Decision Report

Ngāti Tūwharetoa Geothermal Assets

Application to change conditions CH20-01702
to
Bay of Plenty Regional Council

28 July 2021

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Appendix 1 Changed Consent Conditions

1 Introduction

[001] In April 2020 Ngāti Tūwharetoa Geothermal Assets (NTGA) applied to the Bay of Plenty Regional Council (BOPRC) under s127 of the Resource Management Act (RMA) to change the consent conditions of consent 67151. The change sought would:

a) extend the period that NTGA can discharge spent geothermal fluid to the Tarawera River from its East Bank Discharge Point (EBDP) by 14 years from 1 January 2021 to 1 January 2035;

b) enable the contingency discharge of spent geothermal fluid to the Tarawera River between 1 January 2035 and 1 January 2040; and

c) extend the timeframe to meet the contaminant limits outlined in consent 6715 from 1 January 2021 to 1 January 2035.

The s127 application is granted but with a reduced extended period from that sought.

2 Appointments

[002] The BOPRC, acting under s34A of the Resource Management Act 1991, appointed independent hearing commissioners Rob van Voorthuysen[1] and Rauru Kirikiri[2] to hear and decide the application.

3 Description of the Proposal

[003] The proposal is described in the NTGA AEE[3] and the BOPRC s42A Report.[4] By way of brief summary consent 67151[5] authorises the discharge of spent geothermal fluid[6] to the Tarawera River from two discharge points referred to as East Bank (located on the true right bank of the Tarawera River) and West Bank (located on the true left bank of the Tarawera River). Consent 67151 allows the discharge from the West Bank (400 t/h of geothermal fluid) to continue for the duration of the consent (until 2050), but the East Bank discharge (470 t/h of geothermal fluid) must cease on 1 January 2021.

[004] We understand that NTGA intended to reinject the East Bank discharge into the Kawerau Geothermal System (KGS) after January 2021.[7]

[005] NTGA, Mercury Energy Limited (Mercury), Geothermal Developments Limited (GDL) and Te Ahi o Māui Partnership (TAOM) all hold resource consents to take and discharge geothermal fluid from the KGS. However, NTGA is the only party with consent to discharge spent geothermal fluid to the Tarawera River.

[006] We understand that the rationale for NTGA's s127 application was primarily commercially driven, although they also fear that the dividend paid to the Ngāti Tūwharetoa (Bay of Plenty) Settlement Trust (NTST) to enable it to make grants to the beneficiaries of Ngāti Tuwharetoa would be at significant risk if reinjection is required.

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[1] Commissioner van Voorthuysen is an experienced independent commissioner, having sat on over 320 hearings throughout New Zealand since 1998. He has qualifications in natural resources engineering and public policy. In 2020 he was appointed as a Freshwater Commissioner by the Minister for the Environment.

[2] Commissioner Kirikiri is a Wellington-based independent consultant with an extensive background in environmental matters from management roles to public policy involvement at local and national levels, to resource, plan change and special tribunal hearings across the country over many years. He is of Te Whānau-ā-Apanui descent.

[3] Ngāti Tūwharetoa Geothermal Assets, Change Conditions of Resource Consent 67151, prepared by Enspire Consulting Limited, 24 April 2020, section 1 Application Details and 2 Introduction.

[4] Bay of Plenty Regional Council, Officer's Report for non-notified resource consent application, Section 42A Resource Management Act 1991 (RMA), Mary Poppin, Senior Consents Officer, 19 March 2021. Section 3 Background.

[5] The consent expires on 31 December 2050.

[6] NTGA takes geothermal fluid from their wells at approximately 270°C, separates the fluid (geothermal water) and sends the steam to its industrial customers. It is this separated geothermal water that is discharged to the Tarawera River.

[7] The conditions of consent 67151 provide for a contingency discharge from the EBDP after 2021 if there is insufficient reinjection capacity or a failure of the reinjection wells.

[007] In their application NTGA said that in 1998 they entered into commercial agreements to supply customers (including Norske Skog Tasman (NST), Oji Fibre and Carter Holt Harvey Wood Products) with steam that fixed the pricing for that steam until 2035. NTGA contended that they would not receive a commercial rate of return for 65% of their steam sales (presumably from 2021 until 2035) if the EBDP cannot be utilised during that time.

[008] NTGA offered the EBDP cessation condition when they applied for consent 67151 in 2015.[8] Ms Pappon observed that "*further evidence or detail on this aspect has not been provided to date.*"[9] In response, NTGA CEO Spence McClintock acknowledged that the NTGA s127 application before us is inconsistent with the decision NTGA made in 2016 but:

- a number of factors, including the confirmed closure of the NST mill at the end of June 2021,[10] would have adverse commercial effects on NTGA which would then have broader adverse economic consequences for the local and regional economy and adverse social, cultural, and economic effects on the beneficiaries of the NTST;
- NST ceasing operations will result in a loss of revenue to NTGA in excess of $7M per year;[11]
- the existing reinjection system is at full capacity and two new reinjection wells and an extensive pipeline system at a cost of approximately $35-45M would be required to reinject the EBDP discharge;
- reinjection is not required for KGS reservoir sustainability and NTGA analyses and reservoir monitoring have shown that reinjection benefits are uncertain and injection has to be carefully managed to mitigate increased risk of reservoir cooling;
- there are minimal adverse effects on the water quality of the Tarawera River as a result of the ongoing discharge; and
- the cultural effects of the ongoing discharge are considered to be acceptable by two of the iwi that have recognised interests in the Tarawera River – Ngāti Tūwharetoa ki Kawerau (via the NTST) and Ngāti Rangithi.[12]

[009] Applications under s127 are discretionary activities.[13] We can only consider the effects of the change in conditions.[14] Namely, we can only consider the potential effects of allowing the EBDP discharge to continue to operate for a further 14 years.

[010] At various times during the hearing and in the evidence 'status quo' was discussed. We consider that the 'status quo' is the cessation of the EBDP discharge because that is what the existing conditions of consent require.

4 Process Issues

4.1 Notification and submissions

[011] The application was limited notified in August 2020 to twelve parties, including[15] iwi with relevant statutory acknowledgements, the other companies who abstract geothermal fluid from the KGS, and the commercial users of geothermal steam.[16]

[012] Ngāti Rangitihi[17] provided written approval for the NTGA application. NTST also provided written approval, however that was withdrawn shortly before the hearing solely on the basis that counsel for NTGA had identified that a literal interpretation of s104(3)(a) of the RMA might preclude a consideration

[8] The consent was granted in 2016.
[9] Section 3, page 3.
[10] SE McClintock, paragraph 2.3
[11] SE McClintock, paragraph 7.8.
[12] EIC McClintock, paragraphs 1.9, 1.10 and 2.8.
[13] RMA s127(3)(a)
[14] RMA s127(3)(b).
[15] As required under RMA ss95B(3) and (4).
[16] Te Rūnanga o Ngāti Awa, Huia Pacey, Te Ahi o Māui Partnership, Geothermal Developments Limited, Mercury NZ Limited, Norske Skog Limited, Oji Fibre, Carter Holt Harvey Wood Products, Asaleo Care, Sequal Lumber, Waiū Milk Factory and Nova Energy.
[17] Chris Clarke. Environmental Consultant for Te Mana o Ngāti Rangitihi Trust, Matatā.

of the positive effects on NTST of granting the NTGA application.[18] The withdrawal letter stated "*NTST remains highly supportive of the application and two NTST trustees are presenting evidence in support of NTGA's case*." Accordingly, we understand and accept that the withdrawal of NTST's written approval does not diminish their support for the NTGA application.

[013] One submission in opposition was received from Te Rūnanga o Ngāti Awa (TRoNA). The nature and content of the submission was outlined in the s42A Report.[19] In summary, TRoNA contend that the NTGA proposal is inconsistent with Ngāti Awa's Environmental Management Plan (Te Mahere Whakarite Matatiki Taiao ō Ngāti Awa) and has significant impacts on their cultural values. They are concerned about the water quality of the Tarawera River and are not convinced that the effects of the EBDP discharge are less than minor. TRoNA believe that the spent geothermal fluid should be reinjected into the KGS.

[014] We note that TRoNA prepared a Cultural Impact Assessment that was provided to BOPRC in July 2020. It came to much the same conclusions as their submission.

4.2 Officer's recommendation

[015] The BOPRC s42A Report author, Senior Consents Officers Mary Pappon, recommended that the application be granted, but with an effective duration of 2 years. Namely that the EBDP discharge would be allowed to continue until 1 January 2023.

[016] At the hearing Ms Pappon's role was taken by Reuben Fraser (BOPRC Consents manager) as Ms Pappon was on maternity leave. At the conclusion of the hearing Mr Fraser supported Ms Pappon's recommendation.

4.3 Hearing, appearances and site visit

[017] We held a hearing in the Concert Chambers, Plunket Street, Kawerau on Thursday 1 July.

[018] Evidence and legal submissions from NTGA and evidence from TRoNA was pre-circulated in general conformance with procedural Minutes that we issued. We posed written questions to the NTGA witnesses that were helpfully answered in writing prior to the hearing. Copies of the legal submissions and briefs of evidence are held by BOPRC. We do not separately summarise the matters covered here, but we refer to or quote from that material as appropriate in the remainder of this Decision. We took our own notes of any answers given to verbal questions that we posed to hearing participants. The NTGA Reply submissions were provided in writing to us on 22 July 2021.[20] We closed the hearing on 23 July 2021, having concluded that we required no further information from any of the parties.

[019] We conducted a site visit on the afternoon of Wednesday 30 June 2021 accompanied by an NTGA staff member and BOPRC Consents Manager Reuben Fraser.

