

23 April 2026

Our Ref: 50197 - Rev.3

Nova Energy  
PO Box 3142  
Wellington 6141  
New Zealand

Attn. [REDACTED]

**RE: 6591 STATE HIGHWAY 8, TWIZEL, MACKENZIE DISTRICT  
NPS-NATURAL HAZARDS ASSESSMENT**

**1.0 INTRODUCTION**

**1.1 Objective**

This addendum has been commissioned by Nova Energy and prepared by Engineering Design Consultants Ltd (EDC) to demonstrate how the findings and conclusions of the Due Diligence Geotechnical Report (EDC File 50197 – Rev.1, dated 1 September 2025) respond to and give effect to the National Policy Statement for Natural Hazards 2025 (NPS-NH), which came into force on 15 January 2026.

This addendum does not replace or supersede the original report. It provides additional context and clarification to assist decision-makers in applying a risk-based and proportionate approach to the management of natural hazard risk, as required by the NPS-NH.

For this site, it is proposed to construct a solar farm, comprising solar panels and ancillary buildings.

**1.2 Objective/Scope**

The NPS-NH requires that natural hazard risk associated with subdivision, use and development be:

- Assessed using a risk-based approach that considers likelihood and consequence.
- Managed in a manner proportionate to the level of risk.
- Based on the best available information, even where uncertainty exists.
- Avoided where the level of risk is assessed as very high, with lower levels of risk avoided or mitigated as appropriate.

The NPS-NH applies to the following natural hazards relevant to this site:

- Flooding
- Erosion
- Landslip / slope instability
- Liquefaction
- Fault rupture.

This report addresses liquefaction, Seismic Hazard and Active Faulting, Erosion and Slope Instability. Flood and inundation risk is addressed separately, in the Flood Risk Assessment prepared on behalf of Nova by BTW Ltd. Reference has been made to findings in the BTW report with respect to erosion (Section 4.4) and slope stability (Section 4.5).

## **2.0 BEST AVAILABLE INFORMATION**

The assessment of natural hazard risk for the site is based on the best available information at the time of reporting, including:

- Regional and national geological mapping (GNS QMAP);
- Historic aerial photography, available on the ECan GIS (1940's to present);
- Regional liquefaction susceptibility mapping;
- Active fault mapping (GNS Active Fault Database);
- Nearby borehole and groundwater records;
- District Plan hazard overlays.
- Professional engineering judgement informed by experience with similar glacial outwash and alluvial terrace environments in the Mackenzie Basin.

No intrusive investigation was undertaken as part of the due-diligence scope; however, the level of information is considered appropriate and proportionate for a feasibility assessment/Resource Consent, consistent with the NPS-NH.

## **3.0 SITE LOCATION**

The site is located approximately 2.0km southeast of Twizel township and approximately 950m east of Lake Ruataniwha. The site extends to the east of the Tekapo-Twizel Road, State Highway 8, covering a total area of approximately 868ha plus a 19ha lease lot.

The Google Earth coordinates of the approximate centre of the site are: 44°17'42.04"S, 170°8'33.98"E.

