

5th April 2023

Matthew Clark
Transpower and Gas Manager
Commerce Commission
PO Box 2351
WELLINGTON

Dear Matthew,

Notice of intention to plan the Upper South Island Stage 2 regional major capex project.

This letter is notice under clause 3.3.1(1) of the Transpower Capital Expenditure Input Methodology Determination 2012 (**Capex IM**) of Transpower's intention to plan a major capex project which may become a proposed investment.

Investment need

Based on our latest demand forecasts (as outlined in the 2022 Transmission Planning Report),¹ we have identified that the supply into the USI over the 220 kV network has both thermal and voltage stability constraints:

- *Thermal capacity* – we forecast that the thermal capacity of the existing Waitaki Valley-Christchurch circuits will exceed the n-1 capacity limit by 2028/29.
- *Voltage stability* – based on recent forecasts the need dates for voltage stability and thermal capacity constraints lie between 2026 and 2029. The outcome of the upcoming static and dynamic voltage investigation will refine these dates.

The above issues highlight an investment need to meet the **grid reliability standards** in the USI region. We expect the overall capex to exceed \$20m.

Although we refer to this project as USI Stage 2, it is a new project. The USI Stage 1 project, (approved in 2013), pre-dated the introduction of 'staged' major capex projects within the Capex IM.

Proposed timetable

Subject to agreement with the Commission, our high-level timetable for this investigation is below. Building on our work to date and specifically our previous consultations, we propose to work with the Commission on identifying the most efficient and expedient approach to advancing this project.

¹ [2022 Transmission Planning Report.pdf \(amazonaws.com\)](#), Section 6.9.

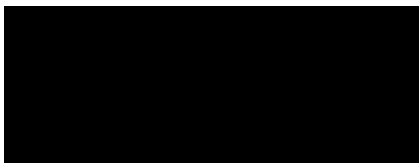
Date	Action
June 2023	Publish long list consultation
August 2023	Long list consultation closes
December 2023	Publish short list consultation
January 2024	Short list consultation closes
May 2024	Submit major capex proposal

Within our long-list consultation we plan to provide respondents with 8 weeks to respond on the potential for non-transmission solutions. Depending on responses we may undertake further engagement to ensure we have adequately considered potential options.

Our intent is to consult on the demand forecasts and key assumptions we should use for this project as part of our long-list consultation. We are aware that new Electricity and Generation Demand Scenarios (EDGS) may be released post our long-list consultation, but prior to our submission of a proposal. If this occurs, we will assess if there is a need to update our forecasts.

We look forward to working with the Commission to agree on the timetable, including the approval timeframe, and the other matters in clause 3.3.1(3) of the Capex IM.

Yours sincerely



Stephen Jones
System Planning and Investment Manager

Annex 1: Background

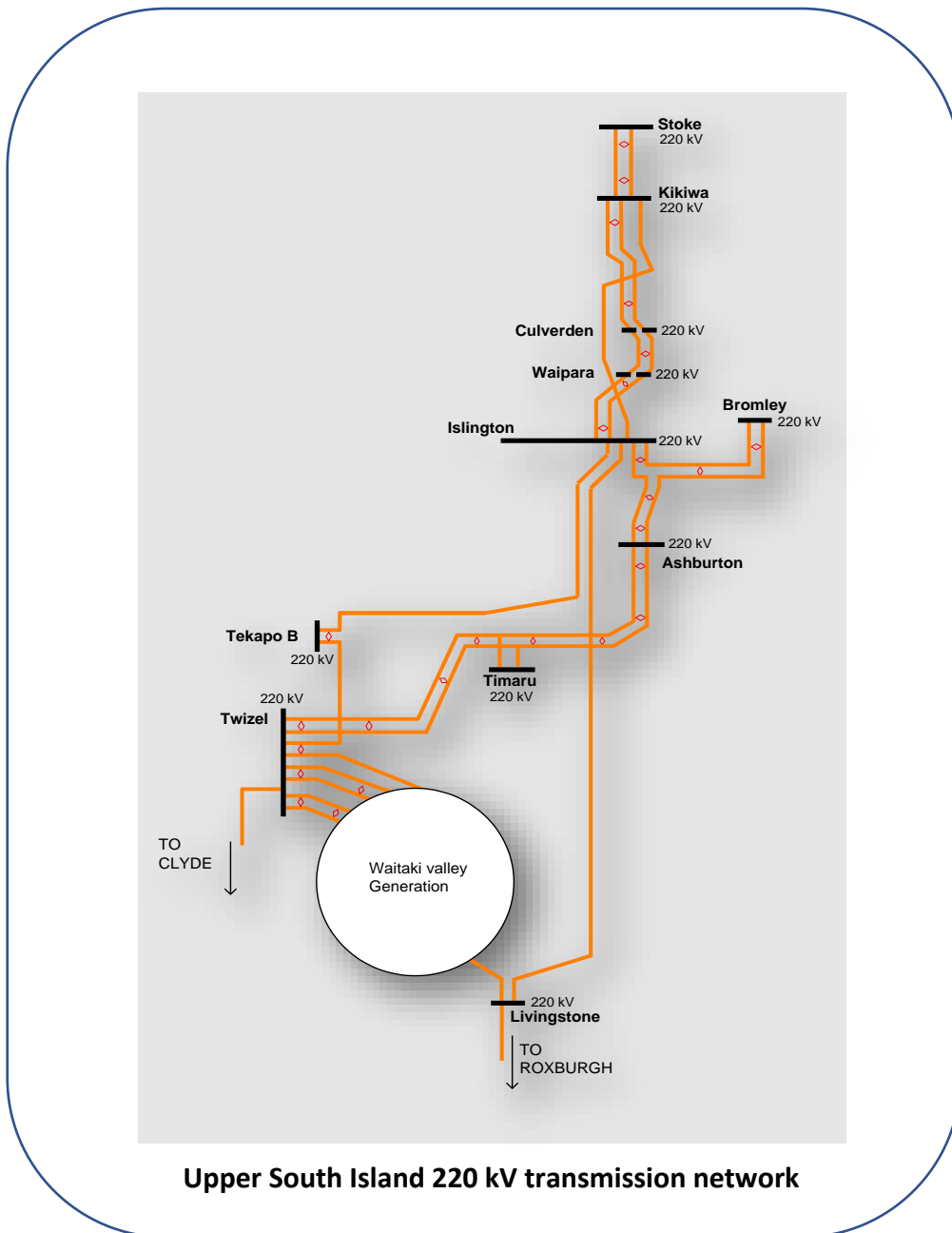
The Upper South Island (**USI**) region is supplied by four 220 kV circuits which connect Christchurch to generation in the Waitaki Valley. These circuits are:

- a single circuit line from Twizel to Islington
- a single circuit line from Livingstone to Islington
- a double circuit line from Twizel to Islington and Bromley.

Three 220 kV circuits from Islington to Kikiwa supply the entire Nelson–Marlborough region and part of the West Coast region. The USI region is illustrated in the below diagram. The USI region does not have enough electricity generation to meet USI demand. Our generation scenarios do not forecast any significant new generation entering the region. Thus, as USI demand increases, flow over the 220 kV lines from the south will increase and capacity constraints will bind.

The generation shortfall in the region is supplied via our transmission lines from the Waitaki Valley. Such long-distance transmission increases the need for voltage support. Without a reasonable amount of local generation, or adequate voltage support from other means, this can lead to static and dynamic voltage instability following faults on the grid. This could cause electrical devices, such as electrical motors and generators to trip off, potentially causing widespread loss of supply in the USI region.

In addition, since the Stage 1 investigation two new GXP's are now underway to accommodate demand growth and address regional supply needs. One nearing completion at Norwood, near Christchurch and another planned for commissioning in the Lower Waitaki. Both are connected to the Islington-Livingstone circuit and each will have a material impact on voltage stability limits and the need for Upper South Island investment.



Studies that we undertook in 2012 indicated that investment in voltage support was required by 2014. However, long-term demand growth was particularly uncertain – the long-term effects of the Christchurch earthquakes were unclear and irrigation load had been growing rapidly against an unprecedented background of zero overall demand growth.

Our 2012 investigations looked at long-term development plans that would ensure voltage stability in the USI until a new transmission line is built between the Waitaki Valley and Christchurch. Because the immediate need was relatively urgent, but the longer-term outlook uncertain, we decided to split the investment into stages.

- Stage 1, a relatively low-cost investment in a new bus coupler at Islington – a short term deferral
- Stage 2, a second (and potentially much larger) investment.

The USI Stage 1² proposal sought funds to install a sixth 220 kV bus coupler at Islington. This was a low-cost measure which allowed end-of-life voltage stability equipment at Islington to be decommissioned and at the same time ensured no voltage instability issues in the short-term. Building a switching station(s) at Orari was the leading option to meet the next need date in our Stage 1 investigation. The Stage 1 proposal also sought funds to investigate future switching station options further. We submitted our Stage 1³ proposal in June 2012 and it was approved by the Commerce Commission in February 2013.⁴

In March 2013, we consulted with our stakeholders on our approach, assumptions and long list of transmission and non-transmission solutions for USI Stage 2. However, changes to our demand forecast, coupled with low levels of demand growth, led to a review⁵ of the need date for Stage 2 and the project was placed on hold.

In 2014 Transpower applied to amend the USI Stage 1 project's approved major capex project outputs. The Outputs Amendment Application⁶ was approved by the Commission on 26 February 2015.⁷ The main change made by the amendment was adding the ability to secure designations and property rights for two future potential switching station(s) at Orari.⁸ This was to ensure the switching station(s) could be commissioned in time if it proved to be the preferred option at Stage 2. This Output Amendment has allowed this option to remain possible, although does not preclude any Stage 2 long-listing and short-listing process which may result in a different preferred solution.

² We referred to this investment as a the USI Stage 1 Project as it was always expected that this would be a multi-stage investment. However, although this language was used, the USI Stage 1 MCP pre-dated the introduction of staged MCPs to the Capex IM.

³ [Upper South Island Grid Upgrade Stage 1 MCP Proposal, April 2012](#) .

⁴ [Commerce Commission's decision and reasons paper for USI Grid Upgrade Stage 1 MCP, 13 February 2013](#).

⁵ This review reflected our general planning approach of regularly reviewing demand forecasts and need dates for major capital projects.

⁶ [Transpower's application to amend the allowance and outputs for the USI Stage 1 Project - August 2014](#)

⁷ [Commerce Commission's Final decision on Transpower's application for an Outputs Amendment to Upper South Island Stage 1 - 26 February 2015](#).

⁸ These designations and property rights have now been obtained.