12 December 2019

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CC: MBIE, Gareth.wilson@mbie.govt.nz

Reporting of Contact and Meridian's breaches of the High Standard of Trading Conduct requirements and Undesirable Trading Situation

Dear James,

Haast Energy Trading considers that both Contact Energy and Meridian Energy's conduct during the relevant trading periods:

- Breached the High Standard of Trading Conduct (HSOTC) provisions (clause 13.5A) of the Electricity Industry Participation Code (the Code);
- Fell outside the clause 13.5B safe harbour provisions in the Code; and
- The nature and scale of the HSOTC breach – specifically the manipulative trading activity and quantum of the wealth transfers – also qualifies as an undesirable trading situation (UTS) under Part 5 of the Code.

Our simulations show Meridian's generation business has extracted excess revenue of $38m in the period since 10 November 2019 and Contact's by $23m. We consider that the scale of monopoly pricing goes well beyond a breach of the HSOTC provisions and amounts to a UTS.

Please find attached the Notice of Breach forms for a HSOTC and UTS. We are joined in the HSOTC and UTS breach complaints by ecotricity, Vocus, Electric Kiwi, Flick Electric, Oji Fibre, and Pulse Energy Alliance.

HSOTC versus UTS

Haast considers that Contact and Meridian have breached both the HSOTC and UTS provisions of the Code. We note the definition of a UTS specifies that:

> "undesirable trading situation means any situation— (a) that threatens, or may threaten, confidence in, or the integrity of, the wholesale market; and (b) that, in the reasonable opinion of the Authority, cannot satisfactorily be resolved by any other mechanism available under this Code (but for the purposes of this paragraph a proceeding for a breach of clause 13.5A is not to be regarded as another mechanism for satisfactory resolution of a situation)."

This means that a breach of the HSOTC Code provisions can also be a breach of the UTS provisions.

The date and time the alleged breach occurred

The relevant trading periods for the alleged breach include hundreds of trading periods from 11 November 2019 onwards and the situation remains on-going. From approximately November 10 Meridian has been spilling water from Lake Manapouri into the Waiau river. Meanwhile, Contact have had sufficient flow at Clyde (generally >850 cumecs[1]) to run their Clyde and Roxburgh stations at maximum capacity 24/7 but have foregone this opportunity to generate and spilled water to prop up energy prices. Both Meridian and Contact have been pricing large tranches of volume at greater than $50 despite spilling hundreds of GWh of water[2], and as a result these stations have not been dispatched as much as they would if their offers reflected the SRMC of the water in these catchments.[3]

Lakes Manapouri and Te Anau both encroached into their high operating ranges around November 10, leading Meridian Energy to commence spill from the scheme in order to satisfy resource consents.

Flows in the Lower Waiau River are controlled by releases of water from the Lake Manapouri Control structure. Meridian must generally maintain minimum flows in the range of 12 to 16 cumecs to satisfy Environment Southland resource consent 96022.[4] Release flows must also increase to equal the flow in the Mararoa River when turbidity increases beyond the consented threshold in that river. With rare exceptions for environmental releases, flows in the lower Waiau river in excess of the Mararoa river flow indicate that Meridian is spilling water from Lake Manapouri. Data from Environment Southland indicates that this has been the case continuously since 10 November.[5]

Lake Manapouri water level

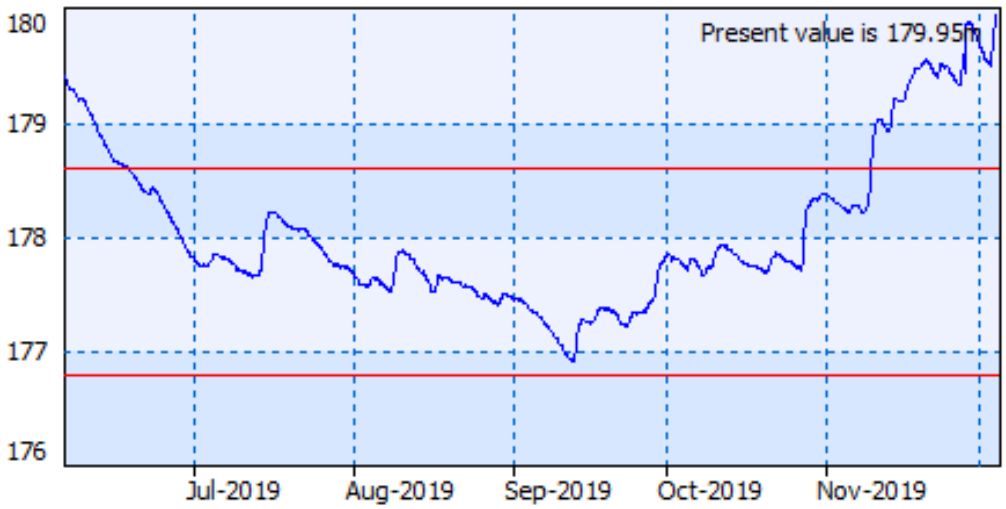

Figure 1: Lake Manapouri water levels. The red lines demarcate the normal operating range of the lake, and it can be seen that the lake entered its high operating range around 10 November

[1] Cubic metres of water per second

[2] For example the spill in cumecs at Manapouri since 3 December has exceeded the maximum consumption of the power station itself (circa 520 cumecs).

[3] The attached spreadsheet details trading periods where Clyde (CYD) and Manapouri (MAN) separately had bands priced to >$5 while they were spilling. (Periods where Manapouri or Clyde was spilling AND maintaining offers above 5 dollars.xls) We chose $5 to reflect: (i) the water value was virtually $0 for the entire period (11th Nov to 9 Dec), but there may be some O&M costs etc which could mean SRMC is above zero.

[4] https://www.es.govt.nz/repository/libraries/id:26gi9ayo517q9stt81sd/hierarchy/about-us/plans-and-strategies/regional-plans/proposed-southland-water-and-land-plan/documents/background-documents/evidence/ENV-2018-CHC-000038%20-%20Meridian%20Energy%20Ltd%20

[5] http://envdata.es.govt.nz/

Lake Te Anau water level

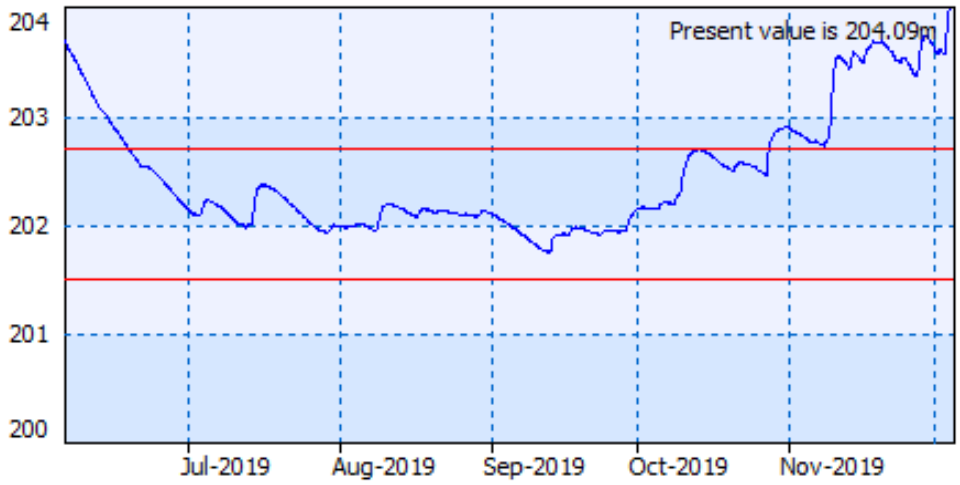

Figure 2: Lake Te Anau water levels. The red lines demarcate the normal operating range of the lake, and it can be seen that the lake entered its high operating range in late October, then rose further around 10 November.

Mararoa water flow

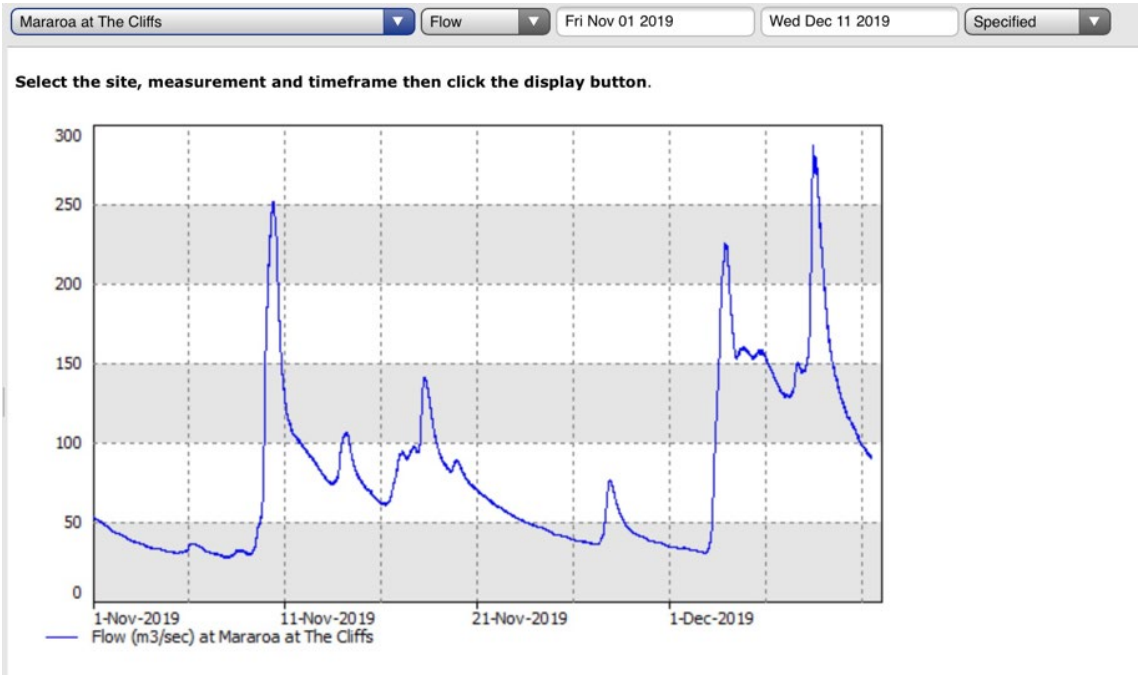

Figure 3: Mararoa river flows (in cumecs), upstream of the Manapouri Control Structure.

