment of the roadway and also delivery of solar farm components.

These effects can be mitigated through adherence with:

- A suitable Construction traffic management plan, including:
 - Traffic planning, including co-ordination with suppliers and transport companies and companies responsible for other construction projects that may be occurring in the area.
 - Traffic flow and management.
 - Temporary traffic management.
 - Close co-ordination with the construction contractors.
 - Consultation with affected stakeholders.
- This will include co-ordination with Waka Kotahi NZTA, which will include:
 - Waka Kotahi NZTA approval of vehicle access detailed design.
 - Planned Waka Kotahi NZTA maintenance works.
 - Information sharing on road infrastructure and planned routes.

6.2.2 Ongoing Operational Traffic

Operational traffic volumes are not high; it is recommended that the facility manages operational traffic as an ongoing management task. This planning and management should address and mitigate traffic effects due to the operational aspects of the facility, including day-to-day operations, maintenance and any other tasks related to the operational phase of the project.

6.1 Traffic Management

Further to the above, traffic management should achieve the following objectives:

- Embrace a culture of continuous improvement.
- Ensure all legislative requirements are met, as they relate specifically to the project.
- Ensure a focus and culture of road safety and transportation efficiency.
- Planning and facilitating Emergency Management (both related to the project and allowing emergency services to operate unhindered).
- Consultation and notification – consultation with key stakeholders including MDC, Waka Kotahi NZTA and others, and also ensuring notification to road users and the community as appropriate.

For the Construction Traffic Management Plan, this scope should include:

- Construction programme including traffic volumes and timing.

- Installation of suitable advance information signs for the site.
- Wayfinding signage for site contractors and staff (advance and at the accessway).
- Consideration and planning for the transition from dry stock operation to solar farm.
- Traffic demand management – minimisation of traffic generation, and scheduling to minimise effects on the road network.
- Monitoring of construction traffic.
- Detailed route planning including all suppliers using of the road network.
- Scheduling including component types, configuration and timing.
- Nature/configuration and timing of the vehicle accessway design – consideration of design enhancements based on any new traffic information regarding traffic generation including frequency/timing.
- Final configuration of the internal access track network to avoid headlight glare onto the public roads at an acute angle.
- Road safety, including minimising effects on existing activities such as school buses.
- Temporary Traffic Management including any specific plans related to each phase and activity of the works including signage.
- Operational requirements including driver behaviour, compliance and education
- Communication with stakeholders including relevant Road Authorities, Emergency Services, the community and road users generally.
- Learnings from co-ordination with MDC, Waka Kotahi NZTA and others.
- Permits – all necessary permits be obtained for over-mass and over-dimension loads, such as cranes, from the respective Road Controlling Authorities.
- Contingency planning.
- Continuous improvement – ongoing review of activities including receiving feedback.

The plan should be prepared by a suitably experienced and qualified transport engineer in consultation with MDC and Waka Kotahi NZTA.

7 DISCLAIMER AND LIMITATIONS

7.1 Distribution

This report has been produced by BTW Company Limited for the client, Nova Energy Limited in respect of its application for all approvals under the Fast-track Approvals Act 2024 for the Twizel Solar project. The Panel appointed to consider the application for the Twizel Solar Plant may rely on this report for the purpose of making its decision under the Fast-track Approvals Act 2024.

The reliance / use of this report and / or the information within this report by any person or business which BTW Company Limited has not given prior consent, is at the person's or business' own risk.

7.2 Limitations

The recommendations made within this report have been concluded based on known information, including information supplied by Nova Energy Limited. This assessment has been undertaken for the purposes of Resource Consent.

REFERENCES

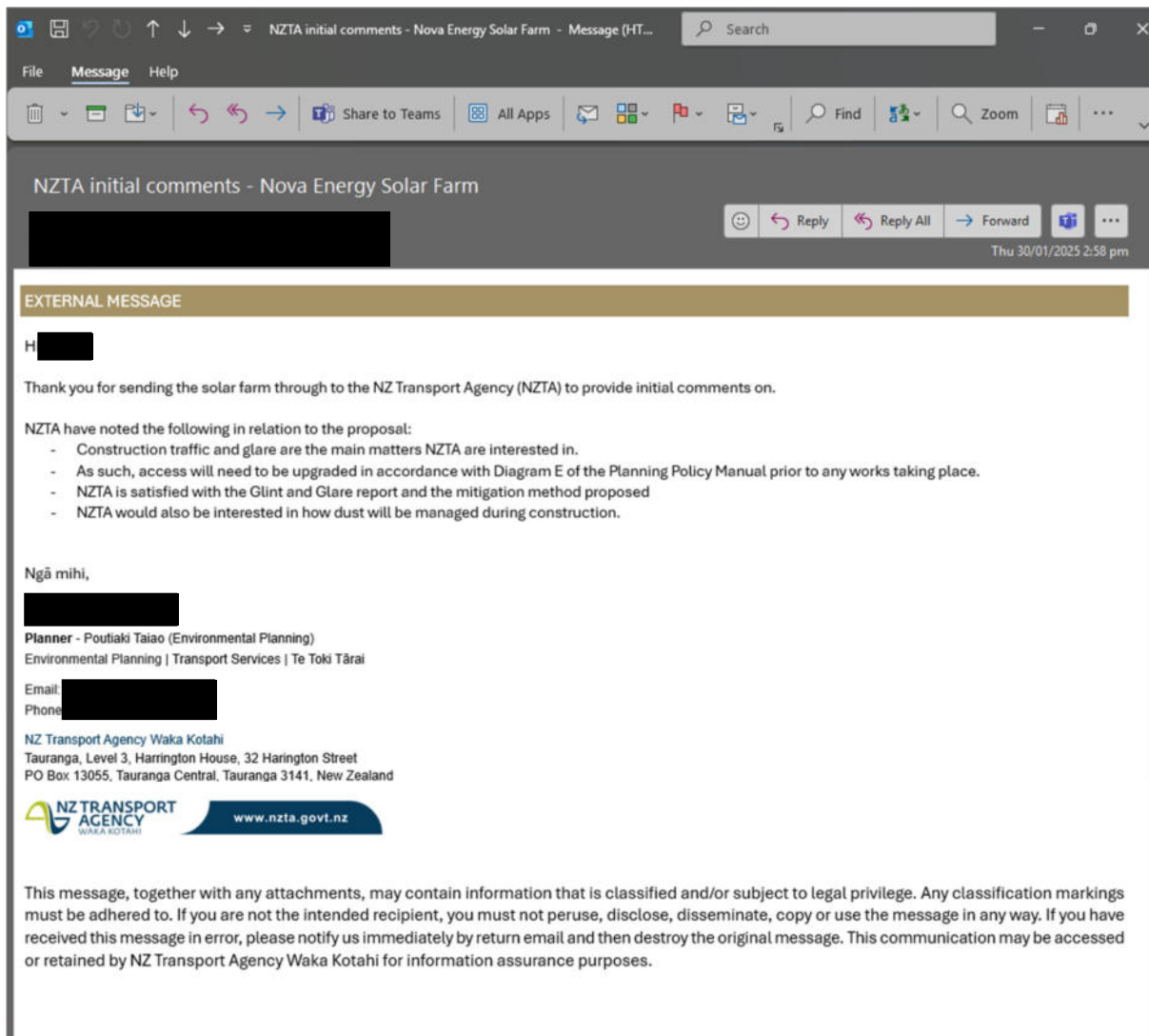
ITP renewables - Twizel Solar Plant Glint and Glare Study 2024

Sunpower 2010 (Shields, M), 'PV Systems: Low Levels of Glare and Reflectance vs. Surrounding Environment', SUNPOWER CORPORATION, viewed 13 September 2021,

Waka Kotahi NZTA Planning Policy Manual – for integrated planning and development of state highways 2007

Waka Kotahi NZTA Manual of Traffic Signs and Markings (MOTSAM) - Part 2: Markings 2010

APPENDIX A CONSULTATION WITH WAKA KOTAHI NZTA



APPENDIX B CRASH DATA – CAS

Crash road	Side road	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather
SH 8	MAX SMITH DRIVE	2721543	15/03/2007	Thu	16:50	Car/Wagon1 SDB on SH 8 lost control; went off road to right	CAR/WAGON1, attention diverted by food, cigarettes, beverages, driver over-reacted, while returning to seal from unsealed shoulder	Dry	Bright sun	Fine
SH 8		2871738	28/05/2008	Wed	8:40	Van1 NDB on SH 8 lost control; went off road to left	VAN1, lost control - road conditions, ENV: road slippery due to frost or ice	Ice or Snow	Overcast	Mist or Fog
SH 8		201070222	1/01/2010	Fri	1:00	Car/Wagon1 NDB on SH 8 lost control; went off road to left, Car/Wagon1 hit non specific guard rail	CAR/WAGON1, alcohol test above limit or test refused, emotionally upset/road rage, other lost control	Dry	Dark	Fine
SH 8	RUATANIW HA ROAD	201074237	13/12/2010	Mon	13:40	Van1 NDB on SH 8 hit Van2 turning right onto AXROAD from the left	VAN2, failed to give way at priority traffic control, overseas/migrant driver fail to adjust to nz roads	Dry	Overcast	Fine
SH 8	OLD IRON BRIDGE ROAD	201371023	18/04/2013	Thu	7:58	SUV1 NDB on SH 8 lost control; went off road to right, SUV1 hit non specific embankment	SUV1, attn diverted by scenery/persons outside vehicle, other lost control	Dry	Overcast	Fine
TEKAPO-TWIZEL ROAD	RUATANIW HA ROAD	201321995	30/05/2013	Thu	15:40	SUV1 SDB on SH 8 lost control but did not leave the road	SUV1, other fatigue	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	RUATANIW HA ROAD	201432144	27/01/2014	Mon	13:20	Car/Wagon2 turning right hit by oncoming Car/Wagon1 NDB on SH 8	CAR/WAGON2, did not check/notice another party from other dirn, failed to give way turning to non-turning traffic	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	RUATANIW HA ROAD	201444403	3/09/2014	Wed	13:30	SUV2 turning right hit by oncoming Car/Wagon1 NDB on SH 8	SUV2, failed to give way turning to non-turning traffic	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	GLEN LYON ROAD	201415985	16/09/2014	Tue	18:27	Car/Wagon1 SDB on SH 8 lost control turning right, Car/Wagon1 hit non specific embankment	CAR/WAGON1, lost control when turning, other fatigue, other vehicle controls, ENV: slippery road due to rain	Wet	Dark	Light rain
TEKAPO-TWIZEL ROAD	OSTLER ROAD	201450036	26/12/2014	Fri	17:02	Car/Wagon1 SDB on SH 8 overtaking hit SUV2 SDB on SH 8 turning right	CAR/WAGON1, following too closely	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	OSTLER ROAD	201511947	22/03/2015	Sun	7:15	SUV1 SDB on SH 8 lost control; went off road to right, SUV1 hit non specific fence	SUV1, new driver/under instruction, other lost control	Wet	Dark	Heavy rain
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	201541133	22/06/2015	Mon	15:00	Van1 NDB on SH 8 overtaking hit Car/Wagon2 NDB on SH 8 turning right	VAN1, other inattentive, overtaking vehicle signalling right turn, ENV: entering or leaving other commercial	Ice or Snow	Bright sun	Fine
TEKAPO-TWIZEL ROAD	OSTLER ROAD	201615841	16/09/2016	Fri	0:10	Car/Wagon1 SDB on SH 8 lost control; went off road to left	CAR/WAGON1, alcohol test above limit or test refused, attn diverted by console inbuilt features radio/ac, too far left	Dry	Dark	Fine
TEKAPO-TWIZEL ROAD	OSTLER ROAD	201650789	10/10/2016	Mon	17:05	Car/Wagon1 SDB on Tekapo twizel rd overtaking hit Truck2 SDB on Tekapo twizel rd turning right, Car/Wagon1 hit non specific embankment, non specific fence	CAR/WAGON1, misjudged intentions of another party, overseas/migrant driver fail to adjust to nz roads	Dry	Overcast	Fine

