

# OTERANGA BAY TO HAYWARDS A LINE (CHURTON PARK SECTION) RECONDUCTORING

ATTACHMENT C: STAKEHOLDER CONSULTATION SUMMARY

**Transpower New Zealand Limited**  
*Keeping the energy flowing*



# 1 Introduction

This attachment documents the Stakeholder Consultation Summary for the Churton Park section of the Oteranga Bay to Haywards A line reconductoring listed project application.

## 1.1 Purpose

The purpose of this document is to outline stakeholder consultation and feedback to Transpower on the proposal to replace the Churton Park section of conductor on the Oteranga Bay to Haywards A line and Transpower’s response to that feedback.

## 1.2 Document Structure

This document forms part of the Churton Park section of the Oteranga Bay to Haywards A line reconductoring listed project application.

## 1.3 Stakeholder engagement to date

Date	Activity
December 2016	Request for Information and Long-list of Options
December 2017	Consultation on our draft Listed Project Application
February 2018	Outage options forum
April 2018	Outage modelling and capital cost update

Details of this consultation can be found in the following sections.

## 2 December 2016 stakeholder consultation: summary of submissions with Transpower responses

This section summarises submissions received on our long-list consultation paper *Oteranga Bay to Haywards A line (Churton Park section) reconductoring of December 2016 (Long-list consultation)*<sup>1</sup>. Below we have endeavoured to summarise submitters' key points briefly: please refer to their submissions for further detail.

Submissions were received from:

- Meridian
- Mercury
- Contact

We include the submitters' comments against the nine specific questions asked in the consultation report, plus any general comments of relevance to specific questions. We also provide our response to each issue raised.

The questions are listed under the relevant subject heading from the long-list consultation report.

### 2.1 Need and project scope

Q1 *Are there any other considerations relating to the need that we should incorporate into this project?*

Mercury and Meridian raised no other considerations. Contact agreed on the need for the investment. It raised two additional considerations:

#### Extending the outage window over two summers

Contact asked if there is a case for spreading the outage window over two summers to mitigate the risk that South Island storage is above mean at that time.

Spreading the outage window over two summers would most likely reduce the probability of spilling water if lakes were high at the start of the outage period. The length of outage window would be shorter hence the lakes would also be full for a shorter period of time.

The Jacobs report (ref: Attachment A in the Long-list consultation) found that if there was a wet summer in the South Island and dry in the North Island, the benefits of a bypass line would exceed the cost. Without a bypass line there would be relatively more North Island thermal dispatched, and also a higher probability of hydro spill in

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<sup>1</sup> The consultation paper, the non-confidential submissions and this document are available at <https://www.transpower.co.nz/oteranga-bay-haywards-churton-park-section-reconductoring-investigation>

the South Island. This would result in higher overall system costs, compared to a scenario with a bypass line (or a scenario with both poles still in service).

**Transpower response:** *We do not think there is an economic justification to spread the outage over two summers.*

*We agree that extending the outage over two summers could help mitigate the risk of spilling water and provide market benefits. There would also be higher overall construction costs since the site set-up and crew mobilisation costs would be replicated in the second year. In Attachment D we assessed the costs and benefits of this outage (Alternative 3). It shows the additional capital costs of \$3.5 million outweigh the expected market benefits. The net benefit (present value) is less than our preferred outage window.*

### **Delaying the outage if hydro storage is high**

Contact also asked if the project would still proceed if storage is abnormally high (and the bypass is not built).