Waiau River water flow

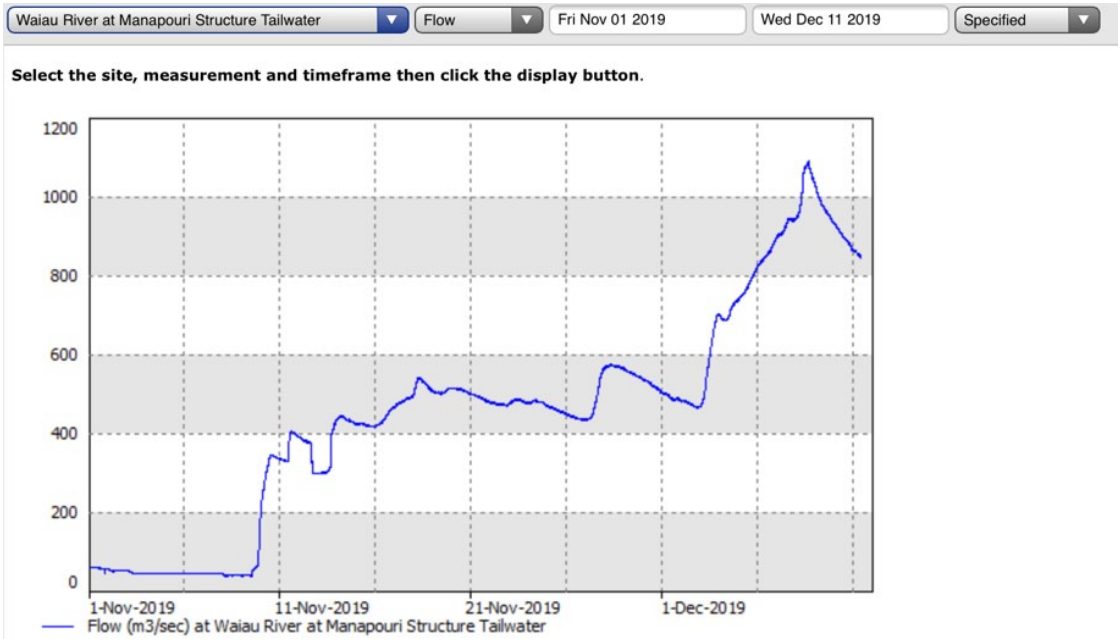

Figure 4: Waiau river flows (in cumecs) immediately downstream of the Manapouri Control Structure. The flows well in excess of Mararoa river flows since 10 November indicates the balance has come from Lake Manapouri

Clutha River water flow

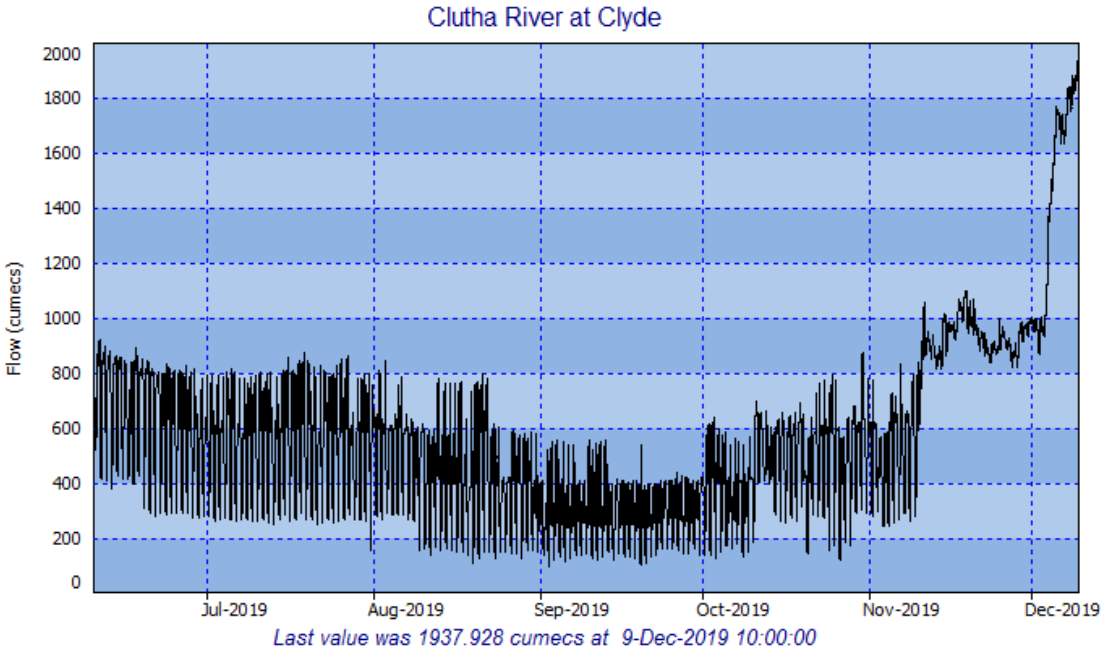

Figure 5: Clutha River flows at Clyde. The flow since 10 November, generally above 850 cumecs, would have been sufficient to run the Clutha scheme near full capacity.

Circumstances of Meridian's breach

Meridian has been spilling water at the Manapouri Power Scheme (Manapouri) during the relevant trading periods. The spill is of the same order or magnitude as the maximum water consumption of the power station (circa 520 cumecs).

The spilling of water means the 'opportunity cost' or value of water is zero during the relevant trading periods and the short-run marginal cost (SRMC) of generating electricity at Manapouri is near zero.[6]

Meridian has offered in tranches of Manapouri hydro generation at well above its SRMC even though it is spilling water at the same time. It was able to do this by misusing its market power. For example:

- From 13 November to 9 December generation of 100MW to 200MW+ at Manapouri was frequently made available only at prices above $450 during off-peak periods, and from 6 December water has also been priced up during peak periods.[7]

- In the same period, Meridian has exercised its market power through actively managing its Waitaki offers[8] prior to gate closure to ensure overnight Benmore prices are maintained in a $50 to $70 range.[9]

Circumstances of Contact's breach

The Clyde Power Station has an energy conversion rate of approximately 0.52 MW/cumec and a maximum generation capacity of 464MW (previously 432MW), meaning flows of roughly 890 cumecs are required for maximum generation. The Roxburgh Power Station has an energy conversion rate of approximately 0.40 MW/cumec and a maximum generation capacity of 320MW, meaning flows of roughly 800 cumecs are required for peak generation.[10] Essentially the same flows pass through each station, barring the addition of the Manuherekia river and some minor tributaries downstream of Clyde[11]

The flow in the Clutha River downstream of the Clyde Dam has averaged over 900 cumecs since 11 November, yet generation from Clutha from 11 November to 9 December averaged approximately 600MW against the scheme's total capacity of 784MW, and often dropped nearer to 300MW overnight. Contact has repeatedly offered zero-value water into the market at prices greater than $50 to prop up spot prices, intentionally spilling more water than necessary. [12]

[6] The Electricity Authority provides the following definition of the "opportunity cost" of water:
"The opportunity cost of using water to generate electricity today is the value of using it at some time in the future to generate electricity, or its value in some other use, such as, irrigation, recreation or conservation of the environment". Reference: Dr Brent Layton, Chair, Electricity Authority, The Economics of Electricity, 4 June 2013, paragraph 17.
[7] Refer to Appendix 1.
[8] Refer to Appendix 2
[9] Refer to Appendix 9.
[10] Refer to Tables 6 and 7 of this document: http://www.epoc.org.nz/papers/EMBEROnlineCompanion.pdf
[11] Refer to: https://www.orc.govt.nz/managing-our-environment/water/water-monitoring-and-alerts
[12] Refer to Appendix 3.

Impact of the manipulative trading activity

To assess the impact of Contact and Meridian's manipulative trading activity Haast used the vSPD-online tool[13] to produce a counter-factual scenario with all of the available Waiau and Clutha plant offered into the market at $5.[14] A level of $5 was chosen to reflect a near zero water value but some small variable operations and maintenance costs.