5 Section 104 and 104B matters

[020] We now address the relevant aspects of the application in terms of sections 104 and 104B of the RMA.

5.1 Actual and potential effects on the environment

[021] Having reviewed the documentation we find that we should address the following matters:

- Positive effects;
- Closure of Norske Skog Tasman (NST);
- Sale of TOPP1;

[18] Letter from BerrySimons to BOPRC dated 29 June 2021.
[19] .Section 8 and Table 9.
[20] Submissions In Reply and Closing Of Counsel For Ngāti Tūwharetoa Geothermal Assets Limited, S Berry and C Malone, 22 July 2021 [Reply submissions].

- Effects on the KGS;
- Effects on the Tarawera River and marine receiving waters;
- Effects on Māori cultural values and interests;
- Costs of reinjection;
- Time required to cease the EBDP discharge; and
- Ngāti Rangitihi Claims Settlement Act.

[022] We record that NTGA and Ms Pappon also assessed potential adverse effects elated to odour.[21] Suffice to say that there are numerous geothermal discharges in the immediate area (both naturally occurring and arising from geothermal bores and power stations) and there are also unpleasant odours discharged from nearby industries. We find that it would be difficult to discern an odour effect from the continued EBDP discharge that is distinguishable from the general odorous nature of the immediate area. In that regard the BOPRC technical reviewer concluded that odour effects were at least less than minor, if not negligible. We agree.

5.1.1 Positive effects

[023] NTGA contended that declining the s127 application would adversely affect the revenue stream they currently enjoy and consequently "… *the dividend we [NTGA] pay to the NTST to enable it to make grants to Beneficiaries of Ngāti Tuwharetoa would be at significant risk*."[22] Mr McClintock and Ms Adlam both advised those grants equated to around $300,000 in 2020. Ms Adlam[23] set out the types of grant funding that NTST makes available and we do not question the social benefits of those grants. In his evidence Mr McClintock stated that (our emphasis) "…*grants from the NTST to beneficiaries could be reduced by around $165k per year in the short term if the viability of NTGA's operations are put at the significant risk associated with the closure of NST and the costs of new reinjection wells and pipelines*."

[024] We accept that avoiding a reduction of the beneficiary grants could be an indirect positive effect of granting the NTGA application. The question is how much weight we should give that which in turn depends on how certain it is that a reduction in grants will occur if the NTGA application is declined.

[025] To better understand the likelihood of that occurring we enquired as to the proportion of NTST grants paid to beneficiaries that are reliant on the dividend paid by NTGA that is derived from the sale of steam or brine, on an assumption that NTST might have other sources of income. In his Supplementary Evidence Mr McClintock advised that NTST has two primary sources of income in the form of dividends from NTGA and dividends from the Ngāti Tūwharetoa Fisheries Charitable Trust. Approximately 55% of grants made by NTST are derived from the dividend paid to it by NTGA with the remainder coming from the dividend paid by Ngāti Tūwharetoa Fisheries Charitable Trust.[24]

[026] At the hearing we sought to understand that better by posing questions to counsel, Ms Adlam and Mr McClintock.

[027] Mr McClintock advised us that a 'one off impost cost' of undertaking reinjection "*must have an impact on the amount of money going out of NTGA to its owners*". We accept that seems likely but we received no definitive information on how much the current dividend paid to NTST might be reduced by and how that might affect the grants NTST pays to its beneficiaries. We asked Ms Adlam if in the face of reduced dividends from NTGA, would NTST reduce other outgoings in order to retain the beneficiary grants at their current levels. Somewhat understandably she could not give a definitive answer to that.

[21] Section 42A Report, section 9.3. Richard Chilton, Senior Air Quality Consultant, Tonkin and Taylor undertook an air discharge assessment in support of the application. Mr Nicholas Browne, Air Quality Scientist, Air Matters Limited, was engaged by BOPRC to undertake a technical review of the assessment provided by Mr Chilton.
[22] EIC McClintock, paragraph 2.10.
[23] EIC Adlam, paragraph 3.2.
[24] SE McClintock, paragraph 5.3.

[028] We accept that the requirement to undertake rejection of the EBDP discharge would have an adverse financial effect on NTGA (see section 5.1.7 of this Decision) and that in turn could have an adverse financial effect on Ngāti Tūwharetoa Holdings Limited[25] and thereafter that could have an adverse financial effect on NTST if the dividend stream from NTGA consequently decreased. In that eventuality there could be adverse economic and social effects on the NSTS beneficiaries if NTST then decided to reduce the level of grants paid to those beneficiaries.

[029] However, on the evidence before us we find that chain of events is far from certain and so we are not persuaded that avoiding its occurrence (by granting the NTGA application) is a positive effect to which we should assign determinative weight.

5.1.2 Closure of Norske Skog Tasman (NST)

[030] NTGA contended that closure of NST has caused financial uncertainty for NTGA such that it would not be prudent to invest in reinjection at this stage. Mr McClintock said:[26]

> *"NTGA's supply contract with NST is NTGA's second largest supply contract and a very significant source of revenue for NTGA. If NST ceases operations, constructing two new reinjection wells and an extensive pipeline system at a cost of approximately $35-45M to reinject the East Bank discharge would potentially have significant adverse financial impacts for no environmental gain."*

[031] At the hearing Mr McClintock told us that despite the closure of NST's paper plant, NTGA was still supplying them with 130 tonnes/day of geothermal fluid to power a small electricity generation plant on the NST site. Other legacy contracts with Carter Holt Harvey and Oji had either been renegotiated on more commercial terms or would be in the future. All other contracts to supply geothermal fluid were on contemporary commercial terms.[27] He was confident that within 12 months' time negotiations with other customers would see the level of geothermal fluid being supplied to NTGA's various customers being back up the levels that they were prior to the closure of NST.

[032] On that basis we fail to see that the closure of NST poses a significant financial risk to NTGA and consequently we find that the closure of NST is not a factor that weighs in favour of granting the NTGA application.[28] We make the same finding with regard to the other 'legacy' contracts with Carter Holt Harvey and Oji that were supposedly a large part of the initial catalysis for NTGA's s127 application.

5.1.3 Sale of TOPP1

[033] From the evidence of Beverly Hughes for TRoNA we were made aware of NTGA's recent sale of the TOPP 1 geothermal power station to Eastland Group. Mr McClintock helpfully addressed this in his Supplementary Evidence. He advised:

- NTGA will receive around $78M from the sale;
- NTGA will use those funds to reduce debt and diversify its investments in order to increase NTGA's ability to weather financial shocks and to ensure the viability of NTGA going forward; and
- thereafter NTGA would be left with a surplus in the order of $13M.

[034] Mr McClintock explained that while the $13M could be put towards reinjection but in that case "… *NTGA would not have a financial buffer to weather financial shocks such as the lost revenue from NST ceasing operations and NTGA would probably not be able to maintain the payment of the current dividend to NTST*."[29]

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[25] This is the company that actually owns NTGA.

[26] EIC McClintock, paragraph 2.8.

[27] From the evidence of Mr McClintock (paragraph 4.2) we note those other existing customers include Asaleo Care NZ Limited, Kawerau Dairy Plant (Waiu), the TOPP1 powerplant now owned by Eastland Generation, and Sequal Timber.

[28] One might even assume that any new contracts alluded to by Mr McClintock will be on better commercial terms than the legacy NST contract which we understand was the primary catalyst for the s127 application.

[29] SE McClintock, paragraph 7.9.

[035] He also advised that NST ceasing operations will result in a loss of revenue to NTGA in excess of $7M per year and the cost of servicing the debt to fund the reinjection would be around $5.9M per year. That does not align with his verbal evidence presented at the hearing that the volume of geothermal steam being sold to customers would be back to 'pre-NST closure' levels within 12 months, as discussed in section 5.1.2 of this Decision.

[036] We find that the sale of the TOPP1 power station and the resultant funds received by NTGA further weighs against us finding that avoiding a potential reduction in grants paid by NTST to its beneficiaries is a positive effect to which we should assign determinative weight.

5.1.4 Effects on the Kawerau Geothermal System

[037] We understand that it is accepted and common industry practice for spent geothermal fluid to be reinjected into the parent geothermal reservoir. Doing so avoids discharging that fluid (which is often high in contaminants including heavy metals) to land or to surface water. Reinjecting the spent fluid at depth also helps to preserve pressure in the geothermal reservoir and provided the reinjection wells are appropriately sited, adverse effects of the reinjected fluid on temperatures within the reservoir can be largely avoided. Maintaining pressure and temperature within the geothermal reservoir reduces the amount of ground subsidence that occurs when geothermal fluid is abstracted.

[038] Mercury owns and operates a computer simulation model[30] for the KGS and commercial agreements enable access to the model by other resource users including NTGA. NTGA engaged Dr John Burnell[31] to prepare an assessment of the effects of delaying NTGA's reinjection of geothermal fluid until 2035. He considered that reinjection was less important for maintaining reservoir conditions at Kawerau than in other geothermal systems, due to a substantial level of natural recharge occurring in the Kawerau reservoir, which is not a common occurrence.[32]

[039] Dr Burnell did not have direct access to KRMV5 but provided a scenario[33] to Mercury who ran it through the model for a 50 year period from 2020 to 2070 and provided Dr Burnell with summaries of the model outputs. Dr Burnell then used those model outputs to estimate likely subsidence effects by extrapolating earlier results from the Kawerau 3D Subsidence Model (2012). To predict the effects of the NTGA proposal on likely subsidence, we understand Dr Burnell used[34] a newly developed and simplified subsidence model called the "Geertsma disk model" which he used in conjunction with a simplified version of reservoir stratigraphy.