**Transpower response:** *It is our intention to continue with the work if storage was abnormally high. There would need to be exceptional circumstances for us to reconsider this approach.*

*Any re-scheduling that occurs comes with significant costs. For example, enabling works will occur during Spring 2019, so rescheduling an outage at the last minute would incur significant additional project costs with site preparation costs needing to be replicated in the subsequent year. There is also no guarantee that the re-scheduled outage time would provide better hydro conditions.*

*There will be a 6 week outage (including testing) required in summer 2020 to replace Pole 2's valve based electronics (VBE). It makes sense to align the reconductoring work with the VBE outage in order to reduce the total number of outage weeks.*

*By indicating the need to undertake this work well in advance we consider market participants have an opportunity to manage their financial risk through use of financial transmission rights and other measures, as well as, the lake levels themselves.*

*If there is a grid emergency or security is at risk, there are systems and tools already in place to manage these eventualities.*

## 2.2 Long list of options

**Q2** *Do you agree that non-transmission solutions are not suitable to meet this transmission need?  
If not, please provide information that allows us to assess the non-transmission solution against the need described in Section 1.*

All submitters agreed that non-transmission solutions are not suitable.

**Q3** *Are there any other options we should consider in our long list?*

No further long-list options were suggested by the submitters.

## 2.3 Outages during construction

**Q4** *Do you agree that we should not consider non-transmission solutions during construction?  
If not, please provide information to allow us to assess the ability of the non-transmission solution to provide security of supply during construction.*

All submitters agreed that we should not consider non-transmission solutions during construction.

## 2.4 Mitigating the market impact of outages

**Q5** *Do you agree with our conclusion that we should not use a bypass line during construction as it is not economically justified?  
If not, we welcome feedback on this conclusion.*

One submitter agreed that a bypass is not economically justified, while two submitters disagreed.

### Reducing the outage duration

Meridian pointed out that under some scenarios the bypass can be economically justified. It would like Transpower to consider the option of using more linesman and reducing the duration of the outage.

**Transpower response:** *We have further considered this point. Our base case project costs assume two lines crews will be working simultaneously. We also considered introducing a third crew during our detailed constructability investigation, but found the additional crew costs exceeded the benefits (in terms of reduced time). Adding a third crew provides diminishing returns due to the size and nature of the reconductoring project. We have modelled the impact of this alternative (outage alternative 4) in Attachment D.*

### Using North Island AUFLS to increase the reserved constrained capacity of a DC pole

Contact wanted Transpower to do more work to account for the reserve constrained capacity of the DC on a single pole. Contact estimated that the capacity would be limited to around 400MW. It wanted to know if we had considered using North Island AUFLS to increase the reserved capacity of a DC pole to its rated capacity.

AUFLS is the acronym for Automatic Under-Frequency Load Shedding and describes the set of relays in New Zealand which automatically trip blocks of load, following a severe under-frequency event, to restore the system frequency.

The System Operator relies on these relays to prevent system collapse following under-frequency events which have the potential to cause a system black-out.

New Zealand's current AUFLS scheme is made up of two blocks of at least 16% of demand in each island. This means that 32% of customers' load can automatically disconnect to restore stability to the power system following the loss of net injection which drops the system frequency to below 48Hz.

**Transpower response:** *The System Operator has considered Contact's request to utilise the AUFLS scheme to manage frequency and assist reserves during a planned HVDC Pole outage. The AUFLS scheme is a security tool and last back stop for the security of the power system. Recent events have shown that AUFLS is very necessary to prevent significant issue or failure of the power system. Using this tool for any purpose other than that for which it was designed creates a risk. This risk is currently not acceptable for the System Operator.*

*As a reasonable and prudent system operator, Transpower formulates and operates to the policies contained within the Policy Statement. These policies set out clear understanding for all industry participants to allow consistency and transparency of operation. Changes to policy are undertaken in consultation with industry through the regular Policy Statement review process. This would be the most appropriate forum through which this potential change to policy should be voiced.*

### Lead time

Contact wanted to know what is the lead time to build the bypass "based on Tiwai's notification to time to shut down or reduced demand" (sic).

The Jacobs report (Attachment A in the long-list consultation) found that if Tiwai was closed, the benefits of a bypass line would exceed the cost. However, in their modelling, they assumed (section 4.4) that lower South Island transmission constraints would be alleviated, which is unlikely to occur before the outage for this project.