The impact of Contact and Meridian's manipulative trading activity has included:

- higher than otherwise wholesale electricity prices (resulting in adverse allocative efficiency impacts and wealth transfers from consumers to generators, including Contact and Meridian). Our simulations show Meridian's generation business has extracted excess revenue of $38m in the period since 10 November and Contact's by $23m.[15] The following graph (Figure 6) shows the difference of approximately $30 between actual prices and the prices that would have arisen if Contact and Meridian hadn't artificially raised their offer prices.[16]

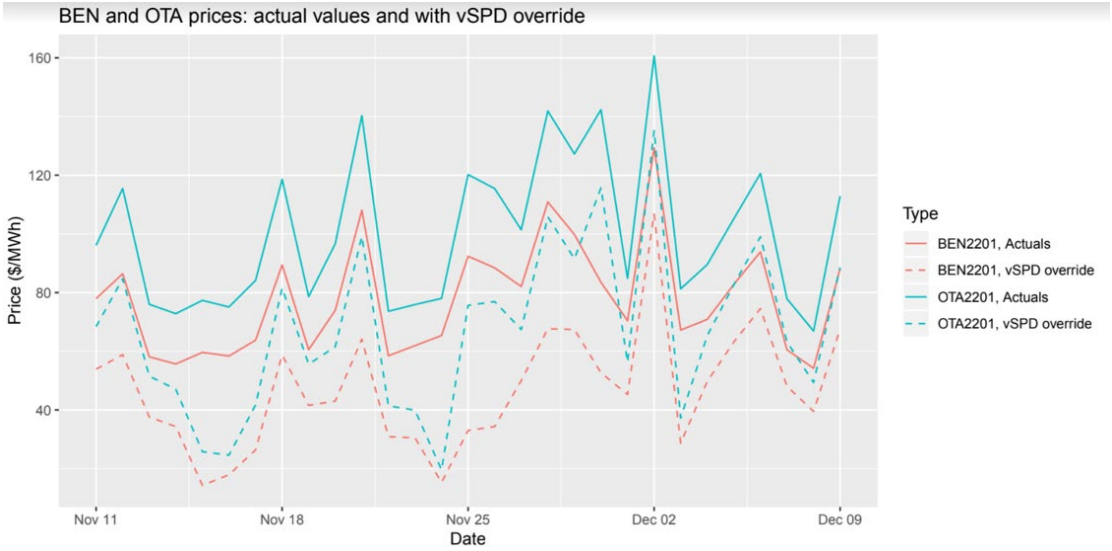

Figure 6: There is a clear and consistent reduction in market prices in the simulated scenario for BEN and OTA (dashed lines)

- additional and unnecessary water spill (productive inefficiency). Our simulation indicates that if the full generation capability of the Waiau and Clutha plant had been offered into the market at $5, then an additional 109 GWH of generation would have been dispatched from these schemes that has been instead been spilled;

- inefficient and higher use of North Island hydro, wasting storable water in the North Island during off-peak hours (productive inefficiency). Our simulations show that 15GWh of North Island water was used needlessly and could have been supplanted by spilled South Island water;[17]

[13] https://www.emi.ea.govt.nz/vSPD-online
[14] Refer to Appendix 6 for a full list of assumptions
[15] This is based on assumption that the SRMC for Clyde, Manapouri and Roxburgh was $5. We chose $5 to reflect: (i) the water value was virtually $0 for the entire period (11th Nov to 9 Dec), but there may be some O&M costs etc which could mean SRMC is above zero.
[16] Refer Appendices 6, 7, and 8.
[17] Refer to Appendix 4.

- inefficient and higher fuel cost (above zero) thermal (gas and coal) power generation in the North Island (including Huntly) during off-peak hours (productive inefficiency). Our simulations show that 11GWh of Huntly thermal generation could have been supplanted by spilled South Island water;[18]

- higher carbon dioxide (CO2) emissions for New Zealand. Our analysis indicates 6000 tonnes of CO2 emissions could have been avoided. The additional coal-fired generation at Huntly also generates other forms of air pollution including sulfur dioxide, nitrogen oxides, particulate matter (PM), and heavy metals (see Figure 7 below). For the excess CO2 emissions analysis, the following emission rates were assumed (tonnes of CO2 per MWh of electricity generated):[19]
    - HLY5: 0.394.
    - HLY1-4: 0.974 if burning coal, 0.581 if burning gas.
    - SFD peakers: 0.506

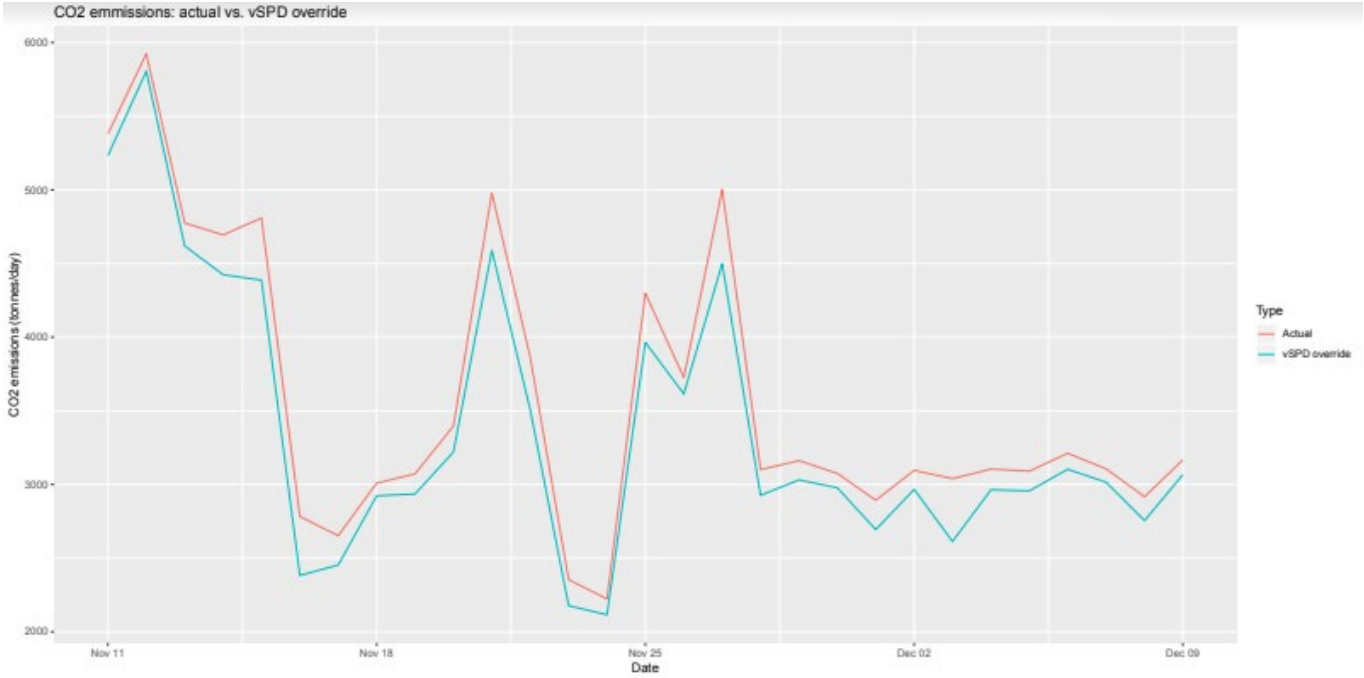

Figure 7: There is a clear and consistent reduction in carbon emissions from electricity generation in the simulated scenario (green line)

The value of water if the storage lake is full is zero

The Electricity Authority has been clear that: "Water has no value in an economic sense when it is so abundant that there are no constraints on the use of water now or in the future in any activity".[20]

[18] Refer to Appendix 5.

[19] NB the source of the CO2 emission rates is as follows: for HLY5 and HLY1-4 when burning coal: Table 12 of this document: https://www.waikatoregion.govt.nz/assets/PageFiles/21888/TR201218.pdf. The figure for HLY1-4 when burning gas was obtained from Tables 10 and 12 of the same document, specifically by multiplying the coal emission rate from Table 12 by the ratio of gas to coal combustion emissions from Table 10 (53.3/89.4). The figure for the SFD peaker was obtained by multiplying its heat rate (9.5GJ/MWh, from http://www.epoc.org.nz/papers/SecurityofSupply-Fulton2018.pdf, Appendix 1) by an estimated CO2 emission rate for gas plant (53.3, from Table 12 of this document: https://www.waikatoregion.govt.nz/assets/PageFiles/21888/TR201218.pdf).

[20] Dr Brent Layton, Chair, Electricity Authority, The Economics of Electricity, 4 June 2013, paragraph 18.

This is reinforced by the Authority's observation that "the opportunity cost of hydro storage … is the value of water preserved for later use"[21] which, by definition, is zero if the water cannot be stored i.e. when water is being spilled.

Consistent with the Authority's view, Poletti has also observed: "If the storage lake is full, and more water is flowing in, there is no value in storing any water for the future, i.e. the opportunity cost of using water is zero".[22]

Contact and Meridian's breaches of the HSOTC Code requirements is unambiguous

Haast considers this to be one of the most unambiguous and clearest breaches of the HSOTC Code requirements.

The fact the 'opportunity cost' or water value is zero when water is being spilt makes it straightforward to compare the generator's offer prices against SRMC to determine whether the generator has mis-used market power to offer generation above workably competitive market levels and raise spot prices.

As we have demonstrated above, it is a relatively straight-forward matter to use vSPD modelling to 'correct' the offer prices to workably competitive levels to determine the level of excess wholesale electricity prices (and excess returns for the generator), as well as other indirect adverse impacts such as increased use of higher cost generation plant (such as Huntly) and higher New Zealand CO2 emissions. The modelling Haast has undertaken reflects the following:

- There was water spilled at Clyde, Manapouri and Roxburgh that could have been used to generate electricity e.g. Contact had sufficient flow at Clyde to run Clyde and Roxburgh near maximum capacity 24/7 since November 11.