[040] Dr Burnell produced a report that accompanied the NTGA application and AEE.[35] In that report he concluded that:

- the NTGA proposal would have a negligible effect on the enthalpy[36] of the geothermal reservoir;
- while the ongoing abstraction of geothermal fluid by the existing four abstractors will lead to a cooling of the geothermal reservoir, the proposed delay of NTGA reinjection would have an insignificant effect on that cooling; and
- around 1200mm of subsidence was predicted between 2018 and 2068 as a result the ongoing abstraction of geothermal fluid by the existing four abstractors and a resultant a widespread 5 bar[37]

[30] Kawerau Reservoir Model (version 5) or KRMV5.
[31] Energy Futures Theme Leader, Geological and Nuclear Sciences Limited (GNS).
[32] EIC Burnell, paragraph 2.7.
[33] Scenario 1b in which all operators at Kawerau produce and reinject to the full extent allowed by their respective consent conditions, except 471 t/h of NTGA separated brine is discharged into the Tarawera River until 2035.
[34] EIC Burnell, paragraphs 6.4, 6.6 and 6.10.
[35] Assessing the Impact of Delaying Reinjection of NTGA River Discharge, GNS Consultancy Report 202/16, March 2020. Appendix 4 to the NTGA application
[36] A thermodynamic quantity equivalent to the total heat content of a system. It is equal to the internal energy of the system plus the product of pressure and volume.
[37] One bar is the same as one atmosphere of pressure.

pressure change predicted by Version 4 of the Reservoir Model. Delaying the NTGA reinjection of EBDP spent fluid would result in very little difference to that predicted pressure drop (less than 0.50 bar between 2021 and 2035) and resulting additional subsidence would be between 120mm and 65mm.[38] That level of additional subsidence would have a negligible impact on other developers of the field and the sustainability of the Kawerau Geothermal System.

[041] In his primary evidence Dr Burnell predicted around 400mm of subsidence over the production area of the KGF. He postulated that lower level of subsidence (400mm compared to the 1200mm previously predicted in his AEE report) was likely to be a result of KRMV5 predicting a lower amount of pressure decline than KRMV4.[39] Dr Burnell concluded that delaying the reinjection until 2035 would result in 10mm more subsidence in the south-west of the KGF and 26mm less subsidence in the north around the reinjection area.

[042] In his Supplementary Evidence Dr Burnell discussed an error he made in his primary evidence relating to the transfer of data from KRMV5 (the reservoir model) that he used for the subsidence calculations. From our questioning we understand that his conclusions in the first two bullet points in [040] above are still valid. However overall subsidence of 1500mm was now predicted and delaying the NTGA reinjection of EBDP spent fluid until 2035 would result in 10mm more subsidence in the south-west of the KGF and 7mm less subsidence in the north around the reinjection area.[40] He described these changes as 'negligible'.

[043] The BOPRC engaged Dr Jonathon Clearwater[41] to review Dr Burnell's initial report. In overall terms Dr Clearwater was comfortable that the effects of the change sought by NTGA was likely to have only minor impacts on the geothermal reservoir. Dr Burnell reported that he discussed his revised subsidence predictions with Dr Clearwater who had advised "*Although the total magnitude of subsidence predicted has changed the relative difference predicted between the scenarios is small (~10mm out of ~1500mm).*"

[044] We note that subsidence does not occur uniformly over the extent of a geothermal reservoir. Subsidence typically occurs as a shallow bowl centered on the abstraction location. While not discernable to the naked eye, the bowl-like nature of the subsidence results in "tilt" (or a sloping land surface) which can affect sensitive machinery and cause damage (including cracking) to rigid structures. Importantly, we understand that Dr Clearwater could not imagine a scenario where an additional 65mm of subsidence would make a difference to property structures or values. That being the case the same conclusion would apply to Dr Burnell's revised subsidence estimates outlined in his Supplementary Evidence.

[045] We also note that the application was limited notified to Te Ahi o Māui Partnership, Geothermal Developments Limited, Mercury NZ (as tappers) Norske, Oji Fibre, Carter Holt Harvey Wood Products, Asaleo Care, Sequal Lumber, Waiū Milk Factory and Nova Energy as users of the resource and none of those parties chose to lodge a submission.

[046] On the evidence available we are satisfied that the NTGA proposal will have no more than minor adverse effects on the Kawerau geothermal system, existing users of that geothermal resource and the owners and operators of structures and machinery located on the land overlying the system.

[047] We find that a consideration of these geothermal matters does not weigh against granting the NTGA application.

[38] The 120mm estimated subsidence is based on the modelled outputs from version 4 of the Reservoir Model. Dr Burnell estimated pressure decline using version 5 of the Reservoir Model would be less than 2.7 bar between 2020 and 2070 (compared to 5 bar under version 4) and on that basis he considered that additional subsidence would only be 65mm

[39] EIC Burnell, paragraph 6.19.

[40] SE Burnell, paragraph 3.5.

[41] Flow State Solutions.

5.1.5 Effects on the Tarawera River and marine receiving environment

[048] NTGA engaged Dr Chris Hickey[42] to assess water quality effects on the Tarawera River. The s42A Report author engaged Dr Alastair Suren[43] to review the ecological aspects of Dr Hickey's assessment and Dr Ngaire Phillips[44] to review the effects of the discharge on ecotoxicology and risks to human health.

[049] Spent geothermal fluid can contain a range of potentially harmful contaminants. In this case that includes ammonia, hydrogen sulphide, boron, arsenic, mercury and lithium. Using the most up to date chemical monitoring and flow data from NTGA from their compliance testing for the East and West bank discharges (to 2019) Dr Hickey generated combined discharge data and downstream concentrations and guideline comparisons. Dr Hickey assessed the effects of the EBDP discharge of harmful contaminants against a wide range of water quality parameters under worst case conditions.[45] He also examined monitoring data obtained from a longitudinal survey of the river undertaken in 2014 and undertook a longitudinal survey of geothermally-related sediment eel tissue contaminants.[46] His conclusions are summarised in tabular form in the s42A Report[47] and in his statement of evidence.[48]

[050] We observe Dr Hickey's assessment concluded:

- The EBDP discharge has a reasonable mixing zone of 200m;
- The recent period from January 2017 was considered representative of likely future discharges from the NTGA operation;
- The presence of significant diffuse inputs of geothermal contaminants upstream of the NTGA discharges means that an "add to background" approach should be used to calculate the downstream concentrations of the chemical contaminants;
- The lower Tarawera River below Kawerau comprises a mobile pumice bed (which limits the habitat suitability for macroinvertebrates) and the reach below SH30 is channelised and stop-banked (reducing the suitability as a fish habitat);
- The concentrations of geothermal contaminants (arsenic, boron, mercury, hydrogen sulphide and ammonia) in the receiving water, when assessed on an "add to background" basis for "worst case" conditions, were all less than the appropriate water quality guidelines;
- However, the dissolved boron and dissolved arsenic final receiving environment concentrations were only marginally below the guideline values[49] with respective safety factors of 1.0 and 1.3;[50]
- In terms of chronic toxicity, based on a multispecies assessment of the EBDP discharge with a worse case level of dilution there would be no toxicity to fish or invertebrates, but the combined discharge could result in a 20% reduction in algal growth;
- Regarding downstream sediment quality, mercury levels exceeded the low ANZECC guideline at one site in 2008 and arsenic and mercury exceeded the low ISQG guideline 2019. That was not considered to have an adverse effect on sediment dwelling macroinvertebrates as the Tarawera River bed is mobile at the sampling locations and is not likely to be colonised by macroinvertebrates;
- The 2014 receiving water longitudinal study showed that water physico-chemistry results during the survey were suitable for supporting healthy benthic invertebrate communities however the ANZECC 2000 recreational water quality guidelines were exceeded for boron, iron and ammonia downstream

[42] Principal Scientist, NIWA.
[43] Bay of Plenty Regional Council Senior Environmental Scientist.
[44] Director and Aquatic Ecology and Ecotoxicology Specialist, Streamlined Environmental.
[45] The *'Worst Case Scenario'* is based on a 7 day mean annual low flow in the Tarawera River and assumes the fully consented discharge which results in a dilution of 1.6% downstream of the discharge points.
[46] EIC Hickey, paragraph 7.2 and page 36.
[47] Section 9.1, Table 3.
[48] EIC Hickey, paragraph 15.2
[49] Updated boron guideline for 95% species protection (ANZG 2018b) and updated arsenic (V) guideline (Hickey et al. 2019).
[50] EIC Hickey, Attachment 8.

of the NTGA discharges. The ammonia concentration could cause odour and the exceedances could cause the temporary disruption of recreational activities;

- Stock drinking water guidelines are not exceeded for any geothermal contaminants nor a wide range of other water quality parameters in the Tarawera River upstream or downstream of the NTGA discharges and there are no consented takes for drinking water supply downstream of the NTGA discharges;
- Regarding the risk to human health from consuming food, the highest mercury concentrations in eels were observed at Onepū (several kilometres downstream), but these levels were still lower than Food Standards Australia New Zealand guidelines and thus did not represent any risk to human health. Metal and trace element concentrations in watercress were elevated, but that was attributed to natural geothermal discharges to the river. There was a minimal risk to human health from the consumption of eels or watercress.