Crash road	Side road	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather
SH 8	MAX SMITH DRIVE	201655867	10/12/2016	Sat	11:30	Bus1 SDB on SH 8 hit rear of Car/Wagon2 SDB on SH 8 turning right from centre line	BUS1, misjudged another vehicle	Dry	Bright sun	Fine
SH 8	RUATANIW HA ROAD	201712395	17/03/2017	Fri	12:50	Motorcycle1 SDB on SH8 hit rear of Car/Wagon2 SDB on SH8 turning right from left side	MOTORCYCLE1, misjudged intentions of another party CAR/WAGON2, failed to signal in time, overseas/migrant driver fail to adjust to nz roads, turned from incorrect position on road	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	201719495	26/11/2017	Sun	12:50	SUV1 SDB on Twizel-Omarama Highway (SH8) hit Moped2 merging from the right	MOPED2, failed to give way at priority traffic control	Dry	Bright sun	Fine
SH 8		201755776	10/12/2017	Sun	14:30	Car/Wagon1 SDB on SH 8 hit SUV2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test below limit SUV2, alcohol test below limit, failed to give way at priority traffic control	Dry	Bright sun	Fine
OSTLER ROAD	RUATANIW HA ROAD	201756925	28/12/2017	Thu	13:15	Car/Wagon1 SDB on State highway 8 hit rear end of Car/Wagon2 stop/slow for queue	CAR/WAGON3, alcohol test below limit CAR/WAGON2, alcohol test below limit CAR/WAGON1, alcohol test below limit, other attention diverted	Dry	Bright sun	Fine
SH 8	OSTLER ROAD	201833580	21/02/2018	Wed	10:30	SUV1 NDB on SH 8 hit Car/Wagon2 merging from the left	CAR/WAGON2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control SUV1, alcohol test below limit	Wet	Overcast	Light rain
SH 8	SH 8	201836879	11/04/2018	Wed	17:00	Van1 NDB on SH 8 hit Car/Wagon2 merging from the left	CAR/WAGON2, alcohol test below limit, failed to give way at priority traffic control, misjudged another vehicle, overseas/migrant driver fail to adjust to nz roads VAN1, alcohol test below limit	Dry	Bright sun	Fine
SH 8	RUATANIW HA ROAD	201840890	29/05/2018	Tue	15:45	Truck1 NDB on TEKAPO-TWIZEL ROAD, PUKAKI, MACKENZIE hit Car/Wagon2 turning right onto AXROAD from the left	TRUCK1, alcohol test below limit CAR/WAGON2, alcohol test below limit, failed to give way at priority traffic control	Dry	Bright sun	Fine
SH 8	OSTLER ROAD	201953178	1/01/2019	Tue	15:15	Van1 EDB on Ostler Road Twizel hit turning Car/Wagon2	VAN1, alcohol test below limit, failed to give way at priority traffic control, overseas/migrant driver fail to adjust to nz roads CAR/WAGON2, alcohol test below limit	Dry	Overcast	Fine
TEKAPO-TWIZEL ROAD	OSTLER ROAD	201962026	19/03/2019	Tue	14:24	Truck1 NDB on Twizel tekapo hwy hit SUV2 merging from the left	SUV2, alcohol test below limit, failed to give way at priority traffic control TRUCK1, alcohol test below limit	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	RUATANIW HA ROAD	201967618	15/05/2019	Wed	12:25	Car/Wagon1 NDB on TEKAPO-TWIZEL ROAD lost control turning left; went off road to right, Car/Wagon1 hit traffic island, light pole	CAR/WAGON1, alcohol test below limit, swung wide at intersection	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	GLEN LYON ROAD	201985536	17/11/2019	Sun	15:30	Van1 SDB on TEKAPO-TWIZEL ROAD hit rear of Car/Wagon2 SDB on TEKAPO-TWIZEL ROAD turning right from left side	VAN1, failed to notice indication of vehicle in front, overtaking vehicle signalling right turn	Dry	Bright sun	Fine

Crash road	Side road	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	201988620	30/12/2019	Mon	15:30	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD lost control turning left; went off road to right, Car/Wagon1 hit traffic sign	CAR/WAGON1, other inattentive, swerved to avoid vehicle, too far right	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	RUATANIWA ROAD	2020143676	27/01/2020	Mon	15:30	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD lost control turning right; went off road to left, Car/Wagon1 hit kerb, traffic signal	CAR/WAGON1, alcohol test below limit, overseas/migrant driver fail to adjust to nz roads, speed entering corner/curve, suddenly turned	Dry	Bright sun	Fine
SH 8	RUATANIWA ROAD	2020143609	30/01/2020	Thu	17:23	Car/Wagon1 NDB on TEKAPO-TWIZEL ROAD hit Van2 turning right onto AXROAD from the left	VAN2, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control, overseas/migrant driver fail to adjust to nz roads CAR/WAGON1, alcohol test below limit	Dry	Bright sun	Fine
SH 8	MAX SMITH DRIVE	2021185451	23/04/2021	Fri	23:30	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD lost control turning left; went off road to left, Car/Wagon1 hit ditch	CAR/WAGON1, alcohol suspected, too far left	Dry	Dark	Fine
SH 8	MAX SMITH DRIVE	2021189371	27/05/2021	Thu	4:50	Van1 NDB on Tekapo-Twizel Road lost control; went off road to left, Van1 hit ditch	VAN1, alcohol test below limit, lost control - road conditions, ENV: road slippery due to frost or ice	Ice or Snow	Dark	Mist or Fog
SH 8	TEKAPO-TWIZEL ROAD	2021197543	10/08/2021	Tue	15:20	Car/Wagon1 SDB on GLEN LYON ROAD missed intersection or end of road, Car/Wagon1 hit embankment (driven over), fence	CAR/WAGON1, alcohol test below limit, medical illness (not sudden), new driver/under instruction	Dry	Overcast	Fine
SH 8	OSTLER ROAD	2021204969	12/11/2021	Fri	12:30	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD hit Car/Wagon2 head on straight	CAR/WAGON1, alcohol test below limit, too far right CAR/WAGON2, alcohol test below limit UTE3, alcohol test below limit	Dry	Bright sun	Fine
SH 8	MAX SMITH DRIVE	2022210108	8/01/2022	Sat	13:15	Motorcycle1 NDB on TEKAPO-TWIZEL ROAD changing lanes/overtaking to right hit Car/Wagon2	CAR/WAGON2, alcohol test below limit, blind spot MOTORCYCLE1, alcohol test below limit	Dry	Bright sun	Fine
SH 8	OLD IRON BRIDGE ROAD	2022213593	16/02/2022	Wed	13:55	Car/Wagon1 SDB on Tekapo twizel road hit rear end of SUV2 stop/slow for queue	CAR/WAGON1, failed to notice car slowing, stopping/stationary, following too closely	Dry	Bright sun	Fine
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	2022228119	17/06/2022	Fri	17:30	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD lost control; went off road to left	CAR/WAGON1, other fatigue, too far left	Dry	Twilight	Fine
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	2022231257	2/08/2022	Tue	6:00	SUV1 NDB on TEKAPO-TWIZEL ROAD hit obstruction, SUV1 hit tree	ENV: road obstructed by fallen tree or branch, strong wind	Dry	Dark	Fine
TEKAPO-TWIZEL ROAD	MAX SMITH DRIVE	2023250337	1/03/2023	Wed	10:55	Car/Wagon1 NDB on TEKAPO-TWIZEL ROAD lost control on straight and hit Car/Wagon2 head on	CAR/WAGON1, alcohol test below limit, driver over-reacted, other lost control, vehicle caught fire CAR/WAGON2, alcohol test below limit	Dry	Bright sun	Fine