- We then assumed that the SRMC for CYD, ROX and MAN water was $5 for the entire period (11th November to 9 December). We chose $5 to reflect: (i) the water value was virtually $0 for the entire period (11th Nov to 9 Dec), but there may be some O&M costs etc which could mean SRMC is above zero.

- We ran an experiment with vSPD where we offered in these stations' full capacity at $5.

- The vSPD results show that prices would have been approximately $30 lower if the CYD/ROX/MAN water was priced at $5.

[21] Dr Brent Layton, Chair, Electricity Authority, The Economics of Electricity, 4 June 2013, paragraph 26.
[22] Stephen Poletti, University of Auckland, Market Power in the NZ wholesale market 2010-2016.

Application of the Authority's statutory objective to determine whether there has been a breach of the HSOTC requirements

Bell Gully has provided the Market Design Advisory Group (MDAG) advice that "In interpreting the trading conduct provisions, we would expect a court to first consider: ... the purpose of the Code as set out in s 32 of the Electricity Industry Act 2010 (the Act)".[23]

The Authority interprets its statutory objective in section 15 of the Electricity Industry Act 2010 (Act) "To promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers" as referring to "workable or effective competition".[24] The Authority also elaborated that it used a short-term, allocative efficiency, benchmark of short-run marginal cost (SRMC) to determine workably competitive market outcomes:[25]

> "… workable competition delivers benefits to consumers by placing pressure on firms to set their prices close to their marginal cost of supply. Prices above this marginal cost of supply cause consumers to forgo goods and services that they value more highly than it costs to supply them. That is an allocatively inefficient outcome, as consumer surplus is forgone." [emphasis added]

Consistent with this, the Authority "… Board also noted that ideally prices in a pivotal supplier situation would … settle at a level just below the short run marginal cost of the next best alternative".[26]

In the Authority's market performance review of the High Prices on 2 June 2016, the Authority took a longer-term, more dynamic, perspective to the meaning of workable competition than it did in its interpretation of its statutory objective:[27]

> "The Authority's underlying benchmark for competition is workable competition. Workable competition is a dynamic view of markets that encompasses prices deviating from long term equilibrium levels as long as barriers to entry are low so that, in the long term, prices move towards competitive levels."

While the two positions are different they are consistent. The positions presented in the Interpretation of the Statutory Objective and the market performance review, individually, only tell part of the story of the outcomes in a workably competitive market: what can be expected is that in the short-term (half-hour by half-hour) pricing is based on SRMC, while in equilibrium (a theoretical construct that is never actually achieved) or on average, over-time, SRMC/prices will tends towards long-run marginal cost (LRMC). The Authority's 2 June 2016 market performance review also explicitly referred to SRMC as being the relevant benchmark[28] and made no reference to LRMC as being relevant to the review.[29]

What this means is that when it is being tested whether prices are consistent with workably competitive markets in any given half-hour, the relevant test is whether generation offers and wholesale electricity prices reflect or exceed SRMC, but when prices are being looked at over an extended period, e.g. over year or longer, the relevant test is whether prices reflect or exceed LRMC. This interpretation is an orthodox economic description of how competitive markets work.

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[23] Bell Gully, INTERPRETATION OF THE TRADING CONDUCT PROVISIONS, Summary of interpretative aids, 27 August 2018.
[24] Electricity Authority, Interpretation of the Authority's statutory objective, section 2.2.1(a).
[25] Electricity Authority, Interpretation of the Authority's statutory objective, section A.22.
[26] Letter from Carl Hansen (CEO, Electricity Authority) to John Hancock (WAG Chair), "Feedback from the Board on WAG discussion paper", 12 April 2013.
[27] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, paragraph 9.4.
[28] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, paragraph 8.24.
[29] The only reference to LRMC was the statement that: "Contact advised that its standard practice is to offer Whirinaki close to its short run marginal cost (SRMC) when covering its own book, and near Whirinaki's long run marginal cost (LRMC) when selling above its contracted position" at paragraph 4.16.

The High Court has also discussed the meaning of workable competition including:

> "A workably competitive market is one that provides outcomes that are reasonably close to those found in strongly competitive markets. Such outcomes are summarised in economic terminology by the term "economic efficiency" with its familiar components: technical efficiency, allocative efficiency and dynamic efficiency. Closely associated with the idea of efficiency is the condition that prices reflect efficient costs (including the cost of capital, and thus a reasonable level of profit)."[30]

> "In a workably competitive market no firm has significant market power and consequently prices are not too much or for too long significantly above costs."[31]

> "Workable competition implies that no player has excessive market power."[32]

> "… workably competitive markets have a tendency towards generating certain outcomes. These outcomes include the earning by firms of normal rates of return, and the existence of prices that reflect such normal rates of return, after covering the firms' efficient costs."[33]

> " … the prices that tend to be generated in workably competitive markets will provide incentives for efficient investment and for innovation."[34]

> "In short, the tendencies in workably competitive markets will be towards the outcomes produced in strongly competitive markets. … The more those tendencies are seen in a market, the more the market can be regarded as workably competitive. And of course, the more competitive the market, the more those tendencies will be seen." [35]

The interpretation Haast takes from the above guidance on workably competitive market outcomes is that:

- Workable competition tends towards strong competition;
- There is no excessive market power or mis-use of market power in a workably competitive market;
- The outcomes of workable competition include productive (or technical), allocative (SRMC pricing) efficiency and dynamic efficiency;
- Prices should reflect the firms' efficient costs and should not result in sustained excessive (above normal) returns. Above normal returns are a temporary reward for superior efficiency;
- In the short-run (half-hour by half-hour) prices should reflect SRMC; and
- In the long-run prices should tend towards or average LRMC.

Contact and Meridian's conduct is inconsistent with the Authority's statutory objective

Haast considers that when Contact and Meridian's trading conduct is compared against workably competitive market outcomes and the statutory objective, the conclusions the Authority reached in relation to Meridian's 2 June 2016 are, at least, equally, if not more applicable, to the conduct that has given rise to this HSOTC breach allegation.

[30] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraph [14].
[31] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraph [15].
[32] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraph [17].
[33] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraph [18].
[34] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraph [20].
[35] WELLINGTON INTERNATIONAL AIRPORT LTD & ORS v COMMERCE COMMISSION [2013] NZHC [11 December 2013], paragraphs [22] – [23].

The high South Island prices, just like for 2 June 2016, was the result of trading behaviour that was inconsistent with the Authority's statutory objective to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

As with 2 June 2016:

> "The high South Island prices … were inconsistent with workable competition … A market is statically efficient if price equals cost in a particular time period. A market is dynamically efficient in a workable competition sense if it tends towards an efficient equilibrium over time. Prices above cost due to innovation or superior performance can occur in a workably competitive market. The high … prices … were inconsistent with workable competition because they did not provide a useful price signal to potential entrants, and it was not the result of innovation or superior performance.
>
> "Meridian's profit from the higher … energy prices … was not a return to innovation or superior performance … The only reason it was able to employ this approach was because of its size—Meridian owns approximately 65 per cent of South Island generation capacity."[36]
>
> "This offer approach contributed to high spot prices … that:
> - did not signal scarcity
> - were not the result of innovation
> - created no useful signal for potential entrants".[37]

Meridian (along with Contact) has again adopted an "offer approach" which has resulted in "prices [moving] away from workably competitive levels"[38] and which "were inconsistent with workable competition".[39] This is clearly reflected in Meridian's Manapouri generation offers exceeding SRMC (based on a zero water value) and resulting in higher than otherwise (above workably competitive market) wholesale electricity prices.

By way of example also, the Authority's conclusions about "Inefficient locational signals" are directly applicable:[40]

> "Raising prices in the South Island when there is abundant supply has the potential to:
> (a) lead to higher South Island retail and hedge prices in the long term
> (b) incentivise over-investment in South Island peaking generation.
>
> "These would be inefficient outcomes if there is fundamentally no supply scarcity.
>
> …
>
> "The high South Island prices also did not provide an efficient signal for more demand response in the South Island. … Under these circumstances, this would mean that demand response providers would simply be avoiding artificially high energy prices, so any entry would be a response to this practice rather than a response to fundamental scarcity in the market."

The nature of the breach was a form of market manipulation

Bell Gully has provided advise to MDAG that "In addition to considering what conduct is acceptable in individual comparable markets, we consider that a court would also be persuaded by evidence that certain standards of conduct are consistent across several markets. In particular, we consider that the universality of the following provisions makes it highly likely that they form part of a "high standard of trading conduct": ... prohibitions on market manipulation, including: ... prohibitions on trading with an improper purpose".[41]

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[36] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, paragraphs 9.1 and 9.2.
[37] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, page ii.
[38] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, paragraph 8.14.
[39] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, section 9.
[40] Electricity Authority, High Prices on 2 June 2016, Market performance review, 18 December 2017, paragraphs 8.3 - 8.6.
[41] Bell Gully, INTERPRETATION OF THE TRADING CONDUCT PROVISIONS, Summary of interpretative aids, 27 August 2018, paragraph 4.6.

The UTS provisions also specify that "examples of what the Authority may consider to constitute an undesirable trading situation" include "manipulative or attempted manipulative trading activity" (clause 5.1(2)(a)).