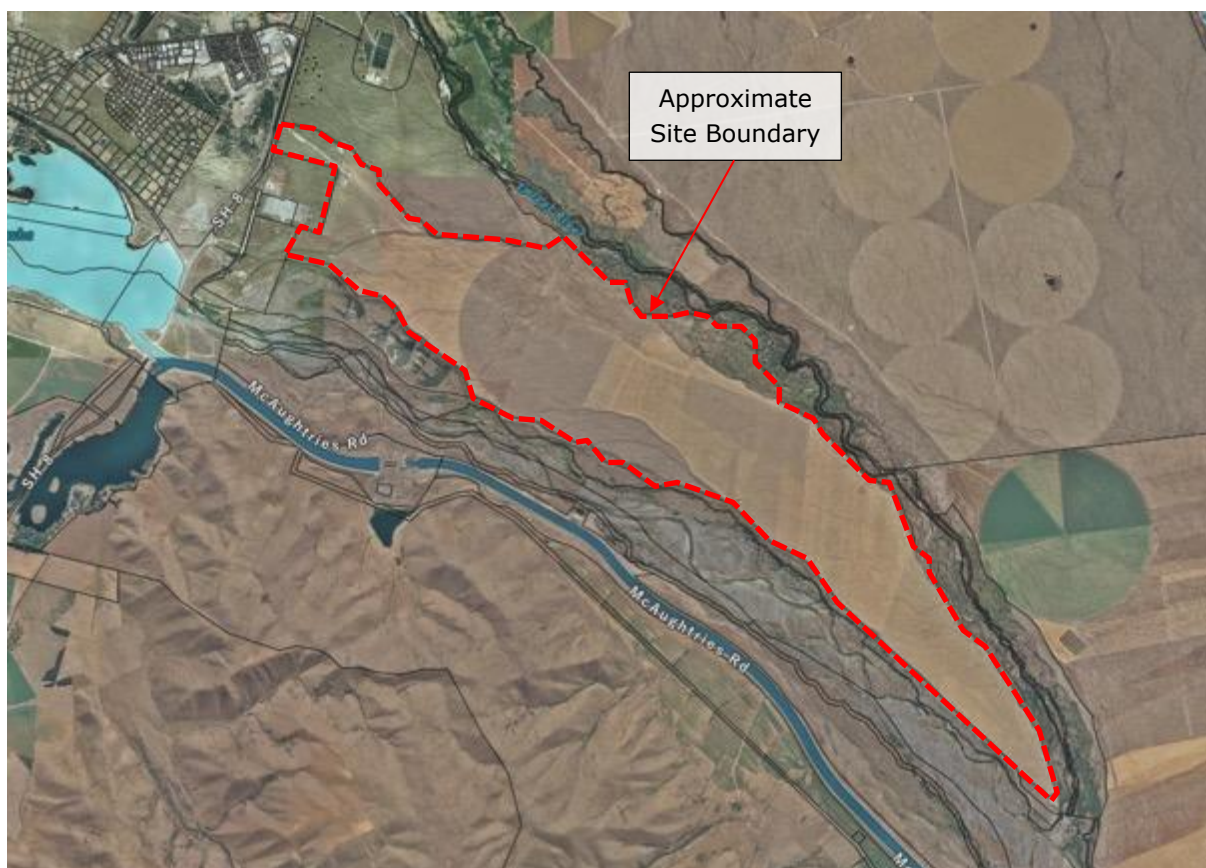


Figure 1: Site Location (Courtesy of Mackenzie Maps)

## 4.0 NATURAL HAZARD RISK ASSESSMENT (NPS-NH)

### 4.1 Liquefaction

The site is predominantly underlain by dense to very dense late Pleistocene outwash gravels (Q2a), with limited areas of younger alluvium (Q1a) adjacent to river margins.

Regional mapping identifies the majority of the site as having very low liquefaction susceptibility, with low susceptibility limited to areas closer to the Twizel and Ohau Rivers.

Based on the dense, free-draining nature of the gravels, liquefaction-related damage is expected to be minor or negligible over most of the site.

**Risk assessment:** Liquefaction risk is assessed as **Low**, and does not constitute a significant natural hazard risk under the NPS-NH.

### 4.2 Active Faulting

No active faults are mapped on the site.

The nearest active fault (Ostler Fault) is located approximately 4 km west of the site.

**Risk assessment:** the risk of on-site fault rupture is Low. The risk does not reach a level requiring avoidance under the NPS-NH.

### 4.3 Erosion

Historical aerial photography does not indicate evidence of active or progressive erosion within the site. In addition BTW’s Flood Hazard Risk Assessment indicates that scour is anticipated to be negligible on the site as the modelled flow velocities on the site are less than 2.0 m/s for a 100-year ARI RCP8.5 event.

River margins beyond the site boundaries are steep and the risk of localised bank toe erosion cannot be discounted during extreme flood events, though historical aerials suggest little impact since the 1940’s. This is supported by BTW’s flood assessment, which indicates that there is low risk from longer term migrations within the braided channels and that the flood velocities are beneath the threshold where they would expect scour and migration of material.

**Risk assessment:** Based on the BTW Flood Risk information and EDC’s desk study the erosion risk is assessed as **Low**, with potential localised **Medium** risk during extreme flood events. This risk will be managed through setbacks from river margins and terrace edges, established as part of the scope of the recommended flood risk assessment in Section 4.3 above. A concept design setback of 20m from rivers and streams has been adopted. Any setback should be confirmed as suitable by BTW as part of detailed design.

### 4.4 Slope Instability

The site contains terrace edges and steep slopes, particularly adjacent to river margins.

No evidence of significant historic slope failure is observed in aerial imagery.

The dense, granular nature of the soils suggests inherently stable slopes under normal conditions, the main triggering risks being significant weather events and seismic events.

**Risk assessment:** Slope instability risk is assessed as generally **Medium**, provided development maintains appropriate setbacks from slope crests and avoids slope modification. Over steep boundary slopes may locally pose a **High** risk. A 20m no development offset has been adopted to mitigate High slope stability risk at concept stage. Whilst likely to be generally acceptable, boundary slopes should be assessed by a Geotechnical Engineer/Engineering Geologist at detailed design stage to confirm the suitability of the 20m development set back from the site boundary, which generally appears in-line with the 1.5 times the slope height from the slope crest recommended in the EDC feasibility report.

## 5.0 SUMMARY & CONCLUSIONS

Natural hazard	Credible hazard scenario for the site	Likelihood level (Table 1 of NPS-NH)	Consequence level (Table 2 of NPS-NH)	Risk level (Fig. 1)
Liquefaction	Localised liquefaction or settlement during strong seismic shaking	Unlikely. Regional mapping identifies very	Minor – limited ground deformation expected in dense gravels	Low

		low to low susceptibility		
Fault rupture	No mapped surface faults known and therefore rupture on-site is not anticipated	Very rare for fault rupture at site	Major damage to land buildings and infrastructure, but low life-safety risk	Medium
Erosion	Fluvial erosion at river margins during extreme flood events	Unlikely	Minor – erosion limited to margins, away from primary development areas	Low, with potential localised Medium
Slope instability / landslip	Instability of terrace edges or riverbank slopes affecting nearby infrastructure	Possible (ARI 50-100 yrs). No significant historic failures evident	Moderate – localised damage possible if development encroaches on slope crests	Medium, over steep boundary slopes may locally be High

**Table 1: NPS-NH Assessment Summary**

Consistent with the NPS-NH, the identified natural hazard risks can be managed through:

- Avoidance of development in areas where hazard consequences would be disproportionate.
- Application of conservative setbacks from slope crests and river margins.
- Further site-specific investigation at detailed design stage where development is proposed in areas of higher uncertainty.

No natural hazard risks have been identified that would be assessed as **Very High** under the NPS-NH risk matrix.

Based on the information available and the assessments outlined above:

- The site does not present Very High natural hazard risk requiring avoidance under the NPS-NH.
- Identified natural hazard risks are generally Low, with some localised Medium to High risks that can be managed through proportionate mitigation and design.
- The conclusions of the original Due Diligence Geotechnical Report remain valid and are consistent with the objectives and policies of the National Policy Statement for Natural Hazards 2025.

**REPORT BY:**



**Giles Learman**  
BSc (Hons), CMEngNZ, (PEngGeol), CGeol FGS  
Geotechnical Manager, Director

## 6.0 LIMITATIONS

Except where required by law, the findings presented as part of this report are for the sole use of our client, as noted above. The findings are not intended for use by other parties, and may not contain sufficient information for the purposes of other parties or other uses. No third party (excluding the local authority) may use or rely upon this report unless authorised by EDC in writing.

To the extent permitted by law, EDC expressly disclaims and excludes liability for any loss, damage, cost or expense suffered by any third party relating to or resulting from the use of, or reliance upon any information contained in this report. It is the responsibility of third parties to independently make enquiries or seek advice in relation to their particular requirements.

Our professional services are performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at this time. No other warranty, expressed or implied, is made as to the professional advice presented in this report, in regard to its accuracy or completeness.

Our opinions and recommendations are based on our comprehension of the current regulatory standards and must not be considered legal opinions. For legal advice, please consult your solicitor. This opinion is not intended to be advice that is covered by the Financial Advisors Act 2010.

The recommendations and opinions contained in this report are based on our visual reconnaissance of the site, information from geological maps and upon data from the field investigation as well as the results of in situ testing of soil. Inferences are made about the nature and continuity of subsoils away from and beyond the exploratory holes which cannot be guaranteed. The descriptions detailed on the exploratory hole logs are based on the field descriptions of the soils encountered.