To:	Nova Energy Ltd				
Copy:	Cam Twigley (BTW)				
From:	Catherine Gu (BTW), Sean Husband (BTW)				
Date:	27th August 2026	**BTW Job Number:**	210982	**Client Reference**	Twizel Solar Project

Subject: Twizel Solar Project Cumulative Effects Assessment – Stormwater and Flood Hazards

INTRODUCTION

BTW has undertaken a cumulative effects assessment for stormwater and flood hazards associated with the Twizel Solar Project.

This cumulative effects assessment accounts for the fact that the Haldon Solar Farm has now been granted resource consents and forms part of the receiving environment that must be considered when assessing the environmental effects of the Twizel Solar Project

The following documents relating to the Haldon Solar Farm were reviewed:

- Haldon Solar Project – Assessment of Effects in relation to Flood Risk. Beca, dated 28/08/2025.
- Haldon Solar Farm – Flood Risk Assessment. Beca, dated 13/09/2024.
- Grid Injection Point for Haldon Solar Farm – Flood Risk Assessment. Beca, dated 18/10/2024.
- Haldon Solar Stormwater Management and Soil Monitoring Plan. Lodestone, dated 17/04/2026.
- CRC261666 Discharge Permit under section 15 of the RMA – Consent Conditions
- Haldon Solar Farm - Record of Decision of the Expert Consenting Panel, dated 10/08/2026

The following documents relating to the Twizel Solar Project were prepared by BTW. This memo draws from these documents as required.

- Twizel Solar Plant – Flood Hazard Risk Assessment. BTW, Rev B, dated 21/04/2026.
- Twizel Solar Project – Stormwater Management Plan. BTW, Rev Draft, dated 24/03/2026.

SITE AND CATCHMENT CONTEXT

Site Locations

Both the Twizel and Haldon solar farms are located to the south-east of Twizel. Their locations are indicated in Figure 1.

The Twizel Solar Project is proposed to comprise an up to 300 MW solar farm located across 565 hectares of an 868 hectare site to the south-east of Twizel. It is located to the north-west of Lake Benmore.

The Haldon Solar Farm is proposed to produce approximately 180 MW and will be located on 320 hectares adjacent to Lake Benmore.

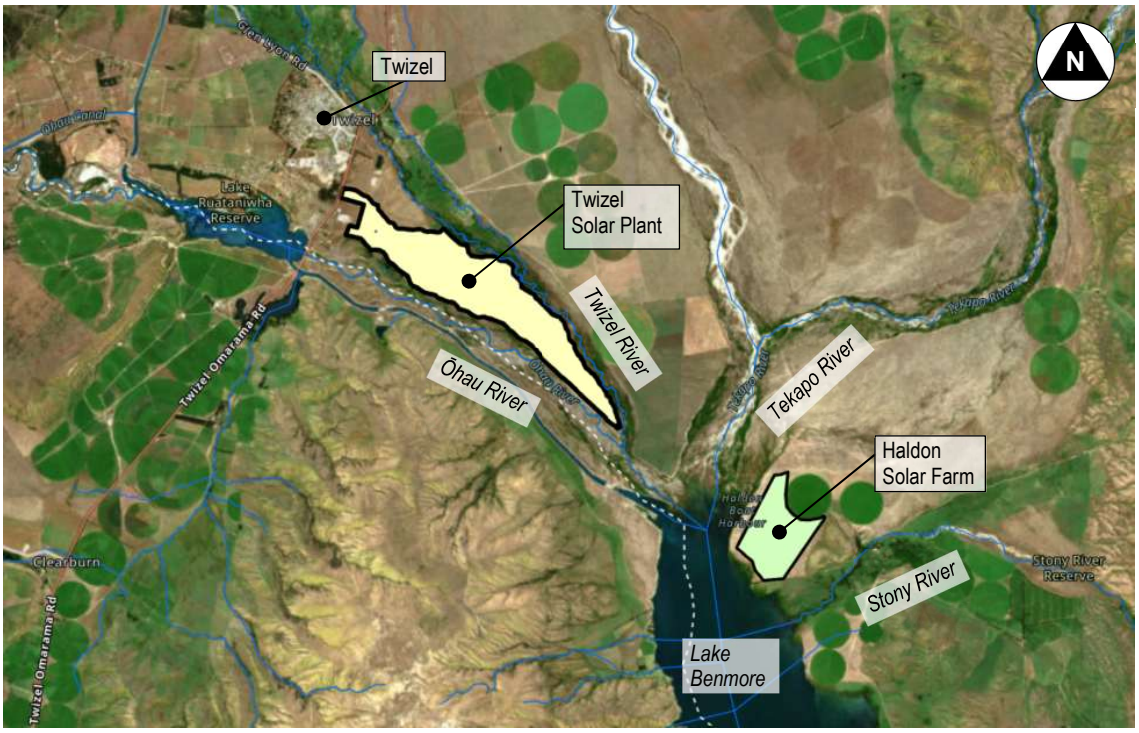

Figure 1: Solar farm locations

Catchment Context

Both sites are located within the catchment of Lake Benmore. Lake Benmore forms part of the Waitaki hydroelectricity scheme.

The Waitaki hydroelectricity scheme is one of the most highly modified hydrological landscapes in the country. It consists of eight power stations with associated dams, creating a number of lakes within the Waitaki Valley, including Lakes Tekapo, Pūkaki, Ōhau, Ruataniwha, and Benmore. Lake water levels and river flow rates within the scheme are controlled and/or highly influenced by the hydroelectric scheme operators.