Contact and Meridian's conduct was a form of "market manipulation" (artificially raising prices above cost-based or workably competitive levels" and had "an improper purpose" (to extract excessive revenues and profits to the detriment of competing retailers and consumers).

Wider environmental and NZ Inc reputational considerations

Haast considers that the wider implications for New Zealand of Contact and Meridian's conduct resulting in New Zealand relying more than necessary on thermal generation, resulting in higher CO2 emissions, is something that should be taken into account in considering the harm caused by Meridian's breach of the HSOTC Code requirements.

The nature of the breach is particularly cynical and hypocritical given Meridian likes to virtue signal about being 100% renewable. Meridian leverages off 100% renewable generation claims to improve its reputation and as part of its branding and marketing while, at the same time, its own actions and market abuses result in higher CO2 emissions.

It should also be recognised the increase in thermal/non-renewable generation resulting from Contact and Meridian's trading conduct also resulted in other forms of pollutants and emissions, from the additional coal-fired generation at Huntly, including sulphur dioxide, nitrogen oxides, particulate matter (PM), and heavy metals

Safe harbour provisions have been breached

Contact and Meridian's trading conduct is in breach of the safe harbour provisions, including as a consequence of the Clyde, Manapouri and Roxburgh offers resulting "in a material increase in the final price at which electricity is supplied" (clause 13.5B(1)(c)(i) of the Code) and Contact and Meridian benefitted "financially from an increase in the final price" (clause 13.5B(1)(c)(iii) of the Code).

We do not consider that Meridian can comply with the safe harbour provision that the "generator's offers are generally consistent with offers it has made when it has not been pivotal" (clause 13.5B(1)(c)(ii) of the Code) as Meridian is pivotal 100% of the time. Haast considers that it is not possible for Meridian to be protected by the safe harbour provisions because it is always pivotal.

With regards to Contact, they have not made offers for all of their available capacity and therefore also cannot be in the safe harbour.[42]

A breach finding would provide important HSOTC precedent

In our 23 August 2019 letter re "16 August 2019 Settlement Meetings" we noted "There is important precedent value from the Authority reaching a decision that Genesis' conduct had breached the HSOTC provisions and in relation to any sanctions that are determined". This is particularly true in relation to Meridian given it wasn't the first time Meridian has breached the HSOTC provisions.

It is clear from the Authority's previous breach finding that Contact and Meridian had been breaching the HSOTC provisions on a regular basis. Despite the Authority's warning at the time, it is clear Contact and

[42] Refer to Appendix 10.

Meridian have continued to conduct themselves in a way that breaches the HSOTC provisions and that this is not simply an isolated or one-off incident.

Haast consider it abundantly clear Contact and Meridian are in breach the HSOTC Code requirements and any reasonably well-informed market participant would have understood their actions were not of a high standard.

A finding that Contact and Meridian had breached the HSOTC provisions would provide useful precedent in relation to how the HSOTC Rules should be interpreted and what is a breach.

Using market power to manage locational price spreads

One of the likely motivations for Meridian and Contact to withhold generation from the spilling reservoirs is to manage the locational prices spreads between the lower South Island and the rest of the market. The Authority board has previous commented "the Board would have expected Meridian to have covered its North Island exposure using other available risk management products or, if it chose not to do that, then to bear the cost of the risk if it eventuates."[43] By continuing to use market power rather than the available hedge instruments to manage locational price risk Meridian and Contact are undermining liquidity in hedge markets and ignoring the warning letter which was issued to Meridian.

Remedy for the breach that Haast is seeking

Haast is seeking that wholesale electricity prices are reset on the basis of a $5 offer price for both Meridian (Manapouri) and Contact (Roxburgh and Clyde). The $5 level is chosen to reflect a near zero water value plus a small O&M component. We would support a sanction that not only required Contact and Meridian to pay back the excess spot prices, but also included a penalty element to send a strong message to generators that they should not use market power or engage in this type of conduct.

We note and support Meridian's view that where "a generator has take[n] advantage of a net pivotal position in circumstances where there is no energy or capacity shortage, prices should be "normalised" by being returned to workably competitive levels" and if "offers are reduced to a level … higher than "normal" … as Meridian has previously submitted, generators could well begin to actively seek net pivotal status".

Meridian's 100%-owned subsidiary similarly commented in favour of resetting offers at SRMC: "SRMC provides more accurate price signals for both buyers and investors. SRMC will also have the highly desirable effect of discouraging generators from exploiting transmission outages which is in the long term interest of consumers".[44]

Concluding remarks

The nature of Contact and Meridian's trading conduct is extraordinary. Wholesale prices are delivering at unprecedented levels in the context of record hydro storage and now relatively low gas prices.

In dry year situations there is uncertainty about the extent to which high prices genuinely reflect market circumstances (with uncertainty about what the genuine value (opportunity cost) of water is) or abuse of market power.

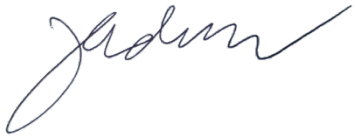
[43] 4 May 2017 Decision regarding Code breach on 6 June 2016 where Meridian withdrew offers to manage location prices.
[44] Powershop, Proposed actions of the Electricity Authority under Part 5 of the Electricity Industry Participation Code to correct the Undesirable Trading Situation on 26 March 2011, 26 March 2011.

In circumstances where there is water spill there is no such uncertainty. The water value is clearly zero. Offer prices that don't reflect the zero water value are a clear mis-use of market power.

Our simulations show Meridian's generation business has extracted excess revenue of $38m in the month since 10 November 2019 and Contact's by $23m. We consider that the scale of monopoly pricing goes well beyond a breach of the HSOTC provisions and amounts to a UTS. The situation is on-going and is currently leading to $3-4m per day of excess generation revenue.[45]

There is important precedent value from the Authority reaching a decision that Contact and Meridian's conduct breached the HSOTC Rules and UTS provisions and in relation to any sanctions that are determined.

Yours sincerely,



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[45] Refer to Appendix 8.

Appendix 1: Manapouri generation offers

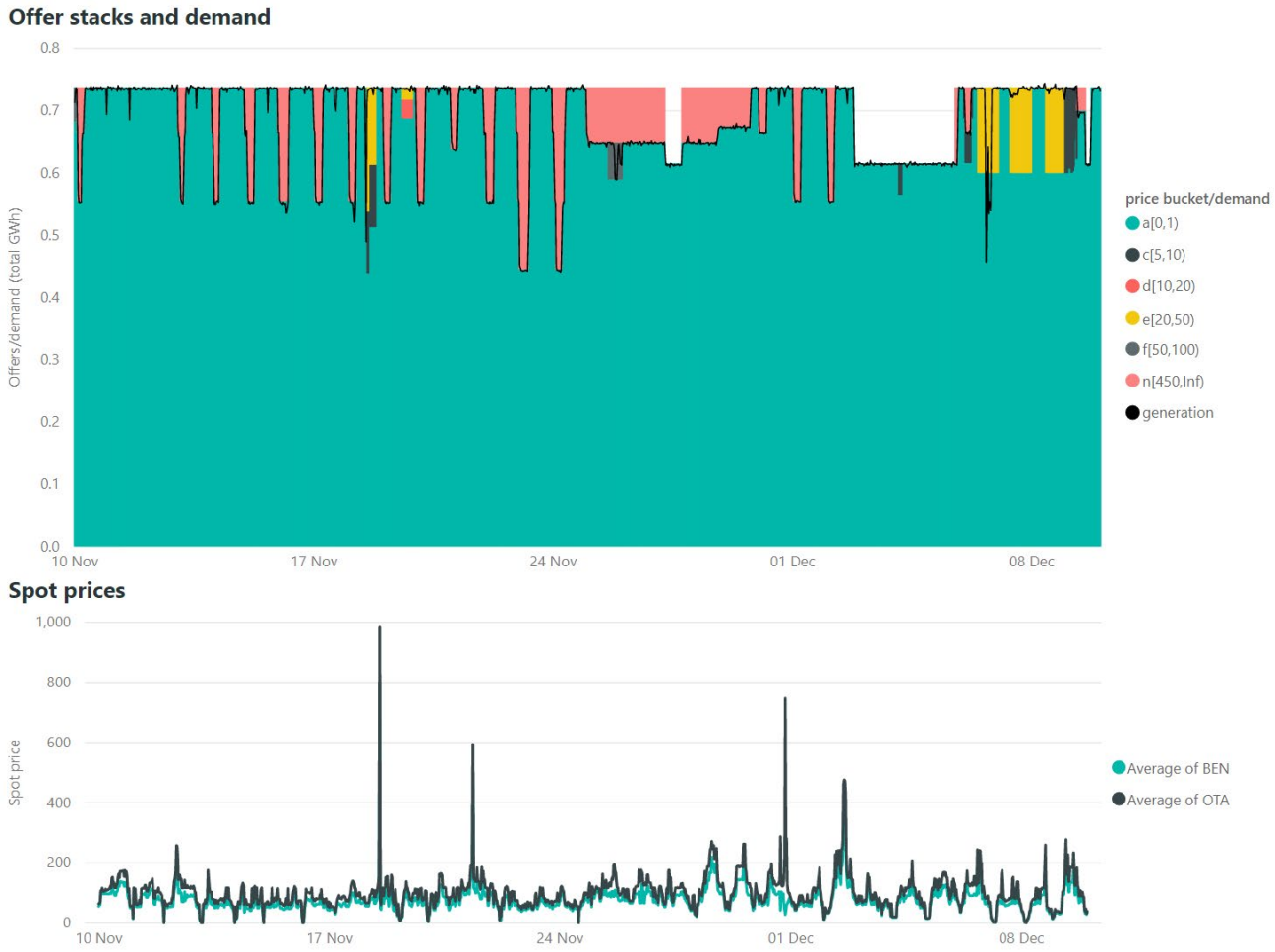


Figure 8: Manapouri offer stack and generation from 10 November, when Meridian commenced spilling, to 9 December. The offers shaded rose indicate capacity offered to the market above $450.