[051] In his primary evidence DR Hickey concluded: [51]

> *"Overall, I consider that the nature of the geothermal wastewaters discharged by NTGA is consistent with the current and historic natural geothermal inputs to the Tarawera River. My assessment of the NTGA discharges incorporates an "add to background" approach for effects assessment, and I am of the opinion that the level of effects are scientifically acceptable, and are accurately described as minor (or less) in magnitude. Based on my analysis, I consider that there are no reasons from a water quality perspective not to change the conditions in the manner requested by NTGA"*

[052] He nevertheless recommended additional algal toxicity testing for both the East and West discharges or a combined discharge sample, 5 yearly multispecies toxicity testing, 5 yearly multisite eel and marine shellfish[52] monitoring, additional sediment sites within 5 yearly eel monitoring to include sites immediately upstream and below the reasonable mixing zone, additional information on harvest quantities and locations (both commercial and recreational) for eels from the Tarawera River (and local reference rivers), and a health risk assessment for recreational consumers.[53]

[053] NTGA accepted those monitoring recommendations.[54]

[054] Dr Hickey also recommended;

- that some level of baseline monitoring should be undertaken to obtain reliable reference data for the river both upstream of Kawerau and immediately upstream of the NTGA discharges; AND
- the construction of a silica terrace for the East Bank discharge to flow over before entering the Tarawera River.

[055] NTGA also accepted those recommendations.[55]

[056] Dr Suren was initially concerned about the age of the monitoring data used by Dr Hickey, the distance downstream of the sampling sites, and the lack of assessment of the combined EBDP and WBDP discharges. This led to BOPRC making a s92 request for further information from NTGA. In response Dr Hickey recommended a monitoring programme that included ecotoxicity testing (including sediment monitoring immediately downstream of the 200m mixing zone and an algal toxicity assessment) and a multi-site eel and marine shellfish monitoring programme to address human health risk matters. In his

[51] EIC Hickey, paragraph 15.3.
[52] There are no freshwater mussels in the river and only limited distribution of watercress downstream of the NTGA discharges. EIC Hickey, page 37.
[53] EIC Hickey, paragraph 2.10.
[54] EIC McClintock, paragraph 5.10.
[55] EIC McClintock, paragraph 5.12.

Supplementary Evidence, as a result of conferencing with Dr Suren, Dr Hickey recommended additional monitoring relating to macroinvertebrates.[56]

[057] From our questions posed at the hearing we understand that all of Dr Hickey's monitoring recommendations are captured in the recommended conditions that were attached to Mr McLean's Supplementary Evidence.

[058] Dr Phillips' ecotoxicity review raised concerns regarding the age of the data, the location of the sampling points, lack of ecotoxicity testing of the West Bank discharge, and the lack of information on the level of local harvesting and consumption of shellfish, eel and watercress downstream of the EBDP. However, Dr Phillips advised Ms Pappon that her "*overall feeling was that, from an ecotoxicity and human health perspective, the weight of evidence indicated that there was unlikely to be any significant effects, other than perhaps on algae".* [57]

[059] Ms Pappon considered that NTGA had demonstrated compliance with existing consent conditions (where limits apply) and compliance with relevant guidelines (such as ANZECC) for the most part. On that basis the effects of continuing the EBDP discharge were likely to be of a scale that was no more than minor. She considered that a monitoring programme alongside adaptive management responses should however be imposed and it would be beneficial to also provide for mātauranga monitoring.[58]

[060] We asked Dr Surren and Dr Phillips[59] if they agreed with Dr Hickey's overall conclusion that the EBDP discharge was having minor (or less) adverse effects on Tarawera River water quality and there were no reasons from a water quality perspective not to change the conditions in the manner requested by NTGA. Mr Fraser advised us that they did.

[061] In our Minute #2 we questioned the annual and total loads of contaminants that would be discharged over the next 14 years should the s127 application be granted and the effect of that on downstream depositional environments. In response Dr Hickey advised that he expected almost all of the geothermal constituents to be discharged to the marine receiving environment rather than retained in depositional environments in the lower Tarawera River.[60]

[062] Dr Hickey advised that the median downstream concentrations of total ammoniacal nitrogen, sulphide and dissolved arsenic resulting from the NTGA combined EBDP and WBDP discharges would all be greater than the concentrations of those contaminants in seawater.[61] We asked what adverse effect if any that would have on the marine ecosystem. In his Supplementary Evidence Dr Hickey predicted no marine toxicity would result from the concentrations of arsenic, total hydrogen sulphide or ammoniacal-N in the Tarawera River attributable to the NTGA geothermal discharges because the river concentrations of those contaminants with the addition of the NTGA geothermal discharges would all be below chronic marine water quality guidelines.[62]

[063] Finally, we have considered the mass load of heavy metals that will be discharged over the 14 year period should the s127 application be granted. From Table 6-5 of Mr Hickey's Evidence in Chief that would result in an additional 3,749 tonnes of boron, an additional 123 tonnes of arsenic and an additional 30 kilograms of mercury to be discharged to the Tarawera River and thereafter into the Pacific Ocean. That was of concern to Ms Hughes and we can appreciate why that was so as those are large amounts of toxic heavy metals.

[56] SE Hickey, paragraph 4.4.
[57] Section 42A Report, section 9.1.2.
[58] Section 42A Report, section 9.1.1.
[59] By way of written questions provide to Mr Fraser prior to the hearing.
[60] EIC Hickey, paragraph 12.13.
[61] EIC Hickey, Table 6-2.
[62] SE Hickey, paragraphs 2.1 to 2.17.

[064] Addressing this matter Dr Hickey advised:[63]

> "*The discharged mass loads need to be converted to receiving water concentration – by dilution into the river flow – to provide the base concentration for bioaccumulation processes to occur. In the case of the NTGA discharges, their volume of discharge is less than 2% of the river flow under worst case conditions. Any annual loads would need to be related to annual river flow to generate annual mean concentration. Thus, any sole reliance on mass load values are not informative in relation to receiving water exposure and bioaccumulation processes*."

[065] We asked Dr Hickey if the volume of heavy metals that would be discharged over the 14 year period caused him any concern at all. He replied that it did not as there were background levels of all of those metals in the ocean.

[066] We asked Dr Surren and Dr Phillips the same questions.[64] Mr Fraser advised us that Dr Phillips agreed with Dr Hickey, but Dr Suren was more circumspect and he had some concerns, but they would be addressed by the monitoring proposed by NTGA.

[067] On the evidence we conclude that potential adverse effects on the water quality and ecology of the Tarawera River, its estuary and ultimately the marine receiving environment do not in themselves weigh against granting the NTGA application.

5.1.6 Effects on Māori cultural values and interests

[068] As noted by counsel for NTGA "*Four iwi have recognised interests in the Tarawera Awa, being Ngāti Tūwharetoa, Ngāti Awa, Ngāti Rangitihi, and Ngāti Mākino. Ngāti Tūwharetoa[65] and Ngāti Rangitihi have provided their written approval to the NTGA application and Ngāti Mākino did not make a submission*."[66] The identification of these four iwi was confirmed by Ms Pappon who referred to the iwi boundary layers in the Office of Treaty Settlement maps.

[069] Ngāti Tūwharetoa Bay of Plenty hold Statutory Acknowledgements over the KGS and the Tarawera River. NTGA is the subsidiary of Ngāti Tūwharetoa Holdings Limited; the commercial arm of the Ngāti Tūwharetoa (Bay of Plenty) Settlement Trust (NTST).

[070] Ngāti Awa (TRoNA) also hold a statutory acknowledgement over the Tarawera River; from the confluence with the Mangakotukutuku Stream to the mouth of the Tarawera River. Evidence in support of TRoNA's submission was provided by Beverley Hughes.[67]

[071] As noted in the NTGA Reply submissions "*There can be no doubt that the Tarawera Awa is a taonga of great cultural significance to Ngāti Tūwharetoa and Ngāti Awa*."[68]

[072] NTGA say that allowing the EBDP discharge to continue for another 14 years will enhance the mauri of the Tarawera River. This is perhaps best encapsulated by NTGA witness Bev Adlam who stated:[69]

> *The geothermal discharge this application refers to is a central part of the Mauri of the Awa. It enhances and replenishes the geothermal heart and spirit of the Awa, which has been depleted and impacted on since the 1950's with the industrial developments in Kawerau. …. We do not accept the local geothermal fluid as being 'contaminants' as they are a natural part of the Awa*

[63] SE Hickey, paragraph 3.6.
[64] Also by way of written questions provide to Mr Fraser prior to the hearing.
[65] As we noted in section 4.1 of the Decision, this was withdrawn prior to the hearing, but not out of a concern about the adverse effects of the proposal.
[66] Opening submissions, paragraph 6.1.
[67] Statement of Evidence on Behalf of Te Runanga O Ngāti Awa (TRONA), 17 June 2021 referred to hereafter as EIC Hughes
[68] Reply submissions, paragraph 2.1.
[69] EIC Adlam, paragraphs 4.1 and 4.6.

> *and in some ways assist in the restoration of the Awa as we all work towards this journey to give mana to the Awa and mana to the Ngawha that they deserve."*

[073] In her Supplementary Evidence Ms Adlam helpfully answered our query about whether the EBDP was a 'natural flow'. She stated:

> *"The discharge of geothermal water from deep within the Ngāwhā to the surface of the Awa used to occur as part of the normal behaviour of the geothermal system and is a natural flow. That flow does not occur naturally now, but I see NTGA's East Bank and West Bank discharges as being a replenishment of those historical flows."*

[074] Ms Adlam's view was echoed in the evidence of NTST Trustee Amorangi Graham Kahu Te Rire who stated:[70]

> "*The flow that is received by the Awa on the eastern bank from the NTGA operations is a way of replenishing the Mauri of the Awa by reintroducing geothermal water that has always been an integral part of the Awa. Although the water is sourced from deeper within the system than would naturally flow to the Awa, we view the whole Ngawha as one flow, and to us there is no difference*."