Crash road	Side road	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather
GLEN LYON ROAD	MAX SMITH DRIVE	2024282848	18/03/2024	Mon	10:00	SUV1 SDB on TEKAPO-TWIZEL ROAD hit rear of SUV2 SDB on TEKAPO-TWIZEL ROAD turning right from centre line	SUV1, following too closely	Dry	Overcast	Fine
TEKAPO-TWIZEL ROAD	OSTLER ROAD	2024297083	8/09/2024	Sun	20:55	SUV2 turning right hit by oncoming SUV1 NDB on TEKAPO-TWIZEL ROAD	SUV2, failed to give way turning to non-turning traffic	Dry	Dark	Fine
SH 8	OSTLER ROAD	2024297939	27/09/2024	Fri	10:15	SUV2 turning right hit by oncoming Car/Wagon1 NDB on TWIZEL-OMARAMA ROAD	CAR/WAGON1, alcohol test below limit, failed to give way turning to non-turning traffic SUV2, alcohol test below limit	Dry	Bright sun	Fine
SH 8	MAX SMITH DRIVE	2024315019	27/12/2024	Fri	12:32	Car/Wagon1 SDB on TEKAPO-TWIZEL ROAD hit rear end of SUV2 stop/slow for queue	SUV2, alcohol test below limit, speed on straight CAR/WAGON1, alcohol test below limit, speed on straight	Dry	Bright sun	Fine

APPENDIX C PROPOSED ACCESSWAY DESIGN

LEGEND

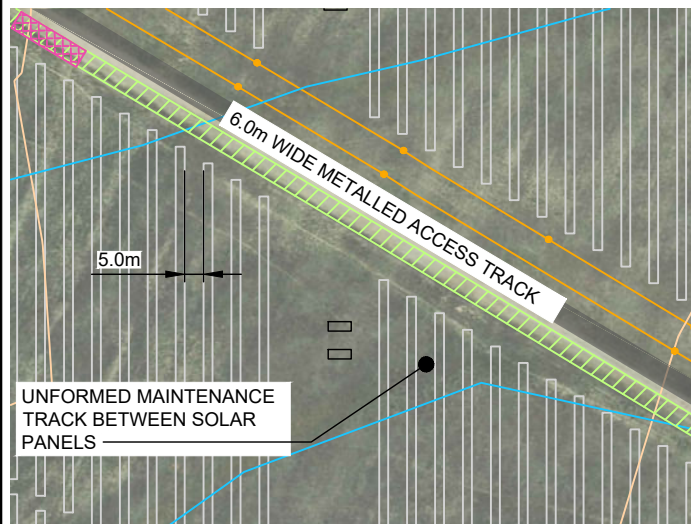
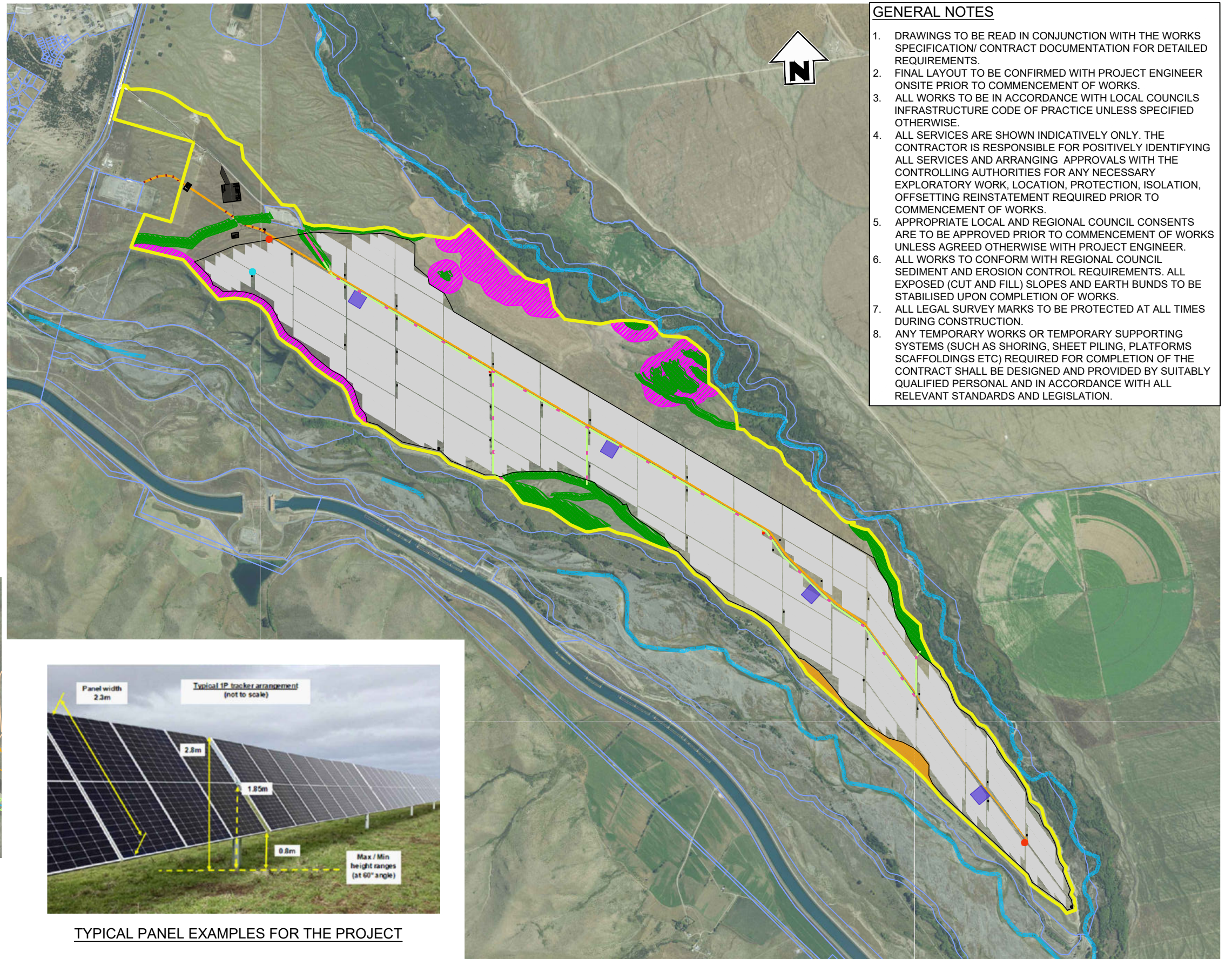
BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	
OPERATIONS AND MAINTENANCE BUILDING/ CONSTRUCTION OFFICE / LAYDOWN AREA	
33KV SWITCHYARD AREA	

SETBACK NOTES

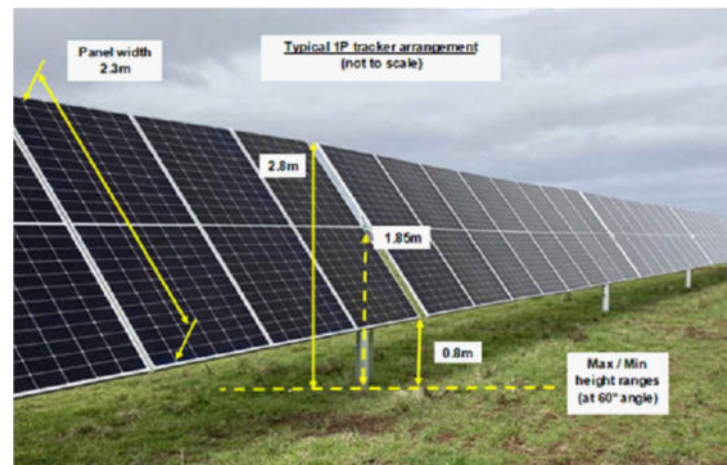
PANEL SETBACKS FROM BOUNDARIES - 20m
 TRANSMISSION LINE SETBACK - 20m
 RIVERS / STREAMS - 20m

GENERAL NOTES

1. DRAWINGS TO BE READ IN CONJUNCTION WITH THE WORKS SPECIFICATION/ CONTRACT DOCUMENTATION FOR DETAILED REQUIREMENTS.
2. FINAL LAYOUT TO BE CONFIRMED WITH PROJECT ENGINEER ONSITE PRIOR TO COMMENCEMENT OF WORKS.
3. ALL WORKS TO BE IN ACCORDANCE WITH LOCAL COUNCILS INFRASTRUCTURE CODE OF PRACTICE UNLESS SPECIFIED OTHERWISE.
4. ALL SERVICES ARE SHOWN INDICATIVELY ONLY. THE CONTRACTOR IS RESPONSIBLE FOR POSITIVELY IDENTIFYING ALL SERVICES AND ARRANGING APPROVALS WITH THE CONTROLLING AUTHORITIES FOR ANY NECESSARY EXPLORATORY WORK, LOCATION, PROTECTION, ISOLATION, OFFSETTING REINSTATEMENT REQUIRED PRIOR TO COMMENCEMENT OF WORKS.
5. APPROPRIATE LOCAL AND REGIONAL COUNCIL CONSENTS ARE TO BE APPROVED PRIOR TO COMMENCEMENT OF WORKS UNLESS AGREED OTHERWISE WITH PROJECT ENGINEER.
6. ALL WORKS TO CONFORM WITH REGIONAL COUNCIL SEDIMENT AND EROSION CONTROL REQUIREMENTS. ALL EXPOSED (CUT AND FILL) SLOPES AND EARTH BUNDS TO BE STABILISED UPON COMPLETION OF WORKS.
7. ALL LEGAL SURVEY MARKS TO BE PROTECTED AT ALL TIMES DURING CONSTRUCTION.
8. ANY TEMPORARY WORKS OR TEMPORARY SUPPORTING SYSTEMS (SUCH AS SHORING, SHEET PILING, PLATFORMS SCAFFOLDINGS ETC) REQUIRED FOR COMPLETION OF THE CONTRACT SHALL BE DESIGNED AND PROVIDED BY SUITABLY QUALIFIED PERSONAL AND IN ACCORDANCE WITH ALL RELEVANT STANDARDS AND LEGISLATION.