Appendix 2: Waitaki generation offers

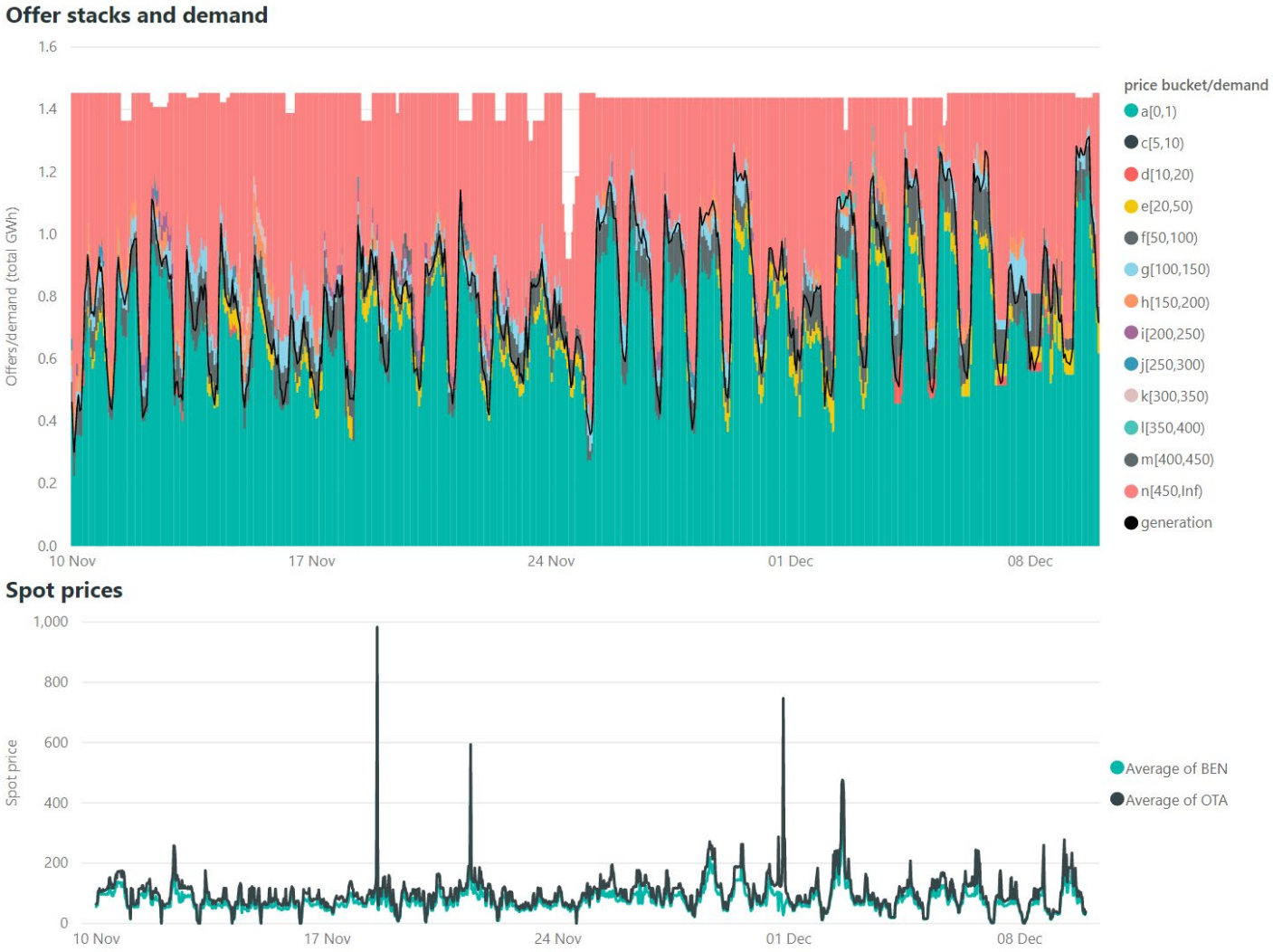


Figure 9: Waitaki offer stack and generation from 10 November, when Meridian commenced spilling at Manapouri, to 9 December. Offers resulted in prices rarely falling below $50, despite frequent occasions when Manapouri was under-utilised and excess water was spilled.

Appendix 3: Clutha generation offers

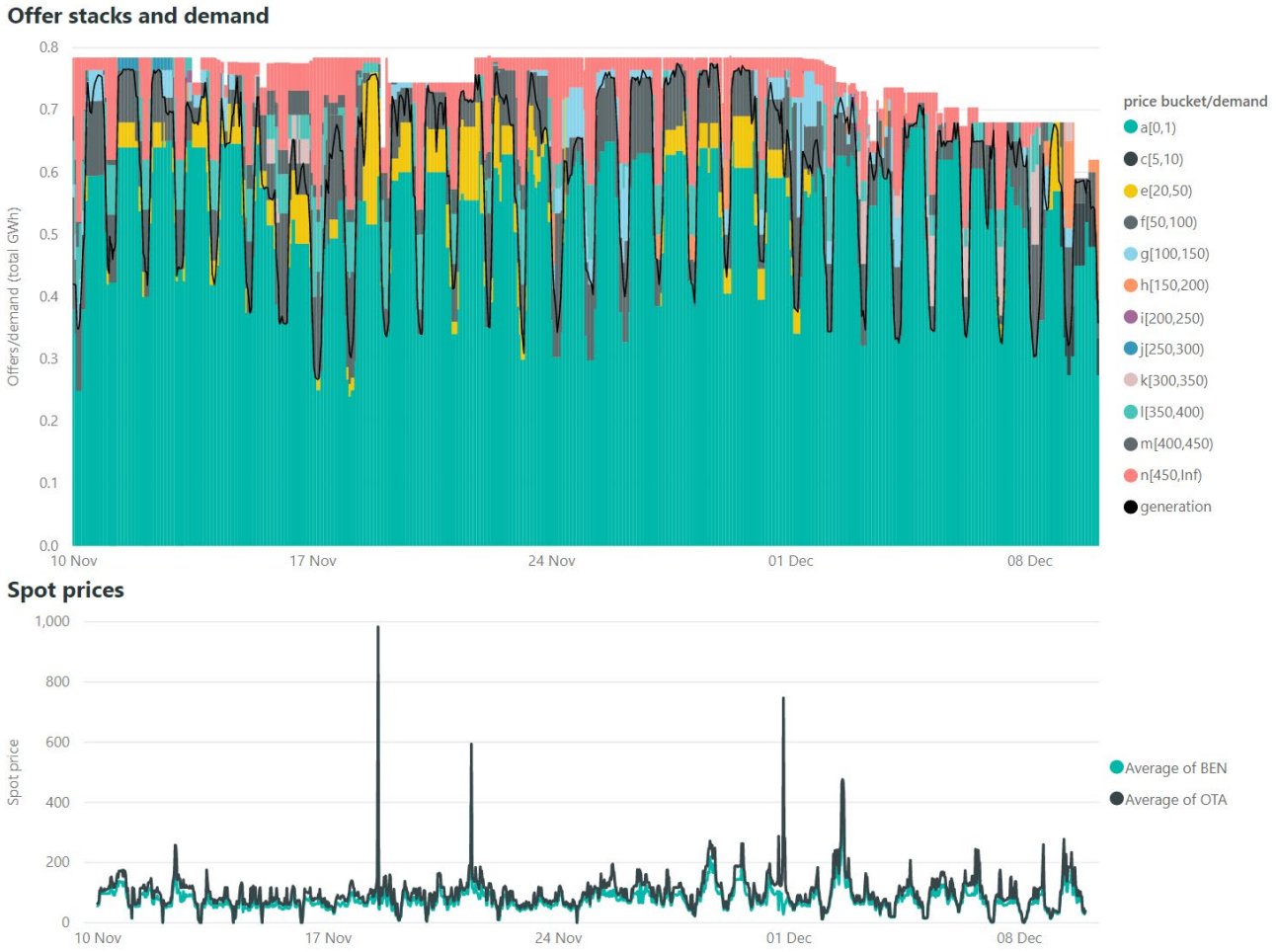


Figure 10: Clutha offer stack and generation from 10 November to 9 December. Offers resulted in prices rarely falling below $50 and frequently reaching over $150, while the scheme almost always had spare capacity but was spilling water to support prices.