Both sites are situated approximately mid-catchment within the Waitaki hydroelectric scheme, with the Twizel Solar Project site being located upstream of the Haldon Solar Farm. Refer Figure 2 for an overview of the scheme.

The Twizel Solar Project site discharges into the Ōhau and Twizel Rivers, which discharge into Lake Benmore. The Haldon site primarily discharges to Lake Benmore, with a small portion of the site discharging to the Stony River to the south of the site, which also discharges to Lake Benmore.

Lake Benmore is noted to have a normal operating range between RL 354.91 m (normal minimum control level) and RL 361.11 m (maximum consented storage level) (NZVD 2016 (Beca, 2024). Both sites are elevated well above the maximum consented storage level and are not considered to be at risk of flooding induced by the lake.

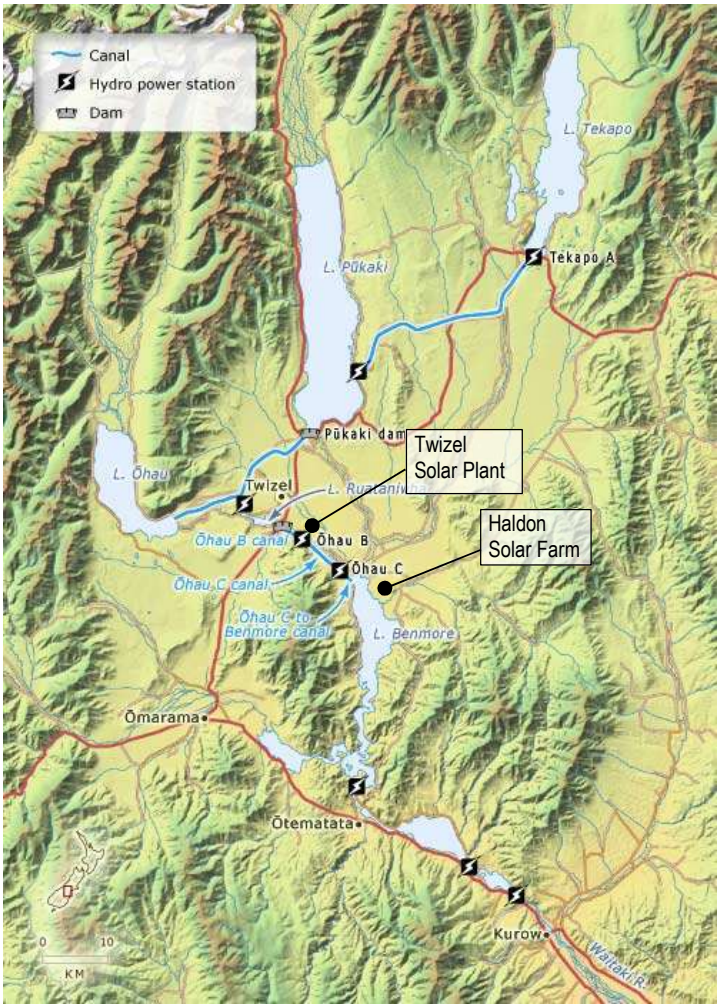

Figure 2: Waitaki Hydroelectric Scheme (Source: Te Ara[1])

ASSESSMENT OF EFFECTS OF TWIZEL AND HALDON SOLAR FARMS

An assessment has been undertaken to determine the effects of the Haldon and Twizel developments on catchment hydrology, flood levels, erosion and sedimentation, and water quality.

Both projects, individually and cumulatively, are considered to have negligible effect on the hydrology of the receiving environment due to their location within the catchment of the Waitaki hydroelectric scheme. The hydrological landscape is highly anthropogenically controlled and modified. Neither project, individually nor cumulatively, is expected to contribute to altered downstream flood levels, as the water levels are heavily controlled by the operators of the hydroelectric dams.

Minor modifications to overland flow paths and flood levels within the project sites are expected through construction of building platforms, access roads, drainage infrastructure, inverters and substations. However, these effects are localised and are expected to be managed internally within the solar farms with controls in place to mitigate effects on the wider environment. The risks associated with this are addressed in the conditions of consent for both solar farms.

Water quality mitigation measures are required by the conditions of consent (or proposed conditions) for both sites. Measures include including providing appropriate treatment for

[1] Waitaki Power Stations, Te Ara. Sourced from https://teara.govt.nz/en/interactive/22468/waitaki-power-stations. Accessed 20/08/2026.

hardstand runoff and containment systems for infrastructure containing oil. The Haldon Solar Farm consent conditions also reference requirements for particular material selection for buildings and solar panels to minimise environmental contaminants such as PFAS and heavy metals. Similar conditions are proposed in the operational phase stormwater discharge consent for the Twizel Solar Project.

Certified erosion and sediment control plans (ESCP) are required by conditions (or proposed conditions) to be in place for both sites. This will require soil disturbing construction activities for both sites to be managed in accordance with best practice guidelines for preventing discharge of sediment to the downstream environment. Application of the best practice guidelines will result in negligible sediment discharges from each site, and therefore negligible cumulative environmental effects.

CUMULATIVE EFFECTS ASSESSMENT

Considering both projects together, the Haldon Solar Farm and Twizel Solar Project have been assessed to pose negligible cumulative adverse stormwater and flood hazard effects.

Given both sites are situated within the highly modified and externally controlled environment of the Waitaki Hydroelectric Scheme, and both developments include controls which mitigate effects of the development on the receiving environment, it is considered unlikely that cumulatively the solar farms will have any adverse hydrological effects. Water quality and erosion and sediment control risks will be required by conditions of consent to be managed appropriately to ensure downstream effects are negligible.