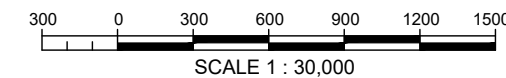
EXPLODED VIEW OF PANEL LAYOUT



TYPICAL PANEL EXAMPLES FOR THE PROJECT

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PLAN
SCALE 1:30000



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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
WD1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS								
REFERENCE DRAWINGS								

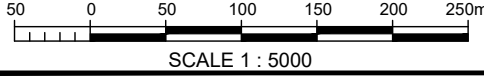
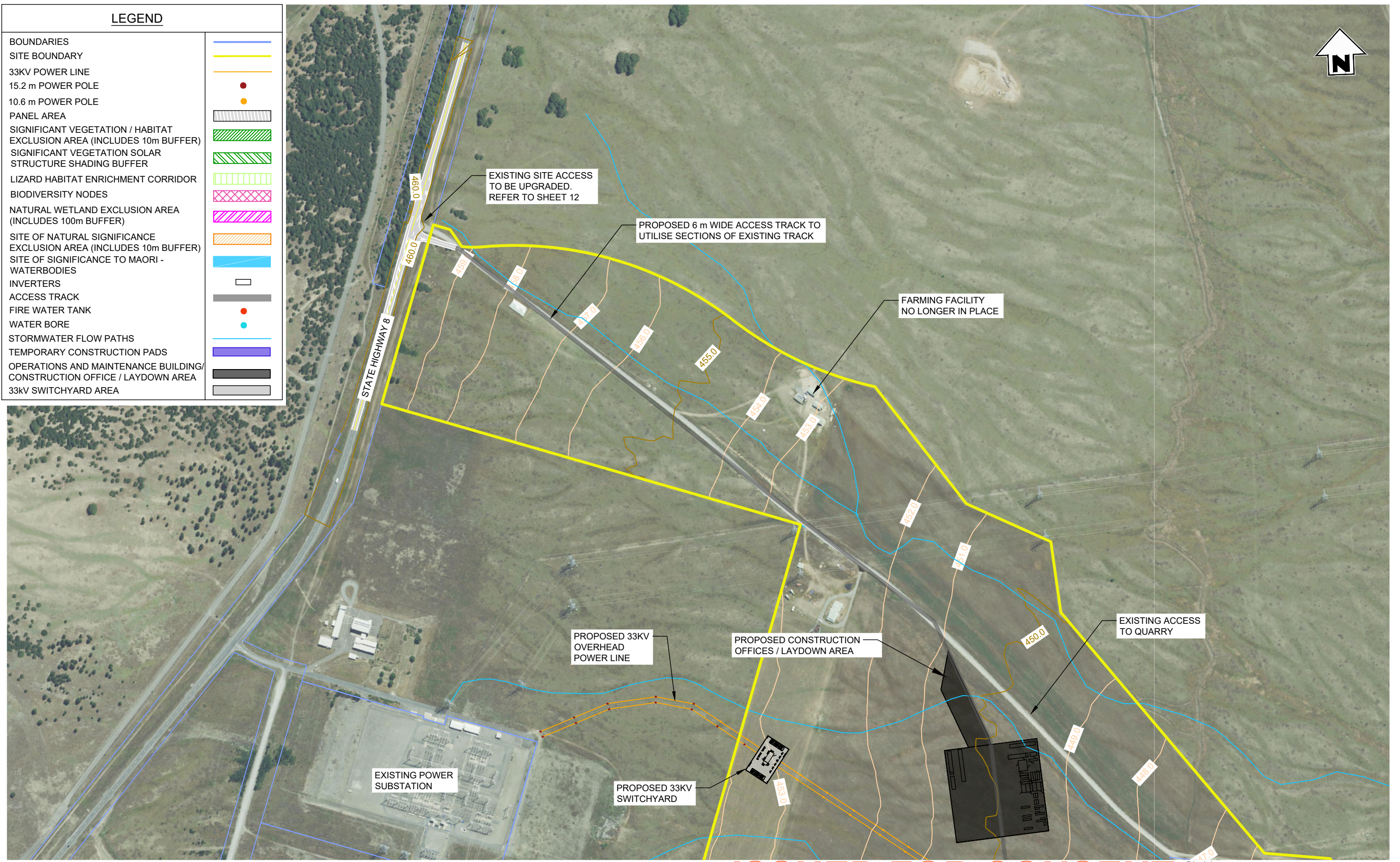
GENERAL NOTES
 1. Coordinates in terms of : New Zealand Transverse Mercator Projection
 2. Elevations in terms of : NZ Vertical Datum 2016
 3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:30000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	09/2024

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		SITE OVERVIEW PLAN	
ORIGINAL SIZE	A3	DRAWING No.	210982-02
SHEET	GD1	REVISION	WD

LEGEND

BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	
OPERATIONS AND MAINTENANCE BUILDING/ CONSTRUCTION OFFICE / LAYDOWN AREA	
33KV SWITCHYARD AREA	



PLAN
SCALE 1:5000

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS								
REFERENCE DRAWINGS								

GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA A1 SITE PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	GD2	WD

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LEGEND

BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	
OPERATIONS AND MAINTENANCE BUILDING/ CONSTRUCTION OFFICE / LAYDOWN AREA	
33kV SWITCHYARD AREA	



PLAN
SCALE 1:5000

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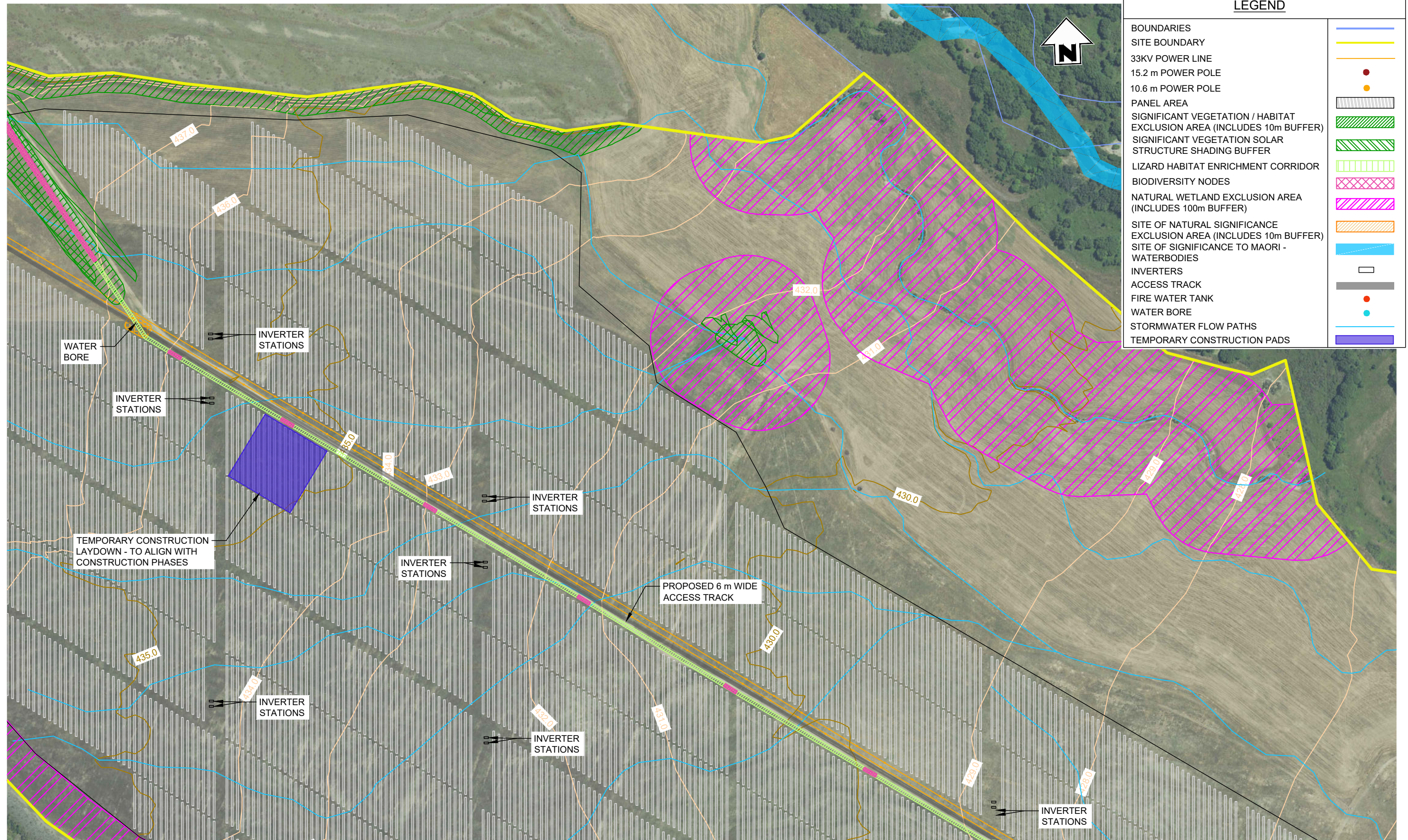
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GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON 09/2024
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA A2 SITE PLAN	
ORIGINAL SIZE	A3	DRAWING No.	210982-02
SHEET	GD3	REVISION	WD

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LEGEND	
BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	



PLAN
SCALE 1:5000

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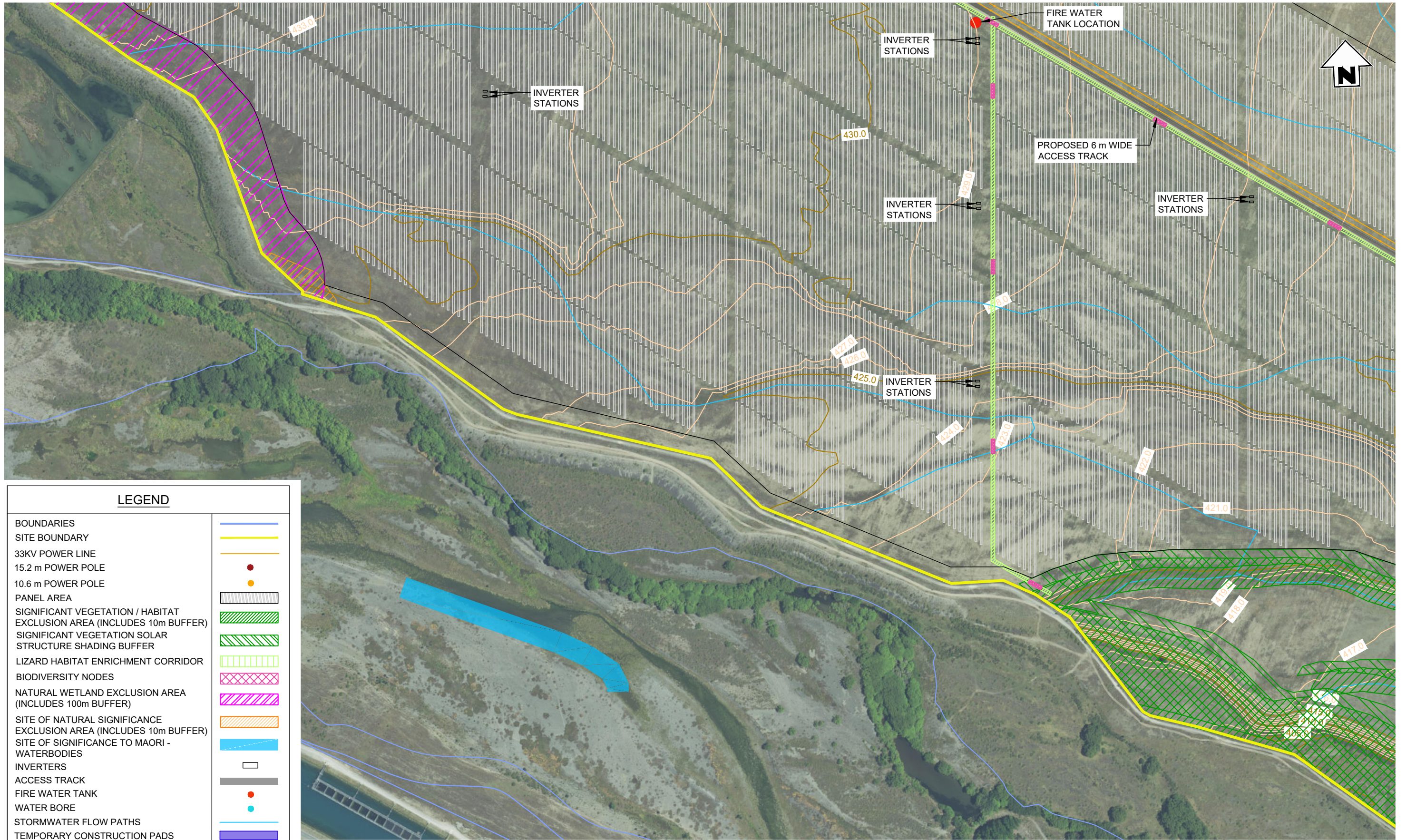
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						ISSUED FOR CONSENT		
REVISIONS							DESCRIPTION	REFERENCE DRAWINGS

GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON 09/2024
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA B1 SITE PLAN	
ORIGINAL SIZE	DRAWING No.	SHEET	REVISION
A3	210982-02	GD4	WD

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LEGEND

BOUNDARIES	
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10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	



PLAN
SCALE 1:5000

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE

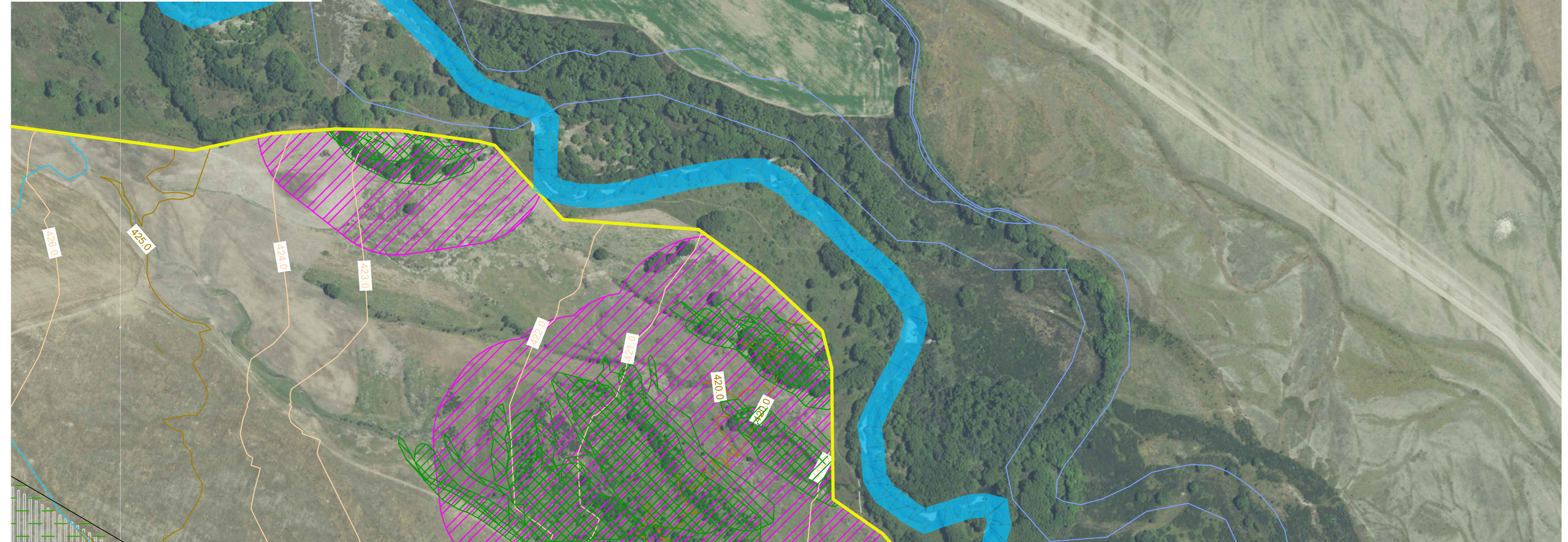
GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA B2 SITE PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	GD5	WD

LEGEND

BOUNDARIES	
SITE BOUNDARY	
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15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	



50 0 50 100 150 200 250m
SCALE 1 : 5000

PLAN
SCALE 1:5000

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
WD1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS						DESCRIPTION	NUMBER	TITLE
REVISIONS						DESCRIPTION	NUMBER	TITLE

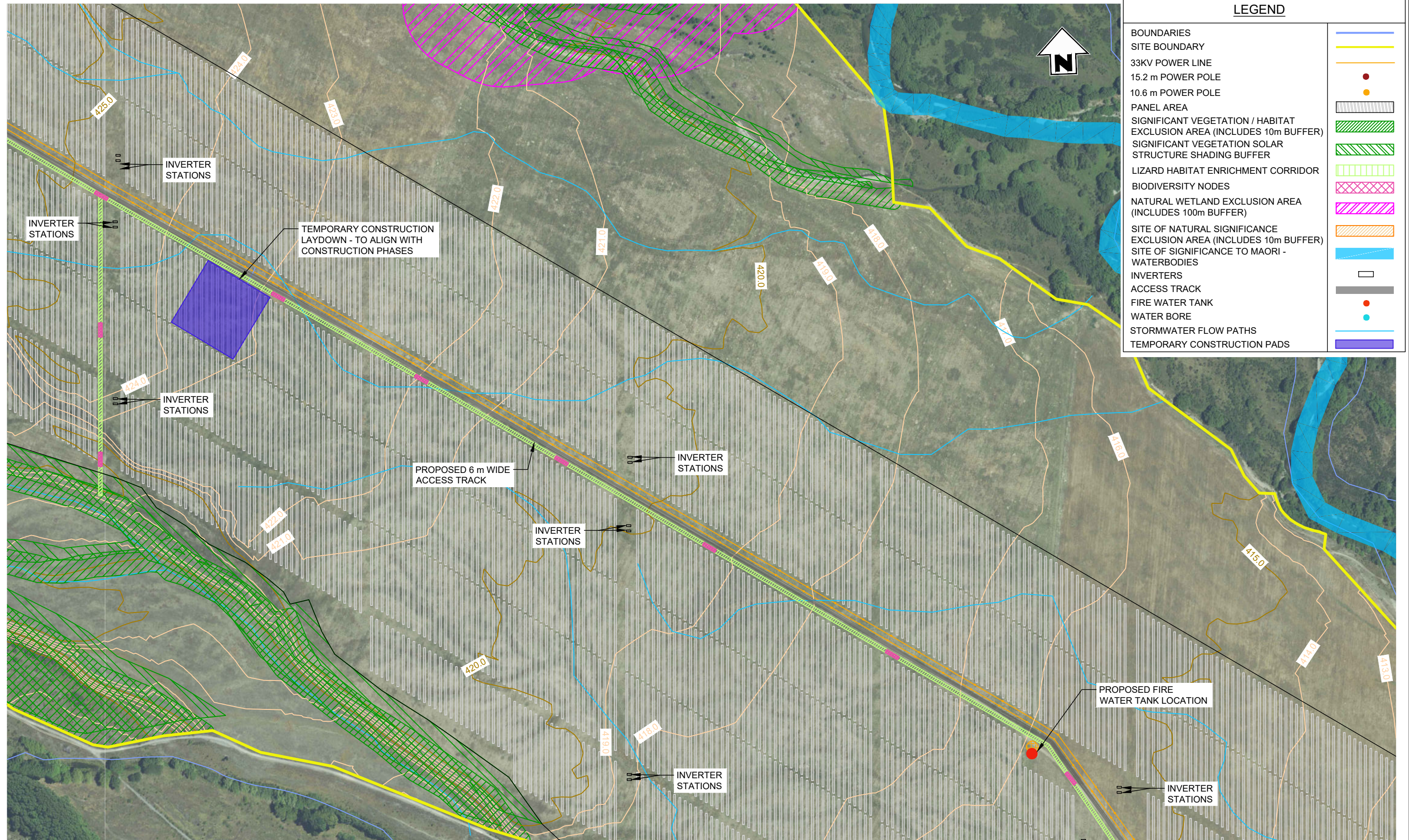
GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA C1 SITE PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	GD6	WD

File Name: C:\125\data\BTW12\12\0982 - Todd Generation Taranaki Ltd_3679\07 Drawings\210982_00-02 Base drawing.dwg - GD6 Plot Date: 19/05/2026 Plot Time: 14:24

File Name: C:\1245\data\BTW1212\10982 - Todd Generation Taranaki Ltd_3679107 Drawings\210982.00-02 Base drawing.dwg - GD7 Plot Date: 19/05/2026 Plot Time: 14:24



LEGEND	
BOUNDARIES	—
SITE BOUNDARY	—
33KV POWER LINE	—
15.2 m POWER POLE	●
10.6 m POWER POLE	●
PANEL AREA	▭
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	▨
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	▨
LIZARD HABITAT ENRICHMENT CORRIDOR	▨
BIODIVERSITY NODES	▨
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	▨
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	▨
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	▨
INVERTERS	▭
ACCESS TRACK	—
FIRE WATER TANK	●
WATER BORE	●
STORMWATER FLOW PATHS	—
TEMPORARY CONSTRUCTION PADS	▭



PLAN
SCALE 1:5000

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE	
						ISSUED FOR CONSENT			
REVISIONS							DESCRIPTION	NUMBER	TITLE
REVISIONS							DESCRIPTION	NUMBER	TITLE

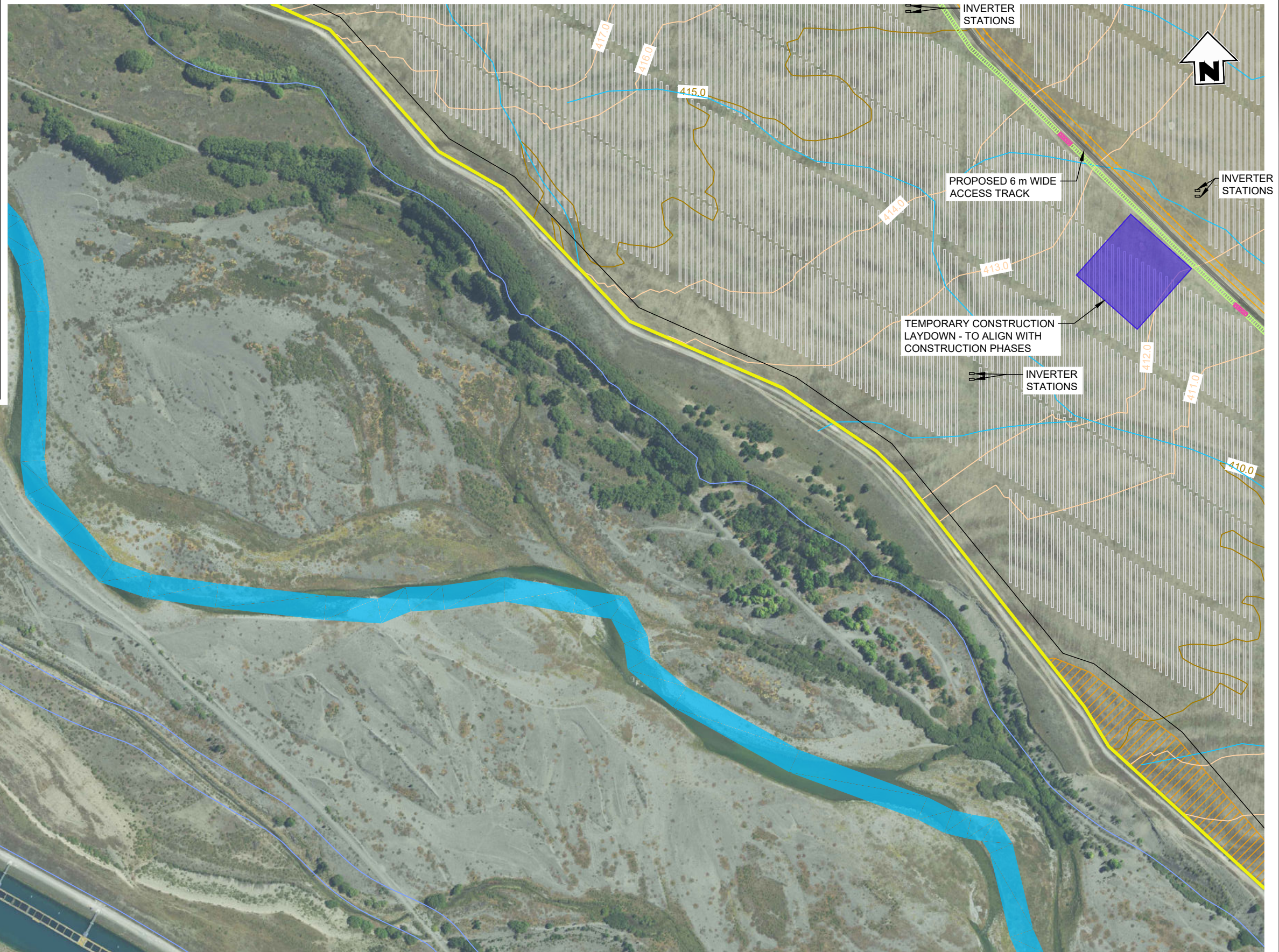
GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD SOLAR FARM - LOT 3 DP 422901 AREA C2 SITE PLAN	
ORIGINAL SIZE	A3	DRAWING No.	210982-02
SHEET	GD7	REVISION	WD

LEGEND

BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	



PLAN
SCALE 1:5000

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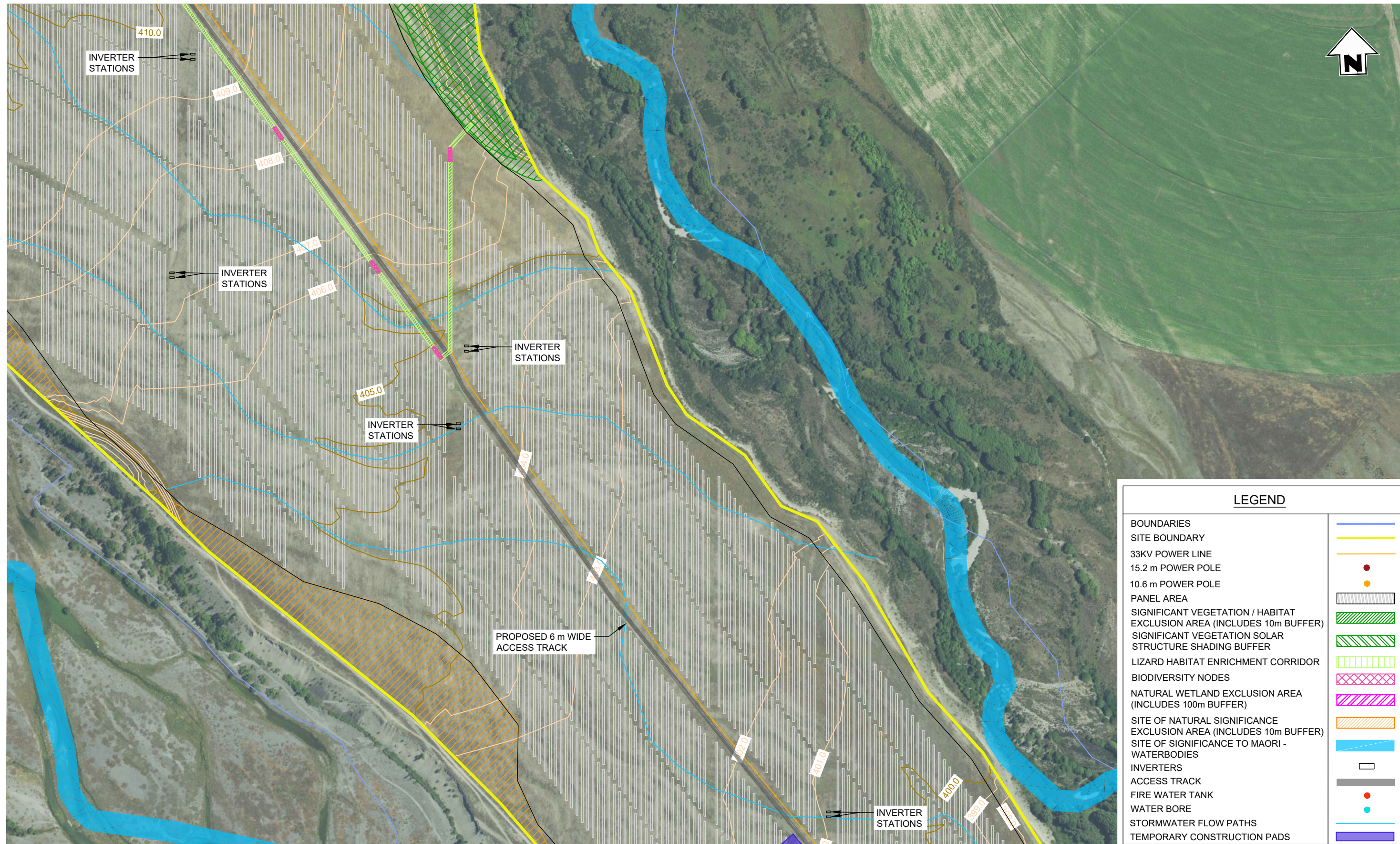
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ENVIRONMENT**

NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
						ISSUED FOR CONSENT		
REVISIONS						DESCRIPTION	NUMBER	TITLE
REFERENCE DRAWINGS								

GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA C3 SITE PLAN	
ORIGINAL SIZE	DRAWING No.	SHEET	REVISION
A3	210982-02	GD8	WD



PLAN
SCALE 1:5000

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LEGEND	
BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	

File Name: C:\125\data\BTW12D1210982 - Todd Generation Taranaki Ltd_3679107 Drawings\210982-00-02 Base drawing.dwg - GD10 Plot Date: 19/05/2026 Plot Time: 14:24



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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS								
REFERENCE DRAWINGS								

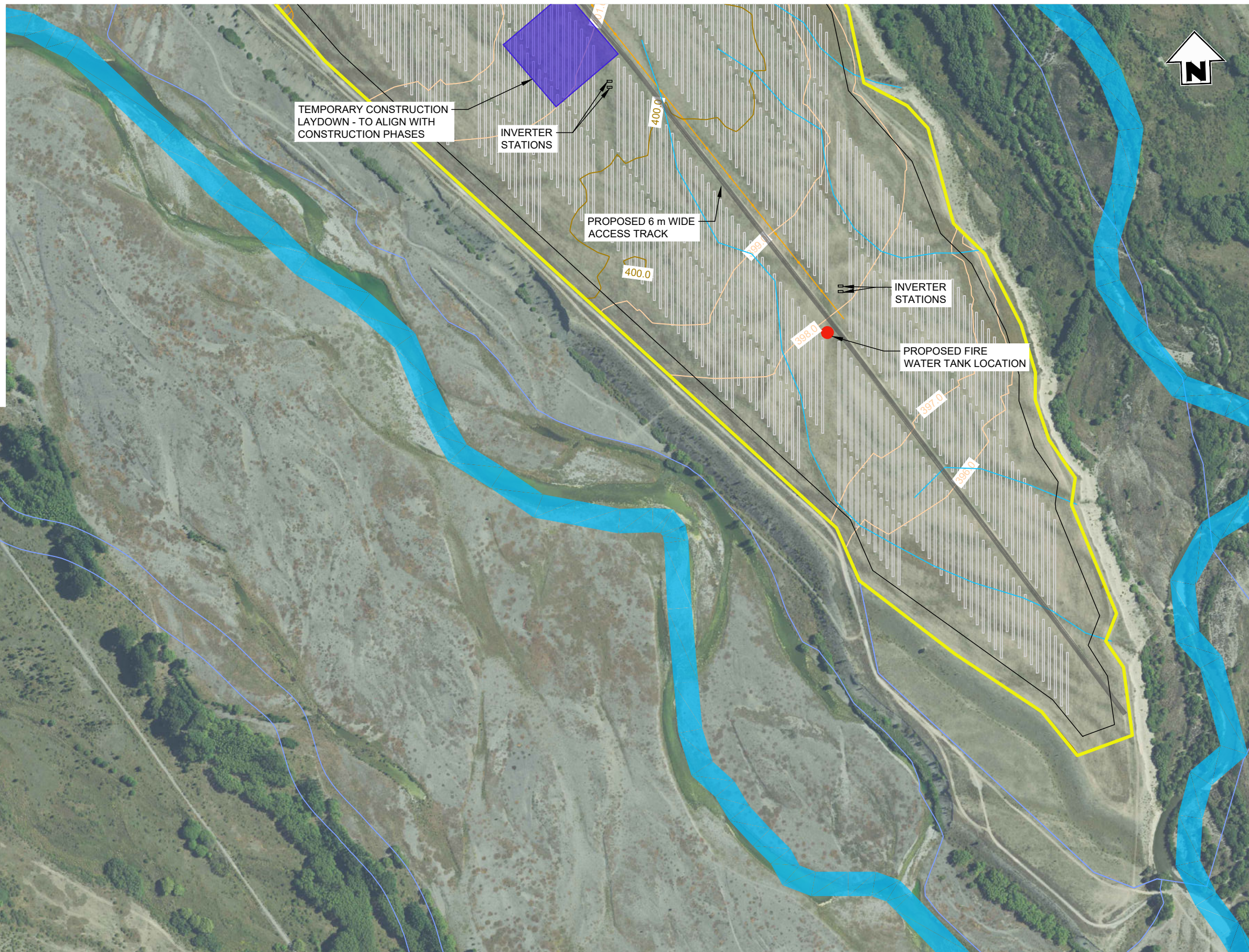
GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON 09/2024
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA D2 SITE PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	GD10	WD

LEGEND

BOUNDARIES	
SITE BOUNDARY	
33KV POWER LINE	
15.2 m POWER POLE	
10.6 m POWER POLE	
PANEL AREA	
SIGNIFICANT VEGETATION / HABITAT EXCLUSION AREA (INCLUDES 10m BUFFER)	
SIGNIFICANT VEGETATION SOLAR STRUCTURE SHADING BUFFER	
LIZARD HABITAT ENRICHMENT CORRIDOR	
BIODIVERSITY NODES	
NATURAL WETLAND EXCLUSION AREA (INCLUDES 100m BUFFER)	
SITE OF NATURAL SIGNIFICANCE EXCLUSION AREA (INCLUDES 10m BUFFER)	
SITE OF SIGNIFICANCE TO MAORI - WATERBODIES	
INVERTERS	
ACCESS TRACK	
FIRE WATER TANK	
WATER BORE	
STORMWATER FLOW PATHS	
TEMPORARY CONSTRUCTION PADS	



PLAN
SCALE 1:5000

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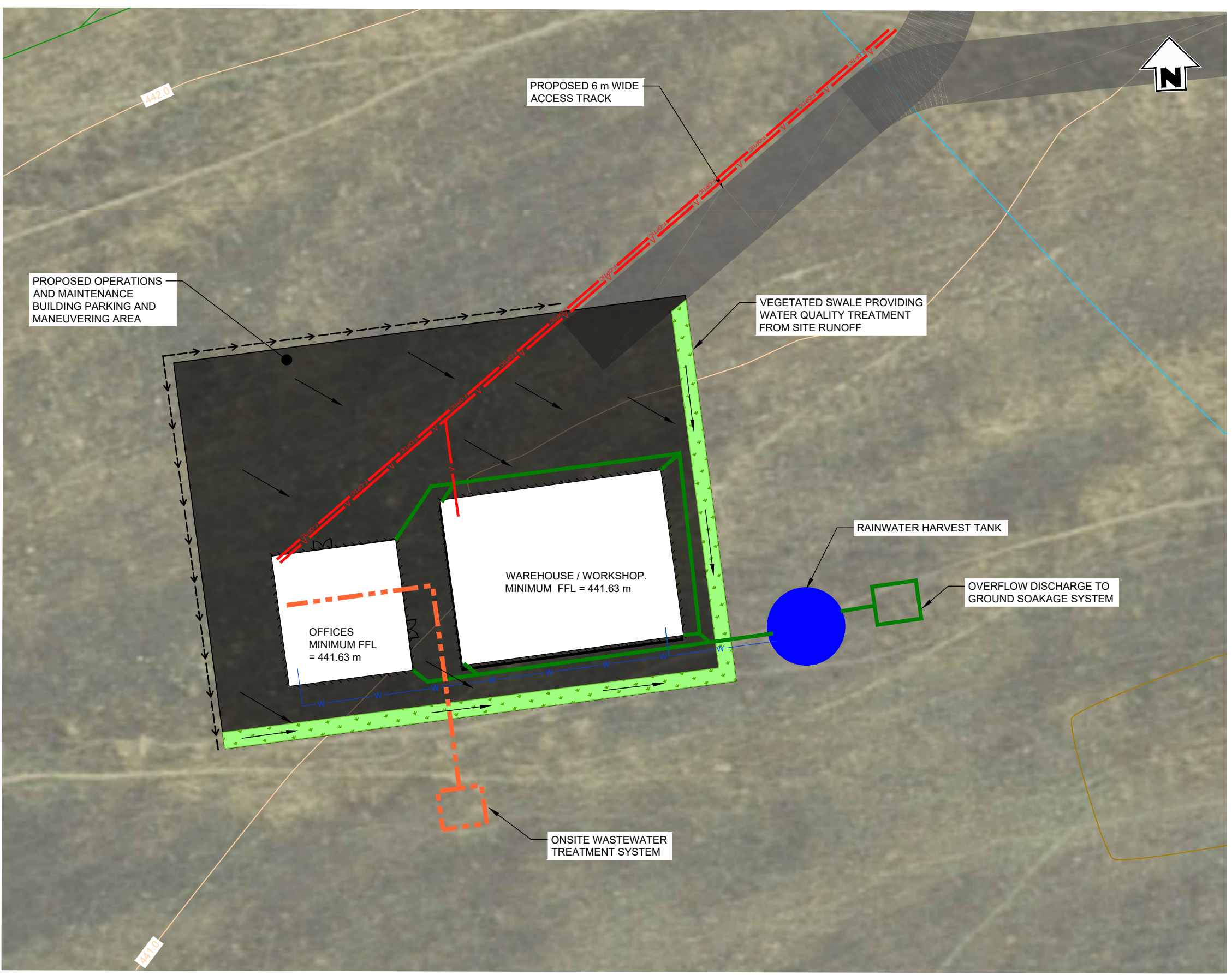
NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
WD1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS							REFERENCE DRAWINGS	

GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	1:5000
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		AREA D3 SITE PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	GD11	WD

LEGEND	
POWER SUPPLY	
FIBRE OPTIC	
WATER	
SEWER	
STORMWATER	
DRAINAGE FLOW	
SLOPE	
EDGE OF BUILDING	
ACCESS TRACK	
GRAVEL	
VEGETATED SWALE	



- NOTES**
- ALL WASTEWATER TREATMENT AND DISPOSAL SHALL BE IN ACCORDANCE WITH NZBC G13/AS1 AND G13/VM4 FOUL WATER ON-SITE DISPOSAL, DESIGN SHALL COMPLY WITH AS/NZS 1547:2012 - ON-SITE DOMESTIC WASTEWATER MANAGEMENT.
 - ALL STORMWATER TREATMENT AND DISPOSAL SHALL BE IN ACCORDANCE WITH NZBC E1 SURFACE WATER.
 - POTABLE WATER SUPPLY TO BE HARVESTED FROM RAINWATER TANKS AND SHALL BE DESIGNED IN ACCORDANCE WITH NZBC G12 WATER SUPPLIES
 - ALL SERVICE ARE SHOWN INDICATIVE ONLY WITH FINAL SYSTEMS AND LAYOUT TO BE CONFIRMED DURING DETAILED DESIGN.
 - APPROPRIATE LOCAL AND REGIONAL COUNCIL CONSENTS ARE TO BE APPROVED PRIOR TO COMMENCEMENT OF WORKS.
 - ALL WORKS TO CONFORM WITH ECAN'S SEDIMENT AND EROSION CONTROL REQUIREMENTS. ALL EXPOSED (CUT AND FILL) SLOPES AND EARTH BUNDS TO BE STABILISED UPON COMPLETION OF WORKS.
 - BUILDINGS TO HAVE MINIMUM FINISHED FLOOR LEVEL (FFL) AS SPECIFIED ON DRAWINGS AND FLOOD RISK ASSESSMENT.



PLAN
SCALE 1:400

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
WD1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS							REFERENCE DRAWINGS	

GENERAL NOTES
 1. Coordinates in terms of : New Zealand Transverse Mercator Projection
 2. Elevations in terms of : NZ Vertical Datum 2016
 3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:400
DRAWN	J. STEPHENSON
CHECKED	

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		O&M BUILDING - PRELIMINARY THREE WATERS PLAN	
ORIGINAL SIZE	DRAWING No.	SHEET	REVISION
A3	210982-02	GD12	WD

File Name: C:\123\data\BTW12D1210982 - Todd Generation Taranaki Ltd_3679107 Drawings\210982-00-02 Base drawing.dwg - GB12 Plot Date: 19/05/2026 Plot Time: 14:24

LEGEND	
POWER SUPPLY	
FIBRE OPTIC	
WATER	
SEWER	
DIRTY WATER DIVERSION	
DRAINAGE FLOW	
SLOPE	
EDGE OF BUILDING	
ACCESS TRACK	
GRAVEL	
VEGETATED SWALE	
40 ft CONTAINER	
20 ft CONTAINER	
COVERED WALKWAY	
OUTDOOR AREA WITH DOME SHELTER	
WATER TANKS	

- NOTES**
1. ALL WASTEWATER SHALL BE COLLECTED IN HOLDING TANKS AND DISPOSED OFF-SITE. WASTEWATER SYSTEM DESIGN SHALL BE IN ACCORDANCE WITH NZBC G13/AS1.
 2. ALL STORMWATER TREATMENT AND DISPOSAL SHALL BE IN ACCORDANCE WITH APPROVED EROSION AND SEDIMENT CONTROL PLANS.
 3. POTABLE WATER TO BE SUPPLIED TO SITE AND HELD IN STORAGE TANKS. WATER SYSTEM DESIGN SHALL BE IN ACCORDANCE WITH NZBC G12/AS1 WATER SUPPLIES.
 4. ALL SERVICE ARE SHOWN INDICATIVE ONLY WITH FINAL SYSTEMS AND LAYOUT TO BE CONFIRMED DURING DETAILED DESIGN.
 5. APPROPRIATE LOCAL AND REGIONAL COUNCIL CONSENTS ARE TO BE APPROVED PRIOR TO COMMENCEMENT OF WORKS.
 6. ALL WORKS TO CONFORM WITH ECAN'S SEDIMENT AND EROSION CONTROL REQUIREMENTS. ALL EXPOSED (CUT AND FILL) SLOPES AND EARTH BUNDS TO BE STABILISED UPON COMPLETION OF WORKS.
 7. PORTACOMS AND CONTAINERS TO HAVE MINIMUM FINISHED FLOOR LEVEL (FFL) 300 mm ABOVE THE IDENTIFIED 500-YEAR ARI FLOOD LEVEL.

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PLAN
SCALE 1:1000



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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
WD1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS							NUMBER	TITLE
REFERENCE DRAWINGS								

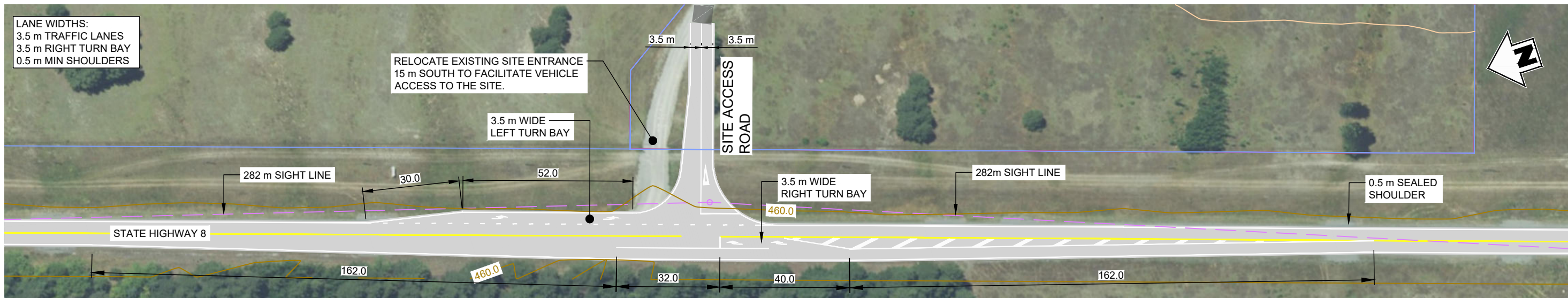
GENERAL NOTES
1. Coordinates in terms of : New Zealand Transverse Mercator Projection
2. Elevations in terms of : NZ Vertical Datum 2016
3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No.	210982
A3 SCALE	1:1000
SURVEYED	-
DRAWN	J.STEPHENSON 09/2024
CHECKED	-

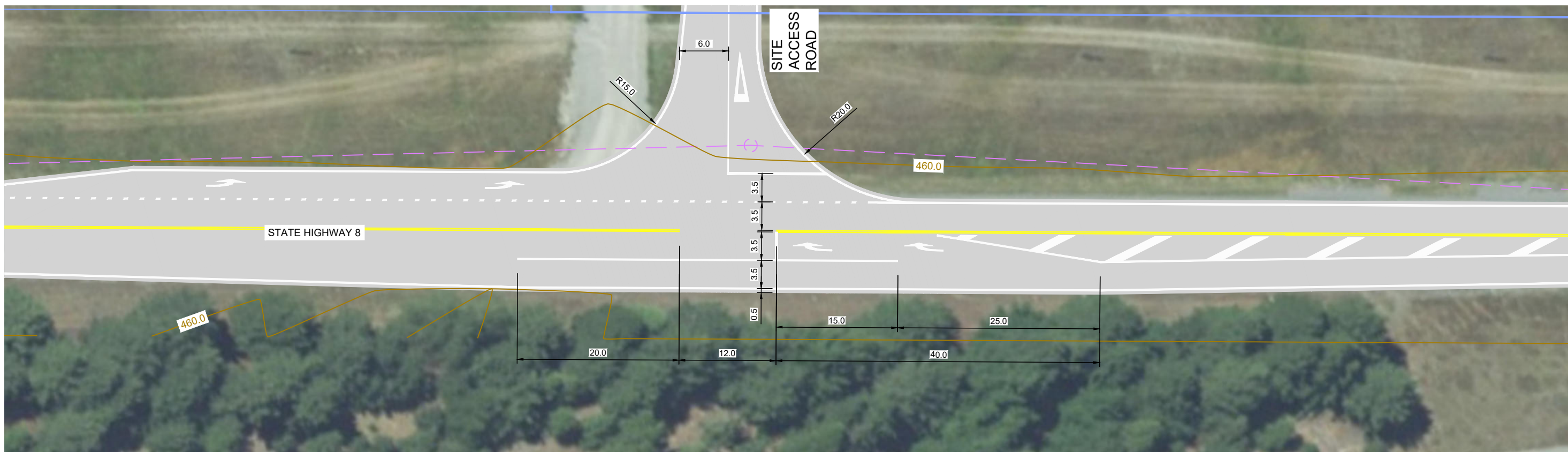
TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		CONSTRUCTION OFFICES / LAYDOWN - LAYOUT PLAN	
ORIGINAL SIZE	A3	DRAWING No	210982-02
SHEET	GD14	REVISION	WD

File Name: C:\125\data\BTW12D1210982 - Todd Generation Taranaki Ltd_3679107 Drawings\210982-00-02 Base drawing.dwg - GD14 Plot Date: 19/05/2026 Plot Time: 14:24

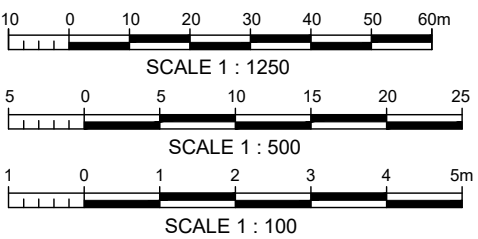
LANE WIDTHS:
 3.5 m TRAFFIC LANES
 3.5 m RIGHT TURN BAY
 0.5 m MIN SHOULDERS



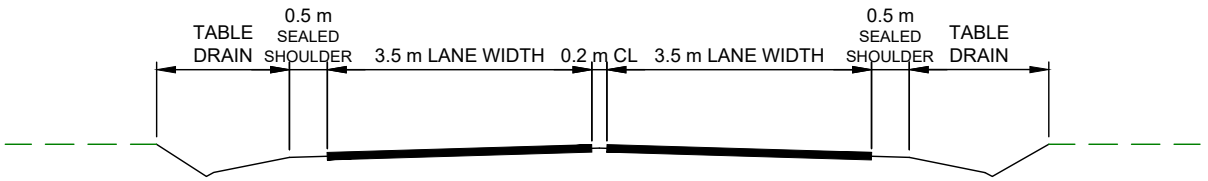
INTERSECTION LAYOUT PLAN
 SCALE 1:1250



INTERSECTION LAYOUT PLAN
 SCALE 1:500



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TYPICAL ROAD CROSS SECTION
 SCALE 1:100

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NO	DATE	BY	CHKD	APPR	OPER	DESCRIPTION	NUMBER	TITLE
1	19.02.26	GH	SH			ISSUED FOR CONSENT		
REVISIONS						DESCRIPTION	NUMBER	TITLE
REVISIONS						DESCRIPTION	NUMBER	TITLE

GENERAL NOTES
 1. Coordinates in terms of : New Zealand Transverse Mercator Projection
 2. Elevations in terms of : NZ Vertical Datum 2016
 3. Contour interval is : 1m

LOCATION	TWIZEL
PROJECT No	210982
A3 SCALE	AS SHOWN
SURVEYED	-
DRAWN	J.STEPHENSON
CHECKED	-

TITLE		NOVA ENERGY LTD	
		SOLAR FARM - LOT 3 DP 422901	
		ENTRANCEWAY LAYOUT PLAN	
ORIGINAL SIZE	DRAWING No	SHEET	REVISION
A3	210982-02	RD1	WD