Appendix 4: Mercury (Waikato river chain) hydro generation

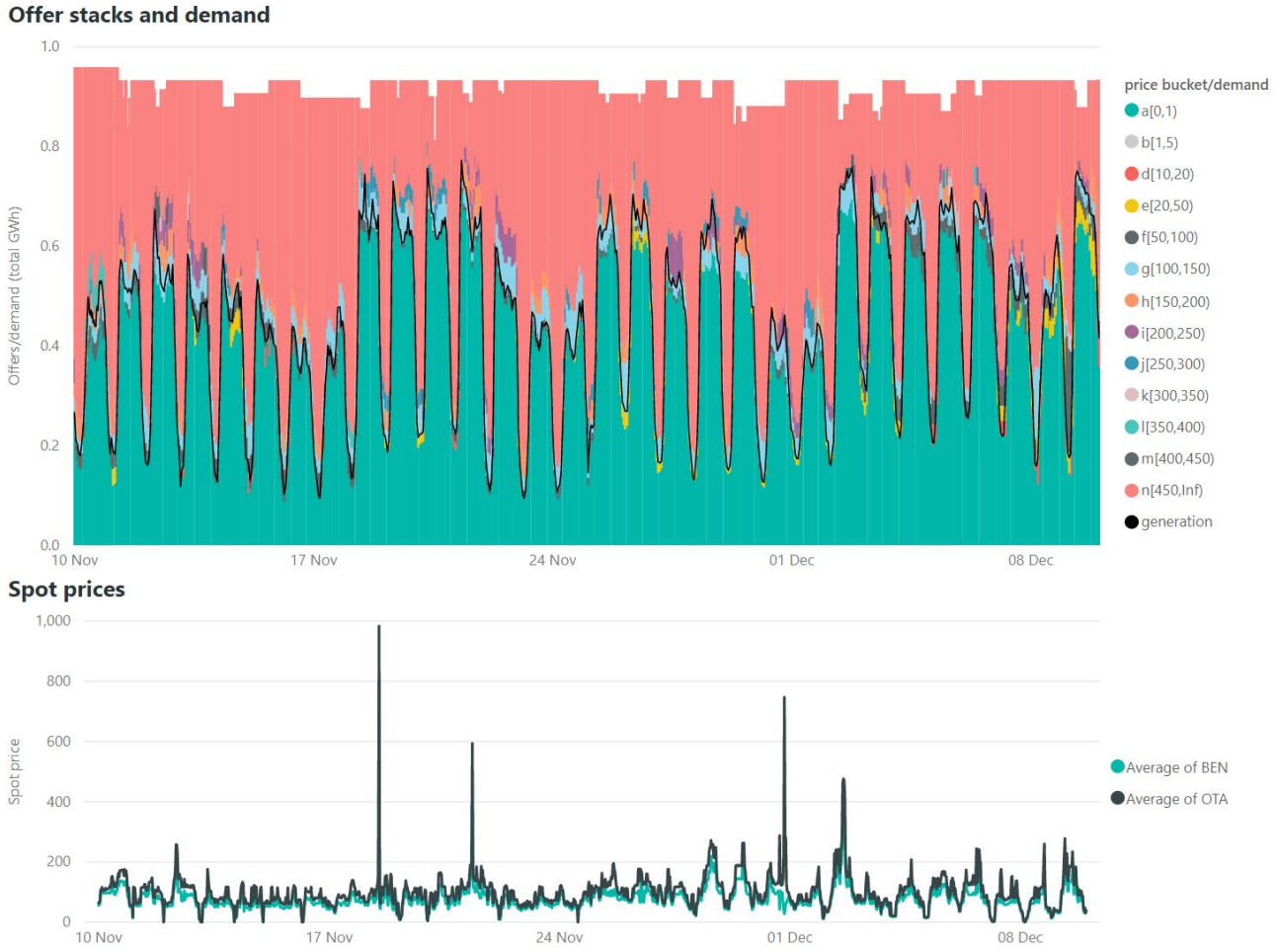


Figure 11: An increase in South Island offer volume at $5 would have reduced dispatch of storable North Island water

Appendix 5: Genesis (Huntly) thermal generation

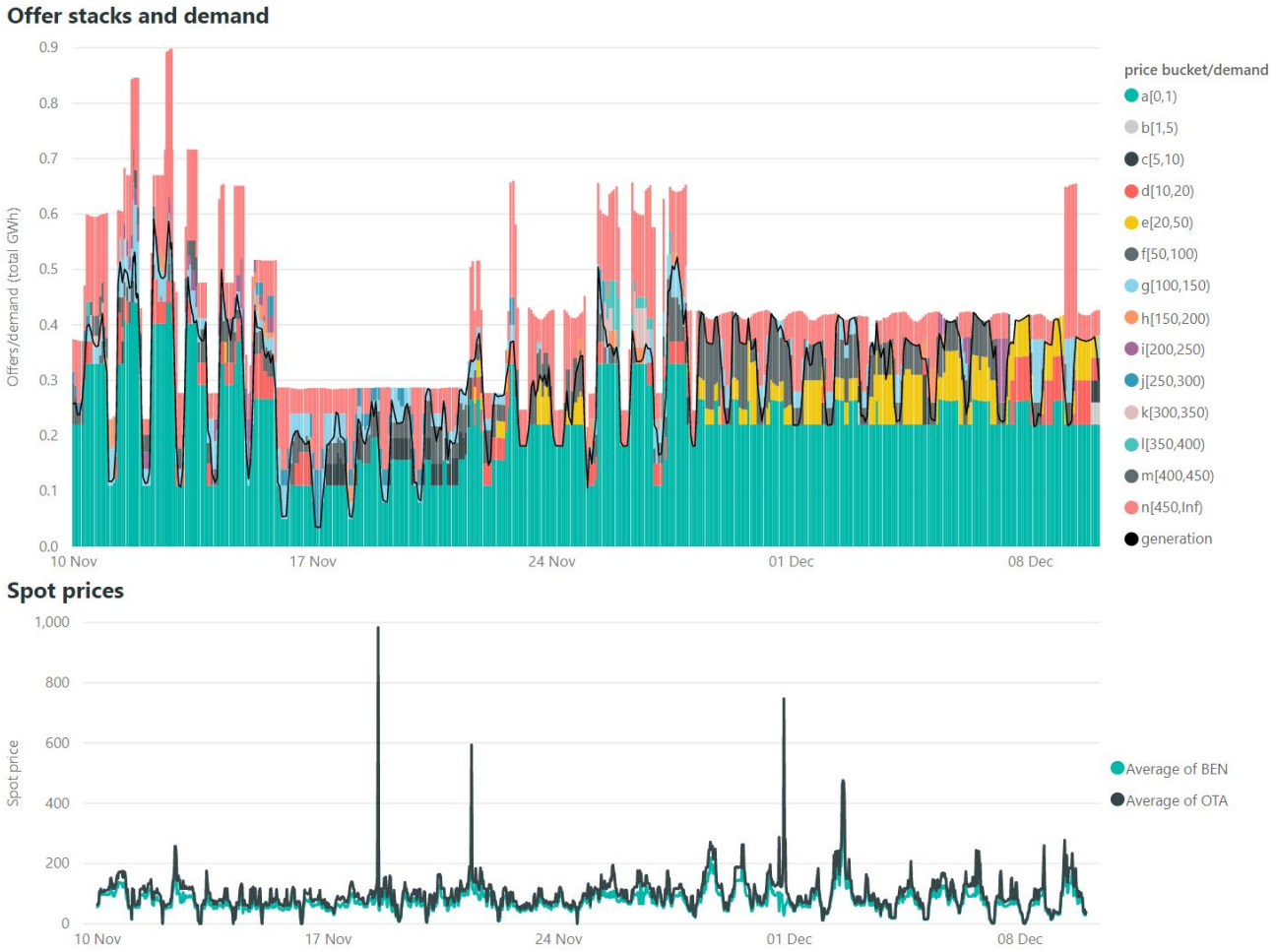


Figure 12: An increase in South Island offer volume at $5 would have reduced dispatch of Huntly generation

Appendix 6: Assumptions made during analysis

- For the vSPD override runs, it was assumed that Manapouri and Clutha offered all available capacity at $5.

- For the excess CO2 emissions analysis, the following emission rates were assumed (tonnes of CO2 per MWh of electricity generated)[46]:
    - HLY5: 0.394.
    - HLY1-4: 0.974 if burning coal, 0.581 if burning gas.
    - SFD peakers: 0.506.

- For the excess CO2 emissions analysis, it was assumed that rankines burnt 50% gas, 50% coal.

- It was assumed that lost North Island storage could be estimated as the difference in generation under the base scenario and vSPD override summed across hydro stations in the Waikato and Waikaremoana catchments (ARA2201 ARA0, ARI1101 ARI0, ARI1102 ARI0, ATI2201 ATI0, KPO1101 KPO0, MTI2201 MTI0, OHK2201 OHK0, RPO2201 RPO0, TKU2201 TKU0, TUI1101 KTW0, TUI1101 PRI0, TUI1101 TUI0, WKM2201 WKM0, and WPA2201 WPA0).

[46] NB the source of the CO2 emission rates is as follows: for HLY5 and HLY1-4 when burning coal: Table 12 of this document: https://www.waikatoregion.govt.nz/assets/PageFiles/21888/TR201218.pdf. The figure for HLY1-4 when burning gas was obtained from Tables 10 and 12 of the same document, specifically by multiplying the coal emission rate from Table 12 by the ratio of gas to coal combustion emissions from Table 10 (53.3/89.4). The figure for the SFD peaker was obtained by multiplying its heat rate (9.5GJ/MWh, from http://www.epoc.org.nz/papers/SecurityofSupply-Fulton2018.pdf, Appendix 1) by an estimated CO2 emission rate for gas plant (53.3, from Table 12 of this document: https://www.waikatoregion.govt.nz/assets/PageFiles/21888/TR201218.pdf).