[075] Regarding mahinga kai, in his Supplementary Evidence Mr Milner advised:[71]

> "*During a site visit with Ngāti Tūwharetoa kaumātua, kuia, and NTGA staff on the 6th of May 2021, feedback on mahinga kai was positive and that kai was still harvested today, but the abundance has decreased. Therefore, the traditional practice of harvesting mahinga kai was still occurring at traditional sites which is a good indication of a key component of the mauri of the Awa*."

[076] We asked Mr Milner what was harvested and where from. He replied that it involved watercress, tuna (eels) and koura (freshwater crayfish), including from areas below the EBDP. That was reinforced by Ms Adlam and Amorangi Te Rire, although they both stated that koura were no longer present in the river. We accept that the contemporary harvesting of mahinga kai is a good indicator that the existing water quality is not inappropriate for cultural uses.

[077] Conversely TRoNA[72] say the EBDP "… *discharge degrades the mauri of the river, its environs, the marine receiving environment and the air freshwater*." We refer to the following passages from the evidence of Ms Hughes to set out what we understand to be Ngāti Awa's position:[73]

> *"This is not a natural discharge but is a man-made industrial discharge established when, in the 1950's the Crown drilled the first wells deep into the Kawerau geothermal system and drew geothermal fluid to support the establishment and operation of the Tasman Pulp & Paper Company. …*
>
> *"Ngāti Awa assesses that the east bank discharge does not maintain, protect, or sustain the health and well-being of, that it adversely affects Ngāti Awa relationships with freshwater and the Tarawera River, and that it degrades the mauri of freshwater rather than enhancing the mauri as promoted by Objective 9 of the Ngāti Awa Environmental Management Plan."*
>
> *"… it is self-evident that the natural flows and seepages, and the traditional uses to which they were put, cannot compare with the volumes and levels of contaminants discharged from the*

[70] EIC Te Rire, paragraph 6.3.
[71] Paragraph 2.2.
[72] EIC Hughes, paragraph 41.
[73] EIC Hughes, pages 14, 15 and 18.

> *industrial east bank outfall, which is, in our view an unnatural, industrial discharge that is harmful to the mauri of freshwater, and Tarawera River, and the receiving environment into which it flows."*
>
> *"… Ngāti Awa seeks to ensure that the only geothermal influences on Tarawera River and environs are natural influences that have arisen from the movements of Papatuanuku and her unborn child Rūaumoko."*

[078] The views of NTGA / NTST and TRoNA are diametrically opposed. NTGA / NTST see the EBDP discharge as a means of restoring previous but now diminished natural flows of deeply sourced geothermal fluid into the Tarawera River. Conversely TRoNA sees that discharge as an 'unnatural' discharge of contaminants.

[079] As stated by Mr Milner in his Supplementary Evidence[74] "*In essence, we have come to an impasse due to NTST and TRoNA's contrasting views of the impact of the discharge on the mauri and health and wellbeing of the Tarawera Awa.*"

[080] Counsel for NTGA referred to case law which stated that in the event of conflicting evidence as to Māori cultural values and practices, it is open to the consent authority (us in this case) to accept the evidence of one iwi over another.[75] However, we find that it is not for us to favour one view over the other or to assume that they somehow cancel each other out. Instead, we recognise and acknowledge both as is required by Policy KT P16 of the Regional Natural Resources Plan which is "*To recognise that different iwi and hapu may have different water, land and geothermal resource management concerns, practices and management methods*."

[081] Counsel for NTGA urged us to place greater weight on the evidence from NTGA, given that " … *they were prepared to back their case with kuia and kaumātua and TRONA did not*".[76] While that may be the case, we do not consider that denigrates TRoNA's concerns as enunciated to us by Ms Hughes.

[082] The TRoNA submission and the evidence of Ms Hughes inevitably lead us to find that granting the NTGA application will result in adverse effects on the cultural values and interests of Ngāti Awa. That is a factor that weighs significantly against granting the application, notwithstanding NTST's opposing view.

[083] We note that TRoNA supported the two year extension of the EBDP discharge recommended by Ms Pappon which would see the EBDP discharge cease by 1 January 2023. We discuss that further in section 7 of this Decision.

[084] TRoNA also sought an additional condition of consent as follows:

> *At the cost of the Consent Holder, the Consent Holder shall convene regular six-monthly engagement hui with members of Te Rūnanga o Ngāti Awa and Ngāti Awa hapū representatives and kaitiaki for the purpose of providing progress reports on NTGA achievement of reinjection of all discharges from the East Bank outfall commencing December 2021*.

[085] We acknowledge the merits of that condition should a 14 year extension of the reinjection date be granted, as it will enable TRoNA to be fully informed of NTGA's progress with ceasing the EBDP discharge. In his Supplementary Evidence Mr McLean supported such regular engagement should the NTGA application be granted either until 2023 or for the full 14 years sought by NTGA.[77]

[74] Paragraph 2.12.
[75] Opening submissions, paragraph 6.6(f).
[76] Reply submissions, paragraph 2.14.
[77] Paragraph 10.6(c).

5.1.7 Costs of reinjection

[086] An interesting issue for us is how much weight we should afford to the adverse financial effect on NTGA arising from the costs of providing reinjection.

[087] In our written questions to NTGA we noted that if the s127 application was declined NTGA stated they will need to spend ≈$35 million constructing new injection wells and pipelines. Mr McClintock had advised that would be serviced by a bank loan. We asked Mr Osborne what the net impact on NTGA's total annual revenue would be on servicing that loan, taking into account any depreciation that could be claimed on those new assets. In his Supplementary Evidence Mr Osborne advised that assuming a commercial loan at market rates, the average annualised cost to NTGA would be $5,932,033 per annum.[78] We accept that is a significant annual sum.

[088] Granting the NTGA application would avoid those costs.

[089] We understand that there are a number of cases where parties have argued that the high cost of complying with conditions of consent makes those conditions unreasonable. The Courts, however, have consistently held that conditions are not unreasonable just because they will be expensive to comply with. In *Kiwi Property Management Ltd v Hamilton City Council*, the Environment Court held:[79]

> It is well known that a condition of a resource consent must be such as arises fairly and reasonably out of the subject matter of the consent. However, in our view, a consent is not "negated", or rendered "impracticable" or "frustrated", merely because it requires the carrying out of works which might be expensive. We agree with Mr Cooper's submission that such may be the price which an applicant has to pay for implementing a resource consent in certain circumstances.

[090] It is therefore arguable that the cost of carrying out the previously committed to reinjection is the price that NTGA has to pay for utilising the Kawerau geothermal resource. If that cost is too high to bear then NTGA could choose to cease the abstraction of the geothermal fluid.

[091] We put the *Kiwi Property* case to counsel for NTGA as it was not one discussed in their opening submissions. In Reply counsel helpfully submitted[80] that the scenario addressed in *Kiwi Properties* "*… can be distinguished from the present circumstances - in the context of this application, the mitigation that TRONA and BOPRC would like to see implemented is not necessary to address adverse effects …*". While that may be correct insofar as it relates to 'western' effects on the Tarawera River and the marine receiving environment, it is not correct insofar as it relates to the cultural concerns strongly held by TRoNA.

[092] Nevertheless, we find that the costs of reinjection would be an adverse financial effect on NTGA, albeit one that they previously agreed to in 2016 and one that reasonably derives from the ongoing exploitive use of the KGS. We note similar costs are borne by all other users of that resource, as noted in section 3 of this Decision.

[093] Regarding NTGA's 2016 commitment to reinjection, we accept the evidence of Mr McClintock[81] that from NTGA's perspective there are (at least) two important factors that apply now that did not apply at the time the 2016 decision was made to accept a reinjection target date of 1 January 2021. Those factors being firstly financial or commercial matters and secondly the evidence of Dr Burnell and Dr Hickey regarding the acceptable effects of respectively of not reinjecting the spent fluid back into the KGS reservoir and secondly the minor adverse effects on the health and well-being of the Tarawera River of continuing the EBDP discharge.

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[78] SE Osborne, paragraph 2.3. Based on interest and principal repayments, depreciation and net operational and maintenance costs (noting the EDBP discharge O&M costs would not arise). Mr McClintock had advised that servicing the reinjection well debt would cost NTGA around $2.5 million per annum but in answers to our questions he agreed that Mr Osbourne's figure was more appropriate.

[79] *Kiwi Property Management Ltd v Hamilton City Council* (2003) 9 ELRNZ 249 at [65].

[80] Reply submissions, paragraph 3.21.

[81] EIC McClintock, paragraph 1.9.

5.1.8 Time required to cease the EBDP discharge

[094] Ms Pappon and Ms Hughes both supported a two year extension of the 1 January 2021 discharge cessation date to enable NTGA to design and install the necessary reinjection infrastructure. To assess the practicality of that we asked Mr McClintock the period of time that would be required to design, construct and commission the necessary two new injection wells and pipelines. In his Supplementary Evidence Mr McClintock advised[82] that the lead time would be between 1 to 3 years depending on rig availability and resource consent requirements.

5.1.9 Ngāti Rangitihi Claims Settlement Act

[095] Counsel for NTGA suggested that it would be premature to require reinjection given the pending Ngāti Rangitihi Claims Settlement Bill which when passed as an Act is likely to establish a statutory body called the Tarawera Awa Restoration Strategy Group comprising NTST, Te Mana o Ngati Rangitihi Trust, TRoNA and Ngati Makino Iwi Authority along with all other statutory agencies with the purpose of developing a restoration strategy for the Tarawera Awa in a document to be entitled Tarawera Awa Restoration Strategy. Counsel suggested that the new Strategy might decide that reinjection was not required.

[096] That may be so but it is at least equally likely that the new Strategy will conclude that the EBDP discharge to the river should cease. Consequently, we are not persuaded that the pending Ngāti Rangitihi Claims Settlement Act is a sound reason for delaying reinjection.

5.2 National environment standards and other regulations

[097] The NES for Sources of Human Drinking Water (NESDW) is potentially relevant. However, we were informed that there are no community water supply intakes downstream of the NTGA discharges to the Tarawera River.

[098] As noted by Ms Pappon, the National Environmental Standard for Freshwater Management 2020 (NESFM) is potentially relevant, particularly regulation 54(c).[83] That regulation requires a non-complying activity consent for any to discharge to water within or within a 100m setback from a 'natural wetland.' Assessing the definitions of 'wetland' in the NESFM, the NPSFM 2020 and the RMA she concluded that regulation 54 does not apply to the EBDP discharge. We agree.

[099] No other relevant national environmental standards or regulations were brought to our attention and we are not aware of any.

5.3 National policy statements

[100] The NPS for Freshwater Management 2020 (NPSFM) is applicable. The NPSFM 2020 was assessed by both NTGA[84] and the Ms Pappon.[85] We have had regard to those assessments. Our own assessment follows.

[101] The sole Objective 2.1(1) of the NPSFM 2020 is:

> The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises:
> (a) first, the health and well-being of water bodies and freshwater ecosystems
> (b) second, the health needs of people (such as drinking water)
> (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future

[82] SE McClintock, paragraph 6.2.
[83] Section 42A Report, section 5.
[84] NTGA Consent Change Application – NPS-FM and NES-FW Considerations, Enspire Memorandum to Mary Pappon BOPRC from Blair McLean, Enspire Consulting Ltd. Also the evidence of consultant planner Blair McLean.
[85] Section 42A Report, section 10.5, Table 13.

[102] The collective view of the Dr Hickey, Dr Suren and Dr Phillips was that the adverse effects of a continued EBDP discharge on the health and well-being of the Tarawera River and its freshwater ecosystem are *"minor (or less) in magnitude".* On that basis granting the NTGA application would not be inconsistent with the first priority of Objective 2.1.

[103] In this case the health needs of people, including drinking water are not at issue.

[104] Matters of social and economic well-being rank equally with cultural well-being as a third priority. Therefore, providing NTGA with an ability to achieve enhanced economic well-being does not outweigh the need to provide TRoNA an ability to provide for their cultural well-being. Nor does enabling NTST's ability to provide for their beneficiaries' social well-being. Again, these matters do not in our view 'cancel each other out'.

[105] We find that the NTGA application is inconsistent with Objective 2.1(c) of the NPSFM 2020.

[106] We consider that most relevant NPSFM policies are Policy 1, 2, 7, 9 and 15.[86]

[107] Policy 1 is to manage freshwater in a way that gives effect to Te Mana o te Wai. The NPSFM states that Te Mana o te Wai is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. This largely replicates Objective 2.1.

[108] Importantly, TRoNA contend that the discharge will have an adverse effect on the mauri of the Tarawera River. We understand their view to be, as relayed to us in the evidence of Ms Hughes, that to give effect to the principles of mana whakahaere, kaitiakitanga and manaakitanga the EBDP spent geothermal fluids should be returned to their source deep below the earth, thereby preserving the mauri of the river. On the basis of TRoNA's submission and evidence we find that the NTGA application is inconsistent with Policy 1 of the NPSFM 2020 insofar as it relates to the freshwater values of TRoNA. We acknowledge however that it is consistent with the freshwater values of Ngāti Tūwharetoa and Ngāti Rangitihi.

[109] Policy 2 is that tangata whenua are actively involved in freshwater management (including decision making processes) and Māori freshwater values are identified and provided for. In this case Ngāti Tuwharetoa are essentially the applicant and they have therefore been actively involved in (and support) the NTGA proposal and they say it provides for their freshwater values. Conversely Ngāti Awa oppose it say it will not provide for their freshwater values. We acknowledge that NTGA has made genuine and comprehensive attempts to engage with TRoNA and resolve their concerns.

[110] Counsel for NTGA contended that the conditions they recommend provide an avenue and opportunity for TRoNA to express their views and exercise their responsibilities as kaitiaki, provide for a sophisticated system of monitoring water quality effects on the Awa, and provide an adaptive management regime to address any issues arising.[87] From the evidence of Ms Hughes we understand that TRoNA does not agree with that, although they welcomed the opportunity for further dialogue with NTGA.

[111] We find that the NTGA application is not consistent with Policy 2 of the NPSFM 2020 insofar as it relates to the freshwater values of TRoNA, but it is consistent with the freshwater values of Ngāti Tūwharetoa and Ngāti Rangitihi.

[112] Policy 7 is that the loss of river extent and values is avoided to the extent practicable. The NPSFM defines loss of value as including where the river is less able to provide for matters including ecosystem health, indigenous biodiversity, Māori freshwater values and amenity. Following on from the above discussion, we find that the NTGA application is inconsistent with Policy 7 of the NPSFM 2020 insofar as it relates to

[86] The remaining policies relate to procedural matters; BOPRC plan making, the use and development of land, monitoring and information provision; or features that are not present here (natural inland wetlands and outstanding water bodies).
[87] Opening submissions, paragraph 8.4.

the freshwater values of TRoNA, but it is consistent in all other aspects including the freshwater values of Ngāti Tūwharetoa and Ngāti Rangitihi.

[113] Policy 9 is that the habitats of indigenous freshwater species are protected. There is no definition of 'protection' in the RMA but we understand this to be a strong directive, imposing a duty on us as decision-makers to keep those habitats "*safe from harm, injury, or damage*".[88] Based on the collective opinions of Dr Hickey, Dr Suren and Dr Phillips we find that the NTGA proposal is consistent with Policy 9.

[114] Policy 15 is that communities are enabled to provide for their social, economic, and cultural well-being in a way that is consistent with the NPSFM. Granting the NTGA application would achieve that outcome for NTGA (and consequently NTST) but not for TRoNA. We find that the NTGA application is inconsistent with Policy 15.

[115] In overall terms we find that the NTGA application is marginally inconsistent with the NPSFM 2020.

[116] In that regard we acknowledge Ms Pappon's view[89] that "*the discharge to the Tarawera River for an additional 14 years would go against the intention and direction of the NPSFM. I believe the enactment of the NPS is to acknowledge that water quality in many rivers throughout New Zealand is degraded and that the intent of the NPS is to improve water quality with everyone doing their part; whether that be in a big or small way."*

[117] Our findings regarding the NPSFM 2020 weigh against granting the NTGA application.

5.4 New Zealand Coastal Policy Statement

[118] The New Zealand Coastal Policy Statement is arguably not directly relevant given the location of the EBDP discharge being well outside the coastal environment. However, as we discussed earlier in this Decision the contaminants contained in the EBDP discharge end up in the marine receiving environment.

[119] Objective 1 of the NZCPS is:

> **Objective 1**
> To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:
> …
> - maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity

[120] Discharging the substantial volumes of heavy metals to the coastal environment that were set out in Table 6-5 of Dr Hickey's evidence is arguably inconsistent with that objective insofar as it refers to maintaining the 'natural condition' of coastal waters, notwithstanding that there is no evidence that those heavy metals are having, or will have, a significant adverse effect on marine ecology and habitat. We find that this weighs marginally against a grant of consent.

5.5 Regional Policy Statement

[121] The Bay of Plenty Regional Policy Statement (RPS) became operative on 1 October 2014. The RPS provisions relating to geothermal matters were assessed by Ms Pappon.[90]

[122] We observe that the NTGA application is inconsistent with Policy GR 2A which refers to geothermal system management plans and the active encouragement of reinjection. The Kawerau System Management Plan seeks to ensure the deep injection of spent fluid to avoid significant adverse effects

[88] *Royal Forest & Bird Protection Society of NZ Inc v New Plymouth District Council* [2015] NZEnvC 219 at [63].
[89] Section 42A Report, section 10.5, conclusion
[90] Section 42A Report, section 10.3.

and maintain pressure support for the KGS and to minimise the discharge of extracted fluid to surface features such as the Tarawera River.[91]

[123] We note that RPS Objective 27 is relevant in terms of water quality. It requires that the quality and mauri of water in the region is maintained, or where necessary enhanced to meet the identified values associated with its required use and protection. The NTGA proposal will not achieve that outcome with regard to TRoNA's freshwater values, but it will do so with regard to the freshwater values of Ngāti Tūwharetoa and Ngāti Rangitihi.

[124] We find that a consideration of the RPS weighs against granting the NTGA application.

5.6 Regional plans

[125] The most relevant plan is the Tarawera River Catchment Plan (TRCP) which provides particular guidance and direction for activities occurring in the catchment that affect the River. The TRCP was assessed by the s42A Report author and we have had regard to her assessment.[92] Relevant provisions include:

Policy 13.5.3(a)	To ensure that the natural character of wetlands, lakes, rivers and their margins is not further degraded but is enhanced or protected from inappropriate subdivision, use and development.
Policy 15.8.3(b)	To promote reduction of contaminant discharges into the Tarawera River.
Policy 15.8.3(e)	To encourage dischargers to avoid, remedy or mitigate any actual or potential adverse effects arising from their direct or indirect discharge of contaminants into water by: (a) Limiting and reducing quantities and concentrations of discharged contaminants, in particular, contaminants which can reduce the life supporting capacity of aquatic ecosystems.
Policy 17.4.3(a)	To limit the effects of fluid discharge on the Tarawera River by encouraging reinjection of waste geothermal fluid into the Kawerau field.
Policy 17.4.3(b)	To restrict and limit the discharge of waste geothermal contaminants into the Tarawera River.

[126] The NTGA application is inconsistent with all of the above provisions, particularly the directive Policy 17.4.3(b), and this weighs strongly against granting it.

[127] The Tarawera River has a 'fish purposes' water quality classification which seeks to maintain water quality for trout. In doing so it is anticipated that the survival of indigenous species will also be provided for. We agree with Ms Pappon that although some uncertainty remains, the evidence of Dr Hickey and the BOPRC technical reviews indicate that the EBDP discharge is unlikely to result in water quality in the Tarawera River that is unsuitable for fish. This particular aspect weighs in favour of granting the NTGA application.

[128] The Regional Natural Resources Plan (RNRP) is also relevant and was also assessed by Ms Pappon.[93] Relevant provisions that she identified (those that provide guidance to us as decision-makers as opposed to those that relate more to the actions of tangata whenua or the BOPRC) include:

Policy KT P5	To ensure that resource management issues of concern to tangata whenua are taken into account and addressed, where these concerns are relevant and within the functions of the Regional Council.
Policy KT P16	To recognise that different iwi and hapu may have different water, land and geothermal resource management concerns, practices and management methods.
Policy KT P17(b)	To have regard to iwi resource management planning documents when considering resource consent applications, where such documents exist.

[91] Section 42A report, section 10.4.
[92] Section 42A report, section 10.1.
[93] Section 42A Report, section 10.2

GR P1(e)	To actively encourage geothermal water to be reinjected into a geothermal reservoir, where appropriate to the circumstances and subject to an assessment of effects.
GR P6(a)(i)	To manage the discharge of geothermal water … [by] …To prefer reinjection where practicable and appropriate to the production method, field characteristics, and safety considerations.
GR P6(b)	To allow the discharge of geothermal water to water only where: (i) The discharge of fluid is into the resource from which the fluid was originally extracted, or (ii) The discharge of fluid is to a surface or groundwater body that is geothermal or naturally influenced by geothermal inputs, or (iii) The effect on the environment is minor

[129] This hearing and Decision give effect to Policies KT P5 and KT P17(b). We have already acknowledged Policy KT P16 in section 5.1.4 of this Decision.

[130] On the face of it the NTGA proposal is inconsistent with policies GR P1(e) and GR P6(a)(i). However, regarding GR P1(e) in this case the "circumstances" are that NTGA contend that reinjection is not necessary in terms of geothermal reservoir management and regarding GR P1(a)(i) they contend it is not appropriate given the risk of reservoir cooling. We understand that BOPRC does not dispute those contentions. That being the case the NTGA proposal would not be inconsistent with those policies. The NTGA proposal is also consistent with policy GR P6(b)(ii) and (iii).

[131] However, the RNRP also includes Chapter 6 "Discharges to Water and Land and On-Site Effluent Treatment." We consider that more relevant provisions include:

DW O1(b)	Discharges of contaminants to water are in a manner that takes into account the cultural values of tangata whenua acknowledged for that area.
DW O3	Prevent the accumulation of persistent toxic contaminants in the environment, particularly in lakes, estuaries and harbours and their catchments.
DW P5(e)	To recognise and provide for the effects on the mauri of the receiving environment caused by the discharge of contaminants to water by … Avoiding physical degradation of the life-supporting capacity of receiving waters.

[132] The NTGA application is inconsistent with RNRP objectives DW O1(b) (with regard to the freshwater values held by TRoNA). It is also inconsistent with the very directive objective DW 03 as it will not prevent the accumulation of persistent toxic contaminants in the environment. Indeed, conversely, it will directly add to the accumulation of toxic contaminants in the form of the heavy metals boron, arsenic and mercury. Objective DW 03 is a very directive provision (prevent meaning 'do not allow' or 'avoid') and so we afford that provision substantial weight.

[133] Based on the evidence of the water quality experts the NTGA application would be consistent with policy DW P5(e).

[134] Considering the overall scheme of the RNRP provisions we find that they weigh against granting the NTGA application. We note that Ms Pappon came to the same conclusion[94] as did Mr Fraser.

5.7 Iwi and hapū management plans

[135] Ngāti Awa's Environmental Management Plan (Te Mahere Whakarite Matatiki Taiao ō Ngāti Awa) is relevant. The TRoNA submission and evidence details why, in their view, the NTGA application is inconsistent with that Plan. From the TRoNA submissions we observe relevant provisions of the Plan include:

[94] Section 42A Report, section 10.2, page 35.

Policy 6.1.3(b)	Ngāti Awa objects to the …disposal of contaminates [sic], particularly wastewater and stormwater directly into natural waterways
Policy 6.3.5	Support and advocate for: The safe reinjection of geothermal fluids. The protection, restoration, and enhancement of geothermal surface features.
Objective 4	No further degradation of water quality within our rohe.

[136] We agree with Ms Hughes that the NTGA application is inconsistent with those provisions.

5.8 Sections 105 and 107

[137] Under s105 of the RMA we must have regard to the nature of the discharge and the sensitivity of the receiving environment, NTGA's reasons for the proposed choice and any possible alternative methods of discharge including into another receiving environment.

[138] In this case the nature of the discharge is that it contains heavy metals which can be detrimental to the health and well-being of the Tarawera River, albeit in this case the technical evidence is that the continuation of EBDP discharge is unlikely to result in such adverse effects.

[139] The Tarawera River has a history of being used to dispose of industrial wastewater. Industrial discharges continue to be authorised on the river today but require continuous improvement and the implementation of best practicable options to improve water quality.[95] The Tarawera River might therefore be categorised as a sensitive waterbody, not in terms of it having pristine water quality (which it does not) but in terms of its level of contamination (both natural and human induced) being such that it is sensitive to additional or continued contaminant loads.

[140] As set out in their AEE, NTGA's choice of the Tarawera River as a receiving environment is primarily commercially driven and there is clearly an alternative receiving environment (reinjection into the KGS reservoir) which is both promoted (or at the very least strongly encouraged) by the regional statutory instruments and is less sensitive (in terms of water quality) than the Tarawera River.

[141] We find that having regard to s105 of the Act weighs against the NTGA application.

[142] Section 107 requires that no discharge permit shall be granted that allows certain listed effects in the receiving waters after reasonable mixing (in this case there is a 200m mixing zone). The s42A Report author considered that the EBDP discharge was unlikely to give rise to the effects listed in s107(1)(c) – (g). On that basis we find that s107 would not preclude a grant of the s127 application.

5.9 Other matters

[143] The s42A Report author helpfully commented on the past performance of NTGA with regard to the EBDP discharge.[96] We find it useful to quote her advice here:

> Despite conditions of consent [67151] that required the cessation of the discharge and a reduction in total amount of heat within the spent geothermal fluid; from 180GJ/hour to 83 GJ/hour (both of which were required by 01/01/2021) and conditions that require annual updates on the progress made towards meeting these limits, it appears that NTGA continue to discharge similar volumes of spent geothermal fluid and heat within that fluid to the Tarawera River as they were in 2016.
>
> NTGA have known for a long time that the discharge to the river would be required to cease. Each time this issue has been explored through consent processes, the same concerns have been raised regarding the term of the discharge and the timeframe in which the discharge should cease. These concerns have been raised by various parties, but have been consistently raised by Ngāti Awa dating back to the original decision in 1997.

[95] Section 42A Report, section 11.
[96] Section 42A Report, section 11.

> NTGA have been on a timeline for transitioning to reinjection from the time they took over the consent in 2005. This means that to date they have had approximately 16 years to consider and reconcile the commercial implications associated with injection. I believe this timeframe demonstrates that any cessation term should be limited to provide enough time for the construction of injection wells.
>
> It is important to recognise that NTGA hold a comprehensive resource consent that enables the drilling of wells across the Kawerau Geothermal System. [97] Therefore, it is not anticipated that there would be further delays associated with obtaining additional authorisations under the RMA and drilling could commence as soon as access to the drilling rigs could occur.

[144] While not being determinative in isolation, we find that the above matters weigh against granting the NTGA application.

[145] For NTGA Phil Osborne[98] estimated the total value-added production to the Bay of Plenty Region's business activity brought about by the NTGA direct operations as well as the value added by the activities currently sourcing energy from these operations that are assumed to be 'unique' in terms of an addition to the regional economy.[99] We found that evidence to be of little if any assistance because it did not quantify what the effect of declining the NTGA application would be.

[146] As part of the NTGA Reply a brief supplementary statement was provided by Mr Osborne.[100] He postulated that $35 million of capital spent on reinjection "… *would generally contribute a total of $28m per annum to regional GDP and support over 140 full time jobs each year. Those economic benefits would be foregone if that expenditure were diverted into establishment of reinjection infrastructure*." We find it difficult to assign much weight to that evidence as it neglects the fact that the reinjection will, on NTGA's own evidence, be serviced by a bank loan. It also assumes that the money expended on servicing that loan would have otherwise be spent in the region and not kept as retained earnings or used in other ways.

[147] No other relevant matters were brought to our attention and we are not aware of any.

5.10 Permitted baseline

[148] When forming an opinion for the purposes of subsection 104(1)(a) of the RMA we may disregard an adverse effect of the activity on the environment if a national environmental standard or a plan permits an activity with that effect.[101] We have not disregarded any effects associated with the application.

6 Part 2 matters

[149] Following the Court of Appeal's judgement on *RJ Davidson Family Trust v Marlborough District Council* we have not separately assessed Part 2 matters as we consider that the relevant plan provisions have clearly given effect to Part 2 and so assessing the Part 2 matters *"would not add anything to the evaluative exercise"*. We note both Ms Pappon and counsel for NTGA[102] agreed with that approach.

7 Determination

[150] Mr McClintock succinctly summarised the case before us. In his Supplementary Evidence he stated:[103]

> *"We acknowledge that the policy context (and the Bay of Plenty Regional Council itself) favour reinjection. However, reinjection is not an end in and of itself and the NTGA discharge is unusual in the sense that reinjection is not required to sustain the geothermal field (evidence of Dr Burnell) or avoid water pollution (evidence of Dr Hickey). Furthermore, the evidence of Amorangi Te Rire*

[97] Authorised by Bay of Plenty Regional Council Consent RM19-0662.
[98] An economic consultant for the company Property Economics Ltd.
[99] EIC Phil Osborne, paragraph 5.3.
[100] Second Supplementary Statement of Evidence of Philip Mark Osborne, July 2021.
[101] Section 104(2) of the RMA.
[102] Outline of Legal Submissions Of Counsel for Ngāti Tuwharetoa Geothermal Assets Limited, 29 June 2021, paragraph 3.15.
[103] SE McClintock, paragraph 3.4

> *and Mrs Adlam note the importance to the tikanga of Ngāti Tuwharetoa of allowing the geothermal fluid to enter the Tarawera Awa as it has for time immemorial."*

[151] In his s42A Addendum Report Mr Fraser put it this way:[104]

> *"Essentially, the question for the commissioners to determine is whether the interpretation by Ms Pappon, the reporting planner, is overly literal, and that the acknowledged strong policy support for removing contaminants from water bodies and in favour of reinjection of geothermal fluid should be outweighed by direct consideration of environmental effects and economic benefit."*

[152] We have earlier found that our own assessment of the statutory instruments, as informed by the technical and iwi cultural experts we heard from regarding potential effects, weigh against granting the NTGA application. Contrary to the submissions of counsel for NTGA[105] we do not consider this to be an "*overly literal interpretation of these documents*" or a case of the "*policy tail wagging the real world dog"*". It is simply the result of having regard to the policy provisions as we find them.

[153] Counsel for NTGA submitted[106] that following BOPRC's full implementation of the NPSFM 2020 "*It may be determined that NTGA's discharge from the East Bank is acceptable in terms of Te Mana on te Wai*." That may be the case, but it may also be the case that the discharge from the East Bank is found to be unacceptable. In any case, it is not for us to speculate what the future policy direction might be, rather it is to apply the policy direction as it is today.

[154] In terms of potential effects, the technical evidence was that the adverse effects that might arise for water quality, aquatic ecosystems and the KGS reservoir from granting the NTGA application are no more than minor. However, at the hearing Ms Hughes advised that TRoNA did not accept the consensus of the 'western science' experts with regard to effects on the Tarawera River because in their view NTGA '*had not looked in the right places*' for those effects as indicated by the extensive monitoring programme now recommended by Dr Hickey (as described out in section 5.1.5 of this Decision). We were similarly unsure how the scientists could be so confident that effects on the river were minor given that they all agreed that much more information regarding those effects was required.[107]

[155] We consider that adverse effects on TRoNA's freshwater values and by association their cultural well-being, including their understanding of the mauri[108] of the Tarawera River, would be significant if the NTGA application is granted in full. Relevantly, Ms Hughes advised us that TRoNA's opposition to the EBDP discharge was long standing and had been consistently advocated in previous hearings including the 1997 and 2016 consent processes that eventually led to the 1 January 2021 discharge cessation condition.

[156] We asked Mr McClintock if NTGA would actually implement full reinjection by 2035 if the s127 application was granted as applied for. He said he was not sure if it would although "*NTGA wanted to look after the Awa*". He said it would depend on whether reinjection could occur with a low level of risk to the KGS reservoir and the consensus was that the spent fluid should not be discharged to the river. That gives us little confidence that the 2035 date would actually be complied with even if we were to allow it. It does not seem appropriate to us to impose a condition of consent that by the applicant's own admission may not be complied with.

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[104] Section 3.0 Conclusion.

[105] Opening submissions, paragraph 2.3.

[106] Reply submissions, paragraph 4.17.

[107] We note that Dr Suren also had some uncertainty about effects on the marine receiving environment although he thought that uncertainty would be addressed by the proposed monitoring.

[108] In answer to our questions Ms Hughes stated that the spent geothermal fluid containing contaminants discharged at the EBDP would have remained deep in the KGS had it not been abstracted for commercial use by NTGA and so but for that abstraction those contaminants would have remained deep under the ground. Discharging them instead to the river degraded the mauri of the Awa.

[157] Given all of the above, and in the absence of determinative positive effects of granting the NTGA application (as discussed in section 5.1.1 of this Decision), we conclude that it should be effectively declined.

[158] However, the 1 January 2021 date cannot be retained because it has passed. This requires us to decide on an appropriate future date by which the reinjection of the EBDP discharge must occur. We acknowledge Ms Pappon's recommendation to grant the application with an effective duration of two years and TRoNA's support for that recommendation.[109] However, Mr McClintock's evidence is that it could take up to three years to plan and develop the necessary infrastructure.

[159] Our overall determination is:

The EBDP discharge cessation date can be delayed by three years from this point in time yielding a date of 30 July 2024.

[160] Accordingly, pursuant to the powers delegated to us by the Bay of Plenty Regional Council under section 34A of the Resource Management Act 1991, we grant the s127 application made by Ngāti Tūwharetoa Geothermal Assets to change conditions of consent 67151, subject to delaying full reinjection by only three years and not the 14 years sought.

[161] Our reasons are set out above and additionally in the body of this Decision.

8 Conditions

[162] In light of our determination there are not many changes that need to be made to the conditions. The date for implementing reinjection is changed to 30 July 2024. We acknowledge that NTGA may well appeal this Decision in which case a new date will need to be inserted by the Court regardless of the outcome of that appeal.

[163] In his end of hearing verbal report to us Mr Fraser advised that in his view there would be no need to impose the monitoring conditions[110] set out in Mr Mclean's evidence if we granted only a short extension of time for reinjection to occur. We agree as there is no utility in monitoring the effects of the EBDP discharge if it is soon to cease. In that regard we note that the annual cost of the monitoring proposed by NTGA is not insignificant at $226,000 in total and $16,185 per annum.[111] Having said that we agree with Mr Fraser that the monitoring information might nevertheless be useful and NTGA may well decide to collect some or all of that information regardless of this Decision.

[164] Having decided that there is no need to impose the extensive monitoring recommended by Dr Hickey, we find there is also no need to impose conditions requiring NTST to invite TRoNA to an annual hui to discuss the monitoring results and any actions that might arise from them.

[109] At the hearing Ms Hughes conceded that the two years should commence from the date of this Decision, namely the new cessation date should be July 2023.
[110] Mr McLean's conditions 11.0 to 11.4 that were appended to his Supplementary Evidence.
[111] Reply submissions, paragraph 6.15 and Appendix 3 to the Reply.

[165] Mr Mclean also recommended changes to the s128 review condition. We have omitted changes that relate to the proposed monitoring programme (as that programme will not be a condition of consent). We were tempted to impose the change relating to the Tarawera Awa Restoration Strategy Group that is likely to be formed following the passage of the Ngāti Rangitihi Claims Settlement Act. However, we understand that the Act is still a Bill before the house and so we find it would not be appropriate to refer to it.

[166] The changed conditions are attached as Appendix 1 to this Decision.

Signed by the commissioners:

Rauru Kirikiri

Rob van Voorthuysen (Chair)

Dated: 28 July 2021

APPENDIX 1 – CHANGED CONDITIONS

Condition 2.0(a)
The quantity of spent geothermal fluid discharged by the Consent Holder to the Tarawera River shall not exceed:
(a) From the commencement of this resource consent until the ~~1st of January 2021~~ 30 July 2024:
   I. 20,880 cubic metres per day; and
   II. 870 cubic metres per hour,

(b) From the ~~1st of January 2021~~ 30 July 2024:
   I. 9,600 cubic metres per day; and
   II. 400 cubic metres per hour,
except where contingency discharges occur in accordance with conditions 7.1 and 7.1A. (Refer to Advice Note 4)

Condition 2.0A
The Consent Holder may, between the ~~1st of January 2021~~ 30 July 2024 and the ~~1st of January 2026~~ 30 July 2029, discharge in accordance with conditions 2.0(a) and 6.1(a) if:
…

Condition 3.1
From the commencement of this resource consent until the ~~1st of January 2021~~ 30 July 2024, the spent geothermal fluid discharged to the Tarawera River shall only be discharged at one or both of the two discharge points shown on BOPRC Plan No. 67151-1 and located at the map references set out in condition 4

Condition 3.2
From the ~~1st of January 2021~~ 30 July 2024 the spent geothermal fluid discharged to the Tarawera River shall only be discharged via the West Bank Discharge Point, unless contingency discharges occur in accordance with conditions 7.1 to 7.4 of this resource consent. In such circumstances, the Consent Holder may use either or both of the two discharge points set out in condition 3.1.

Condition 6.1
The discharge of spent geothermal fluid shall not exceed the following limits, except where a contingency discharge occurs in accordance with condition 7.1 and 7.1A:
(a) From the commencement of this resource consent until the ~~1st of January 2021~~ 30 July 2024:
…
(b) From the ~~1st of January 2021~~ 30 July 2024 of this resource consent:
…