**Transpower response:** *Three years lead time would be required to build a bypass line. We do not consider the bypass line to be a "last minute" mitigation option. Given the current market conditions, we have ruled out the bypass since it does not produce a net benefit. Should Tiwai close the current transmission constraints would take 3 years to resolve, which is outside of the reconductoring timeframe. Further details can be found in our preferred option consultation section A3.6.*

## 2.5 Short-listing criteria

Q6 *Are there other criteria we should consider when evaluating our long-list of options?*

Meridian and Contact responded “no”. Mercury answered “yes”, the outage timing is very important.

### Outage timing

Mercury commented that the market impact of an outage could be lesser around December/January (compared to January/March which is Transpower’s preferred outage window). It said this may impact the long-list evaluation process.

**Transpower response:** *A December start would not allow sufficient time to reconnector one complete pole circuit leading up to the Christmas and New Year period. We estimate reconnectoring one circuit will take a minimum of eight weeks at this time of year, possibly longer if unusually windy or wet. We plan to use two full wiring crews plus specialist support teams with an overall workforce of approximately one hundred lines workers. For the health, safety and welfare of the staff involved we would have a Christmas – New Year break in the work.*

*In order to complete by Christmas, we would have to commence work in late-October. Pre-January the weather is less settled with higher wind speeds, more rain and wet ground conditions that would hamper productivity. Enabling work such as site access tower strengthening and stringing preparation would need to be done over winter or early spring which is more costly and causes greater disturbance for landowners.*

*Recommencing work on the second pole circuit in January would require another six-week outage, for an overall outage of time of 14-15 weeks. Alignment of the Pole 2 electronics replacement may fit within the January outage, however testing, (where the pole is effectively out of service), is expected to take a further 10 days, for a total outage of 15-16 weeks.*

*We estimate the additional capital costs of commencing in October/November and completing work in March as \$1m, assuming all enabling work can be done in time for a November start.*

*We undertook analysis that can be found in Attachment D, which models the costs and benefits of this outage (Alternative 2) and it has a net benefit (PV) that is ~\$900,000 less than our preferred outage option. It also adds significantly more risk that the project will take longer due to weather conditions.*

## 2.6 Market development scenarios

**Q7** *Are these market development scenarios appropriate for this investigation? If not, we welcome specific information regarding changes.*

Mercury answered “yes”. Meridian answered no but provided no further details.

### Alignment of Tiwai closure and Huntly retirement

Contact commented that the scenario of Tiwai closing and Huntly Rankine units retiring should be combined as the latter will occur with the notice for closure.

**Transpower response:** *We have reviewed the EDGS assumptions<sup>2</sup> and MBIE assumes in its scenarios that the Huntly Rankine units retire in their “Tiwai Off” scenario. However the timings are different, MBIE assumes Tiwai closes in 2018, while MBIE assumes the Rankine units are decommissioned in 2020.*

*The Tiwai closure would result in a transmission constraint between Roxburgh and Benmore which would take a further 3 years to resolve after the closure. We believe MBIE has therefore decided to align the Huntly closure with the resolution of this constraint (after which we would see substantially higher HVDC flows north).*

## 2.7 Investment test parameters

**Q8** *Are these investment test parameters appropriate for this investigation? If not, we welcome specific information regarding changes.*

All submitters responded “yes”.

## 2.8 Expected Net Electricity Market Benefit

**Q9** *Are there other market costs or benefits which should be reflected in the analysis?*

Meridian replied “no”. The other submitters suggested two additional issues be considered.

### Price separation costs

Contact suggested that Transpower evaluate price separation costs, as these can increase costs to the end consumer. By price separation costs we assume Contact refers to North island prices “separating” from the South Island price.

**Transpower response:** *We have estimated net market benefits by assessing the system fuel costs with and without the outage. An increase in system fuel costs will increase spot prices and so affect consumer prices.*

<sup>2</sup> <http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/modelling/electricity-demand-and-generation-scenarios/edgs-2016#assumptions>



*Price separation can result in value transfers between spot market participants if they are not sufficiently hedged. We currently assume that price separation, if it does occur, would not have a material impact on consumer prices. The losses for one gentailer would be counteracted by gains for another. Gentailers will also have an opportunity to hedge their positions before the outage in order to reduce the financial consequences for themselves.*

*Our understanding is that such wealth transfers should not be considered in our assessment of electricity market benefits as described in Schedule D of the Capex IM.*

### **Outage timing**

Mercury said that the market cost / benefits need to be assessed with the outage moved to a different time of the year.

**Transpower response:** *We undertook this analysis and it can be found in our Preferred option consultation, which we have repeated in Attachment D. We did not find benefits in changing our approach in response to this analysis.*

### 3 December 2017 preferred option stakeholder consultation: summary of submissions with Transpower responses

This section summarises submissions received on our preferred option and application of the investment test consultation paper<sup>3</sup>. Below we have endeavoured to summarise submitters' key points briefly: please refer to their submissions for further detail.

Submissions were received from:

- Meridian
- Contact

We include the submitters' comments against the five specific questions asked in the consultation report, plus any general comments of relevance to specific questions. We also provide our response to each issue raised.

The questions are listed under the relevant subject heading from the preferred option consultation document.

#### 3.1 Need and project scope

*Q1 Are there any other considerations relating to the need that we should incorporate into this project?*

Contact and Meridian raised no other considerations.

#### 3.2 Assessment of the Long List of Options

*Q2 Do you agree with our assessment of the long-list?*

Meridian answered Yes and Contact made no comment.

#### 3.3 Analysis of costs and benefits for this project

*Q3 Do you have any comments on our analysis of costs and benefits for this project?*

Both Contact and Meridian consider further work to be warranted on the potential costs and benefits of a partial bypass line. Both Meridian and Contact would also like Transpower to consider the costs and benefits of maintaining flexibility to return to bi-pole operation at certain break points throughout the project to enable the rebalancing of generation.

<sup>3</sup> The consultation paper, the non-confidential submissions and this document are available at <https://www.transpower.co.nz/oteranga-bay-haywards-churton-park-section-reconductoring-investigation>

**Transpower response:** *We have subsequently considered these options and consider that our best option is to continue with our planned approach. This is discussed more in the main proposal document “Mitigating the impact of outages for construction works.”*

### 3.4 Application of the Investment Test

**Q4** *Do you agree with our assessment of the preferred solution and our application of the Investment Test?*

Meridian answered Yes and Contact made no comment.

### 3.5 Material changes in cost

**Q5** *What would you consider a material change in cost?*

Contact consider further consultation to be warranted on options for a partial bypass line.

This further consultation would also provide Transpower with an opportunity to consult on updated project costs, which are currently being refined and further investigated.

**Transpower response:** *We have subsequently considered a partial bypass option and found that the small reduction in outage time is not worth the additional cost. This is discussed more in the main proposal document “Mitigating the impact of outages for construction works” and Attachment D – Outage Modelling Report.*

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## 4 February 2018 – Industry Outage Alternatives Forum

On Friday 23<sup>rd</sup> February 2018 we hosted an *Industry Forum* to present our analysis of outage option alternatives to interested parties. The notes from this session can be found on our project website<sup>4</sup>.

Some stakeholders continued to raise concerns about the outage length and suggested use of various mitigation options such as: returning both circuits to service part way through the outage, a partial by-pass line, and a electrode by-pass line. They also asked for more modelling detail to be provided. Our analysis of these options and the additional modelling detail is provided in Attachment D: Outage Modelling Report.

## 5 April 2018 – Outage modelling and capital cost update

This update gave further details of the modelling we undertook around required outages for this project in response to requests for further details by stakeholders.

We also provided information about updated capital costs for the project. These increased 34% since our preferred option consultation due to higher than expected property and access costs.

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<sup>4</sup> <https://www.transpower.co.nz/oteranga-bay-haywards-churton-park-section-reconductoring-investigation>