Appendix 7: VSPD files

vSPD files used in the analysis. Available from https://www.emi.ea.govt.nz/vSPD-online

JOB NAME	OVERRIDE	DESCRIPTION	CREATED BY	CREATED DATE	FINISHED	DURATION	DOWNLOAD
+ nov_11-14_mrc_overrride	Man Rox Clyde v2	Nov 11-14 with Manapouri/Roxborough/Clyde offering all volume at $5	jonathan	10/12/2019	10/12/19 19:20	23 minutes and 7 seconds	
+ nov_11-14_base		Nov 11-14 base case (no override)	jonathan	10/12/2019	10/12/19 18:57	18 minutes and 30 seconds	
+ dec_3-9_base		Dec 3-9 base case (no override)	jonathan	10/12/2019	10/12/19 18:24	30 minutes and 42 seconds	
+ dec_3-9_mrc_overrride	Man Rox Clyde v2	Dec 3-9 with Manapouri/Roxborough/Clyde offering all volume at $5	jonathan	10/12/2019	10/12/19 17:53	32 minutes and 2 seconds	
+ nov_27-dec_2_base		Nov 27-Dec 2 base case (no override)	jonathan	10/12/2019	10/12/19 17:21	26 minutes and 10 seconds	
+ nov_27-dec_2_mrc_overrride	Man Rox Clyde v2	Nov 27-Dec 2 with Manapouri/Roxborough/Clyde offering all volume at $5	jonathan	10/12/2019	10/12/19 16:55	28 minutes and 16 seconds	
+ nov_15-21_base		Nov 15-21 base case (no override)	jonathan	10/12/2019	10/12/19 16:23	30 minutes and 8 seconds	
+ nov_22-26_base		Nov 22-26 base case (no override)	jonathan	10/12/2019	10/12/19 15:52	21 minutes and 35 seconds	
+ nov_15-21_mrc_overrride	Man Rox Clyde v2	Nov 15-21 with Manapouri/Roxborough/Clyde offering all volume at $5	jonathan	10/12/2019	10/12/19 15:27	33 minutes and 7 seconds	
+ nov_22-26_mrc_overrride	Man Rox Clyde v2	Nov 22-26 with Manapouri/Roxborough/Clyde offering all volume at $5	jonathan	10/12/2019	10/12/19 14:47	25 minutes and 13 seconds	

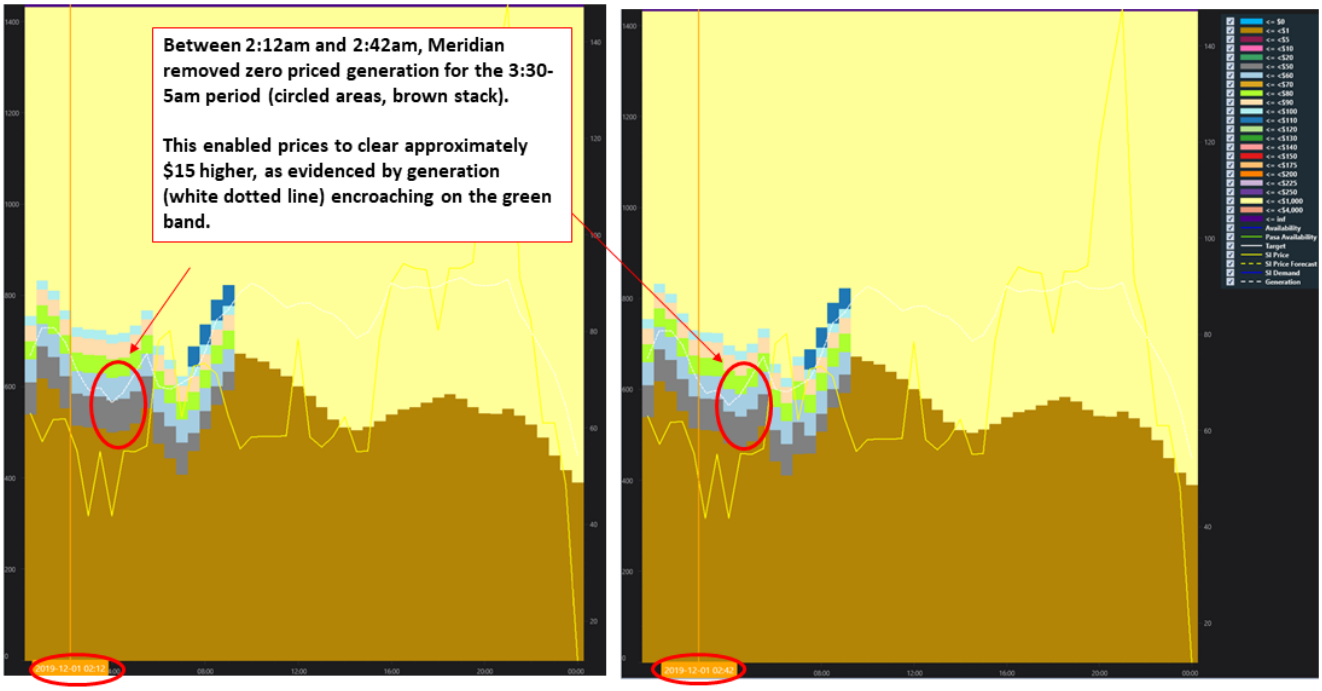
Appendix 8: Summary data from VSPD runs

The following table highlights some differences between actual dispatch and the VSPD runs outputs if the spilling hydro catchments were offered at $5.

Metric	Unit	Value (sum of all trading periods, 11/11-9/12)	Value (daily avg)	Description*
ota_excess	$/MWh	NA	32.9	Excess OTA price
ben_excess	$/Mwh	NA	30.9	Excess BEN price
revenue_excess	$	99,099,453	3,417,223	Excess revenue collected by all generators
revenue_excess_meri	$	37,970,356	1,309,323	Excess revenue collected by Meridian
revenue_excess_contact	$	22,649,108	781,004	Excess revenue collected by Contact
cost_excess	$	95,634,700	3,297,748	Excess price paid across all load nodes
co2_excess	tonnes	5,984	206	Excess CO2 released across all thermal generators
lost_ni_storage	MWh	15,036	519	Reduction in storable NI water as a result of unnecessary dispatch
reduced_hvdc	MWh	32,613	1,125	Reduction in HVDC flows
*'Excess' or 'reduction' refers to the difference in values between the actual outcome and that output from vSPD assuming Manapouri/Clutha offered all volume at $5				

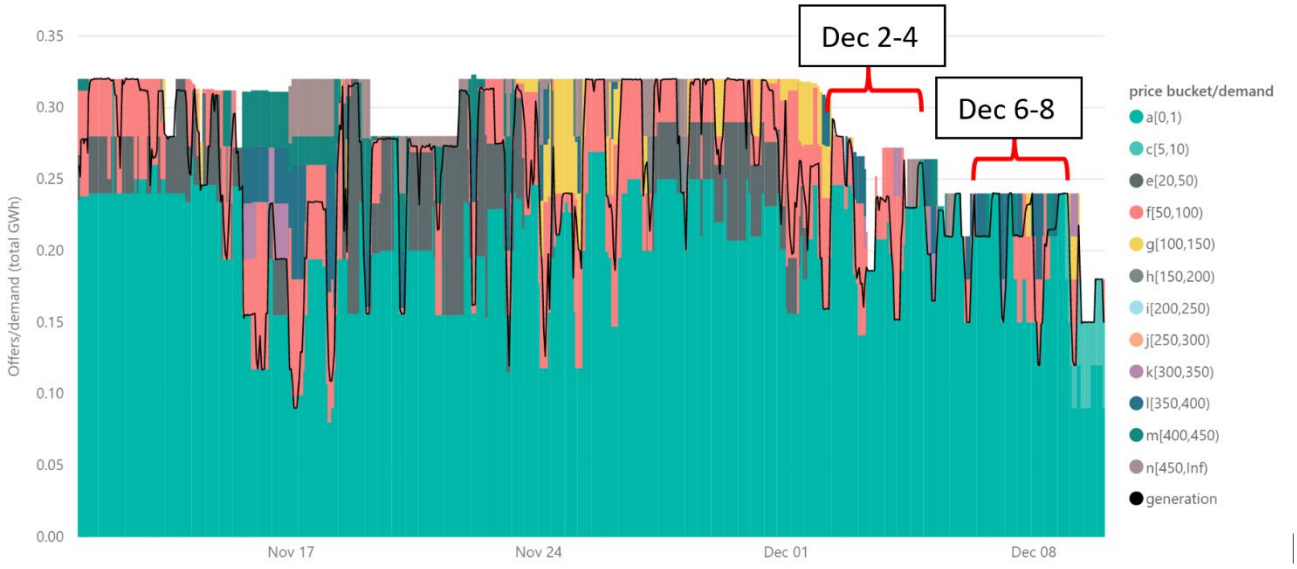
Appendix 9: Example of Meridian pricing up Waitaki while Manapouri is spilling

Example of Meridian pricing up Waitaki offer stacks while marginal Manapouri water was offered at $1000 and Lake Manapouri was spilling



Appendix 10: Evidence for offers not being made for full ROX available capacity.

There appears to be a number of periods where the full ROX capacity was not offered and there was no declared outage that explained the missing offers, but in particular we highlight the periods between Dec 2-4 and Dec 6-8.



ROX outages declared on POCP: