BEFORE THE WAIKATO REGIONAL COUNCIL

GEOFUTURE PROJECT

Under	the Resource Management Act 1991
In the matter	of applications for resource consents by Contact Energy Limited, New Zealand Education and Tourism Limited and New Zealand Prawns Limited under section 88 of the Act in respect of the GeoFuture Project

STATEMENT OF EVIDENCE OF TODD MATHEW BALDWIN (BIODIVERSITY PROJECTS AND OPERATIONAL MATTERS) ON BEHALF OF CONTACT ENERGY LIMITED

23 September 2022

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QUALIFICATIONS AND EXPERIENCE

1. My full name is **Todd Mathew Baldwin**. I am an Environmental Advisor at Contact Energy Limited (**Contact**).

2. My evidence is given on behalf of Contact in relation to its applications under section 88 of the Resource Management Act 1991 (RMA) for resource consents for the GeoFuture project (GeoFuture), but also considers the effects of the related applications of New Zealand Education and Tourism Limited (Netcor) and New Zealand Prawns Limited (NZ Prawns).

3. I have the following qualifications and experience relevant to the evidence I shall give:

    - I hold a Bachelor of Science degree (2001) from the University of Waikato.
    - I hold a New Zealand Diploma in Civil Engineering (2017) from the Western Institute of Technology.

4. I have 17 years' experience in the fields of environmental monitoring, environmental management, environmental engineering, and resource management, five of which have been within a geothermal setting with Contact.

5. I confirm that I have read the 'Code of Conduct' for expert witnesses contained in the Environment Court Practice Note 2014. While I am employed by Contact and my evidence is therefore not independent, my evidence has been prepared in compliance with that Code as far as applicable. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

BACKGROUND AND ROLE

6. In my role as environmental advisor for Contact I am responsible for the following:

    (a) Ensuring that Contact's geothermal power stations have valid resource consents or permits for the operations that are undertaken.

    (b) Communicating and co-ordinating Contact staff to ensure consent conditions are understood and complied with.

    (c) Assisting in the development of environmental strategies, policies, and practices for Contact's geothermal generation sites.

    (d) Environmental compliance activities, including compliance reporting and following up compliance actions as required.

    (e) Undertaking environmental event investigations and management.

    (f) Managing relationships with external stakeholders, neighbours, and partners.

    (g) Contributing to ISO14001 Environment Management Systems.

    (h) Monitoring project construction works to ensure compliance with Environment Management Plans.

    (i) Monitoring and reacting to proposed changes in relevant planning documents as they relate to Contact operations.

(j) Assessing resource consent applications by external parties, including affected party approvals.

(k) Managing relationships with local and regional authorities with regard to resource consent compliance and consented activities.

(l) Assisting the Property and Environment Advisor with manaaki whenua project works.

(m) Managing and engaging external contractors and consultants.

7. I am a member of the GeoFuture project team. As a GeoFuture project team member I have helped lead public consultation including with hapū, local authorities, interested parties, landowners, and other stakeholders. I have assisted with the development of the GeoFuture project and the preparation of the Assessment of Environmental Effects for GeoFuture (AEE).

8. More specifically my work has included:

(a) Consulting with neighbours, Taupō District Council (**TDC**), hapū, and other stakeholders including through hui and meetings, open-days, and direct face to face engagement with interested parties and submitters.

(b) Presenting project information as a guest speaker to the Lakes and Waterways Action Group (**LWAG**).

(c) Arranging and assisting with field work undertaken by external contractors (The National Institute of Water and Atmospheric Research **(NIWA)**, Wildlands, GNS).

(d) Information gathering, particularly in relation to local site operations. This includes collating data sets, clarifying monitoring methodologies, confirming types of activities undertaken and clarifying requirements in relation to consents.

(e) Linking members of the GeoFuture project team with relevant onsite experts, technicians, and operational staff.

(f) Reviewing draft technical reports prepared by experts assisting with the GeoFuture project that are relevant to my role as Contact's environmental advisor and my role in the GeoFuture project team.

(g) Consulting with the management of the Wairākei Resort, specifically in relation to project planning for Te Kiri o Hinekai Stream restoration.

(h) Assisting **Mr Sophy** in writing a draft management plan for the Otumuheke Stream.

(i) Identifying and documenting all instream structures within the Wairākei Steamfield and surrounds.

(j) Fact checking and ground truthing of activities, information, and infrastructure.

9. In preparing my evidence I have reviewed the technical information in support of the resource consent applications as follows:

(a) the GeoFuture Project Description included as Appendix 1 of the AEE and discussed in the evidence of **Mr Pummer**;

(b) The ‘Assessment of Effects on Terrestrial Ecology Associated with the Continued Extraction of Geothermal Energy from the Wairākei Geothermal Field’ by Wildlands, dated November 2021, included as Appendix 9 in the AEE and discussed in the evidence of **Dr Bycroft**;

(c) 'Wairākei Geothermal Power Scheme: Cooling Water Discharge Thermal Plume Modelling' dated October 2021 included as Appendix 10 in the AEE and discussed in the evidence of **Mr Neale**;

(d) the 'GeoFuture Consultation and Engagement' report, attached as Appendix 20 to the AEE and discussed in the evidence of **Mr Drayton**;

(e) the 'GeoFuture Proposed Mitigation' report, attached as Appendix 18 to the AEE and discussed in the evidence of **Mr Drayton**; and

(f) the ‘Proposed Approach to Adaptive Management in relation to Effects on Surface Geothermal Features’ report dated 6 September 2022 provided to the Waikato Regional Council (**WRC**) as additional information and discussed in the evidence of **Mr Drayton** and **Dr Bycroft**;

(g) all of the submissions on the GeoFuture resource consent applications;

(h) the section 42A report and the technical reports supporting the WRC's section 42A report in so far as they relate to thermotolerant vegetation, terrestrial ecology and effects on the Waikato River and its tributaries; and

(i) reviewed the draft consent conditions proposed by Contact and the WRC.

10. I have also reviewed the draft evidence of the other experts for Contact noted above.

SCOPE OF EVIDENCE

11. The purpose of my evidence is to:

(a) discuss Contact’s plan to secure the necessary access arrangements to undertake the restoration and enhancement work at Te Kiri o Hinekai Stream, which is proposed as part of the mitigation package for GeoFuture;

(b) discuss the restoration and enhancement work Contact has undertaken in the Wairākei - Tauhara Geothermal System during the past approximately ten years and the work which is proposed to continue and expand under GeoFuture. In particular, I will discuss the following environmental projects and workstreams:

(i) riparian management and revegetation;

(ii) wilding pine control;

(iii) pest animal control;

(iv) Te Rau o Te Huia Stream restoration; and

(v) Waiora Hill geothermal area enhancement;

(c) discuss the consent conditions as proposed by the section 42A report to maintain temperature monitoring probes on the Waikato River to an accuracy of +/-0.1 degrees; and

(d) discuss the comment in the section 42A report that water takes relating to this consent application should be telemetered to WRC in real time.

EXECUTIVE SUMMARY

12. Contact is working to agree formal access rights to the Te Kiri o Hinekai Stream to secure the access needed to undertake an ecological restoration project on the Te Kiri o Hinekai Stream. This ecological and cultural restoration project forms the basis of one of the mitigation measures proposed in the GeoFuture consent application and discussed in the evidence of **Mr Drayton**.

13. Wairākei Resort Hotel, who owns a large portion of the lower section of the Stream, has been supportive of this ecological restoration project, and have confirmed to me that they will provide Contact with the necessary access to undertake this project.

14. Contact is continuing to develop an ecological restoration project plan with Wildlands Consultants (Wildlands) and tangata whenua.

15. In addition to the new mitigation funding and projects proposed in the GeoFuture consent application (including in the 'Mitigation Report' included as Appendix 18 of the AEE and discussed in the evidence of **Mr Drayton**), specifically directed towards the Wairākei Geyser Valley, Te Rau o Te Huia, Otumuheke and Te Kiri o Hinekai, my evidence will describe the efforts that Contact already undertakes on a range of significant manaaki whenua (land improvement) projects across the Wairākei - Tauhara Geothermal Field. This includes riparian restoration and management, wilding pine control, pest animal control, the Te Rau o Te Huia restoration project already underway, and the enhancement of the Waiora Hill geothermal area. These projects are part of a wider biodiversity strategy that Contact follows to achieve a positive cumulative environmental impact on the land that we own or operate on.

16. another matter my evidence addresses is the proposal in the section 42A report to include a consent condition requiring water temperature within the Waikato River to be measured to within +/- 0.1 degree Celsius accuracy. I will discuss why this condition is not warranted, and why it is unrealistic compared to the standards outlined in the National Environmental Monitoring Standards QC600 data standards.

17. Finally, I will address a comment in the section 42A report relating to the use of real time telemetry applying to all water takes sought under this consent application. In practice, the only consumptive water take relates to NZ Prawns' application for the take of freshwater, hence should be the only take that the telemetry requirement applies to. The rest of the takes relating to either non-consumptive takes or to geothermal takes.

ACCESS ARRANGEMENTS FOR THE PROPOSED TE KIRI O HINEKAI STREAM RESTORATION AND ENHANCEMENT PROJECT

18. Throughout the development of the GeoFuture project a number of potential mitigation projects to remedy and mitigate the adverse effects of the project on terrestrial and aquatic values have been identified.

19. As the GeoFuture project and has progressed and consultation advanced, the idea of a restoration and enhancement project on the Te Kiri O Hinekai Stream (**TKOH Stream**) has solidified.

20. The TKOH Stream is a good candidate for restoration and enhancement because a meaningful quantity of separated geothermal water (**SGW**) will continue to be discharged to, and will flow down, the TKOH Stream, regardless of any external environmental conditions or changes. As discussed in the evidence of **Dr Bycroft** the continual flow of SGW to the TKOH Stream will help to maintain and improve the steamy habitat for At Risk geothermal plant species (e.g. *Christella* aff. *dentata* ("thermal") and *Hypolepis dicksonioides*) which is intended to provide a positive ecological effect over the life of the consent.

21. Further, as discussed in the evidence of **Mr Drayton**, following the consultation process with Ngā hapū o Wairākei at a marae level and also as a hapū collective, it became clear that a continuation of the discharge of SGW to the TKOH Stream is strongly supported by hapū.

22. Contact has identified that a large portion of the lower reaches of the TKOH Stream flows through a parcel of land that is owned and operated by KAH NZ Ltd, operating locally as the Wairākei Resort Hotel (**Hotel owners**).

23. In July 2022, I set up a meeting with Atif Khan (Wairākei Resort Hotel Manager), and Nishane Fernando (Wairākei Resort Engineering manager). We met at the Wairākei Resort Hotel in person to discuss a proposal for the restoration and enhancement of the TKOH Stream, primarily focused on improving biodiversity values and in particular, maintaining habitat for rare geothermal species.

24. At this meeting I explained how the flows in the TKOH Stream are achieved, that is, through a cultural discharge made by Contact upstream (up to 600 tonnes per day), as well as the much larger volume of flows via the Wairākei Terraces. I also outlined the ecological importance of the TKOH Stream in providing habitat for geothermal vegetation, in particular, ferns.

25. I explained the concept of a proposed restoration and enhancement mitigation project for TKOH Stream, and the fact that Contact would need permission from the Hotel owners to enable the project to progress.

26. We discussed the fact that parts of the TKOH Stream banks would need to be maintained in order to provide access for stream maintenance activities, particularly clearing culverts and stream beds of silica build up, which is an ongoing maintenance activity for the Wairākei Resort Hotel.

27. We discussed the need to keep parts of the true right bank open and clear, as it is part of a walking and biking trail that is frequented by visitors to the area.

28. I explained that a project plan would need to be prepared to identify the scope and extent of works for the TKOH Stream project and I agreed that this project plan would need to reflect the above activities so to not jeopardise the TKOH Stream project's viability.

29. On conclusion of this meeting, Atif and Nishane stated to me that they were supportive of the TKOH Stream project and highlighted that they had been considering their own similar project relating to environmental enhancement along the TKOH Stream banks involving planting native trees to aesthetically improve the area for visitors.

30. I followed up via phone and email in August 2022 with a draft scope for works prepared by Wildlands Consultants which outlined the works required for developing the TKOH Stream project plan. I asked Atif to confirm that the Wairākei Resort Hotel was still interested in supporting the

TKOH Stream project and whether the Wairākei Resort Hotel would like Contact to continue with planning for this project.

31. Atif confirmed via email on 5th September 2022 that the Wairākei Resort Hotel was happy to support the TKOH Stream project initiative. He explained that he would like to hear more details on what would be involved in undertaking the project so the project is financially sustainable and can be managed without the Hotel needing to provide additional resources.

32. I responded via phone call and email, confirming that there is no requirement for the Wairākei Resort Hotel to provide additional funding, and the only input required from the Hotel is to provide access and permission for the TKOH Stream project to go ahead on their property. I highlighted that the proposed funding mechanism was through Contact, and it was proposing to commit to providing an initial sum of $100,000 to undertake the TKOH Stream project.

33. I asked Atif to confirm in writing that the Wairākei Resort Hotel will provide access for Contact and its consultants to the TKOH Stream for the project, subject to an agreement between Contact and the Hotel. As shown in **Exhibit TMB1**, on 19 September 2022 Atif confirmed via email that the Hotel was willing to give Contact access to the TKOH Stream for the TKOH Stream project.

34. Having secured the Wairākei Resort Hotel's approval to allow Contact access to undertake the TKOH Stream project, the next steps are for Contact to draft a proposed agreement between the Hotel and Contact, which will outline the access arrangements and the nature of the TKOH Stream project. The draft agreement will be provided to the Hotel once a project plan has been drafted, which will include consultation with hapū.

35. Wildlands Consultants have been engaged to develop a draft project plan for the TKOH Stream project which, will be consulted on with hapū and the Hotel. The project plan will focus on providing management solutions to address the adverse impacts of pest plants and animals on TKOH Stream, and to provide restoration planting opportunities on TKOH Stream.

36. The project plan for the TKOH Stream will outline the priority areas for restoration. A work plan and costings will be included, along with a monitoring programme.

37. An indicative draft contents page for the TKOH Stream project plan is as follows:

    (a) Project vision and aspirations

    (b) Ecological context

    (c) Ecological significance

    (d) Vegetation and habitats (including geothermal vegetation, habitat and weed maps)

    (e) Management objectives

    (f) Management priorities

    (g) Monitoring requirements

    (h) High level work plan, timeframe, and ball-park costs to achieve objectives

    (i) Conclusion and appendices, including

        (i) Plant species list

(ii) Vegetation type map

(iii) Weed map

(iv) Management units

38. The draft project plan is expected to be produced by early November. This will allow consultation with hapū to advance in a meaningful way and will inform the requirements for formal access arrangements to be agreed with the Wairākei Resort Hotel based on priority planting and maintenance areas.

CONTACTS EXISTING RESTORATION AND ENHANCEMENT PROJECTS

39. Contact owns and generates electricity across significant areas of land around Taupō and is committed to protecting, enhancing, and restoring areas of existing indigenous biodiversity across our freehold land and land which Contact has rights over.

40. Contact owns or has rights over extensive area of land across the Taupō area, including approximately 2600 hectare in freehold or leasehold ownership.

41. Contact has a range of sustainability and biodiversity targets and strategies. Our goal is to have thriving and ultimately self-sustaining ecosystems within all habitats that we influence.

42. In particular, for our geothermal sites, we carry out our activities in accordance with an overarching Geothermal Biodiversity Management Plan, which has been in place now for several years. These activities are described in **Exhibit TMB2**. This plan reflects the fact that Contact relies on many highly valued natural and culturally significant resources to generate electricity and our activities can have adverse effects on biodiversity if not remedied, mitigated, or otherwise offset. We recognise that we have a responsibility to reduce our impact and add value to the resources that come under our control.

43. We regularly identify areas that are not required for our generation operations and that are not sustainable for agriculture or other productive uses and revegetate those areas with indigenous species to further enhance biodiversity corridors across our operations. Some examples include a portion of gully land in the Karapiti block, which has been planted in manuka planting after a pine forest harvest, with another portion maintained to allow for natural native revegetation.

44. On land around Wairākei-Tauhara and Taupō that Contact does not own, we look for opportunities to engage and support adjoining landowners, tangata whenua and community groups to further protect areas of biodiversity, including through supporting environmental education and partnership projects.

45. Contact's priorities for biodiversity management as of 2022 are as follows:

(a) Any geothermal ecosystems within Contact's operational sites should be fenced to reduce impact from animals and human activities.

(a) Fenced areas should be managed for pest plants – mainly wilding pines, blackberry, and broom.

(b) The existing thermal areas of the lower Wairākei stream banks should be managed to protect and enhance rare thermotolerant ferns.

(c) Pest animal control should be undertaken within priority areas including; areas containing thermotolerant vegetation, areas with existing biodiversity value, and areas that with planting could have enhanced biodiversity value, especially where that can allow thermotolerant species to flourish.

(d) Any conservation efforts on thermal areas outside of our operational sites being run by community groups, Department of Conservation or local authorities should be prioritised for Contact's regional sponsorship or partnerships.

(e) Contact should look for collaborative partnerships to help protect geothermal vegetation outside of Contact's main operational sites (e.g., Waikato Regional Council, iwi, the Department of Conservation (**DOC**) and Landowners).

46. **Figure 1** below highlights the various revegetation and restoration projects that Contact has undertaken over the last approximately ten years. The green areas highlight existing projects, with the red sites an example of areas that are currently being developed into long term projects.

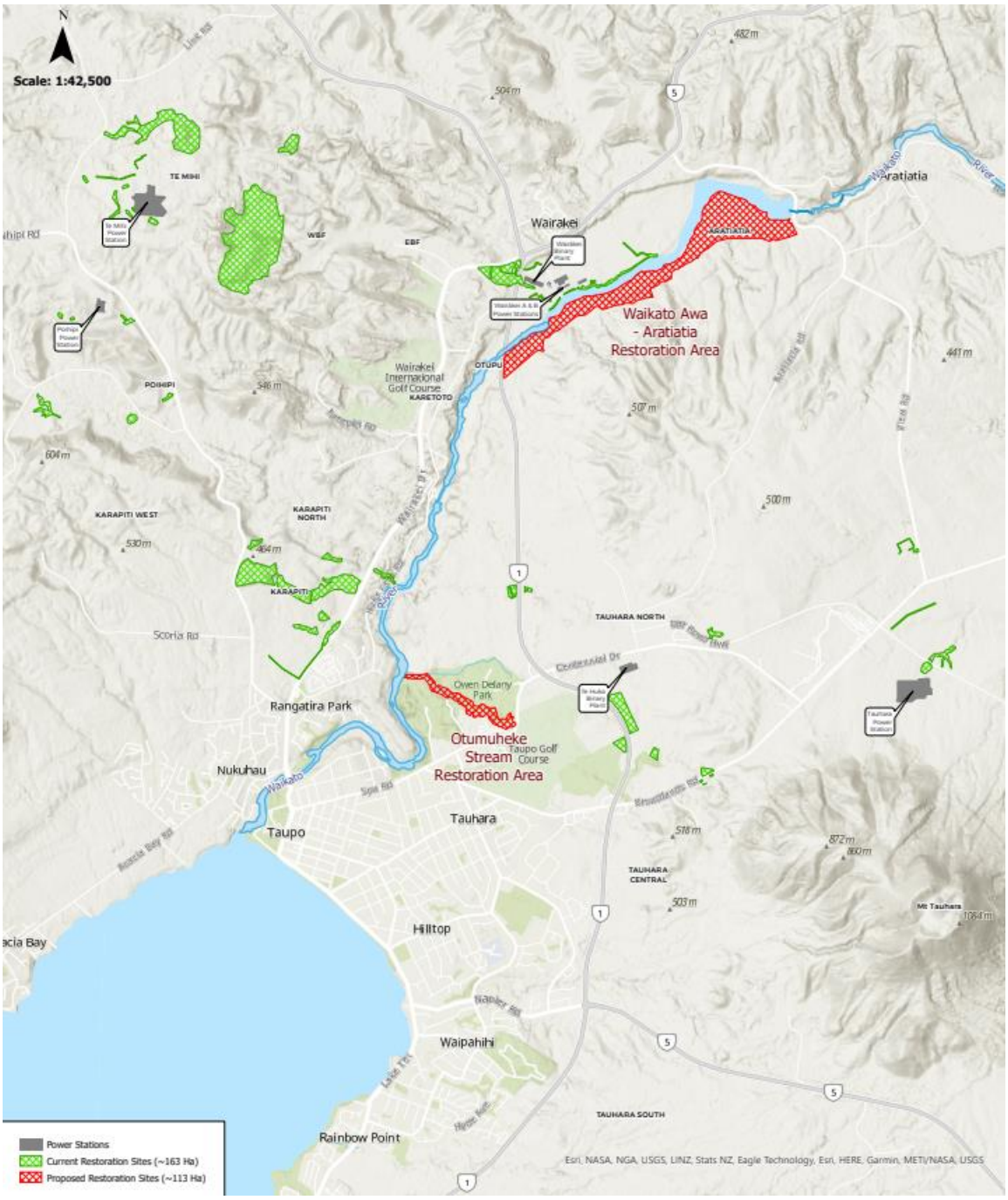

Figure 1 Current and example proposed restoration sites as of 2022

47. We plan and operate so that all the green highlighted areas will continue to be managed and maintained by Contact or our contractors for at least the life of our geothermal operations on the Wairākei-Tauhara Geothermal Field.

48. Since FY 2020 Contact has procured and planted over 100,000 native trees throughout the lands we operate on.

49. Some specific examples of our biodiversity restoration or improvements are given below:

Riparian management and revegetation.

50. There are a large number of streams and waterways running through Contact owned or occupied land. The land use around these streams includes industrial, agricultural, steam-field or pine forest.

Considerable effort has been made by Contact over the last five years to ensure all these waterways and their riparian margins are fenced off from livestock. The focus has now moved to pest plant removal and staged, mainly indigenous planting along stream banks.

51. Gut Creek on the Aratiatia flats was fenced off to prevent stock access by Contact around 2010. As shown in **Figure 2** below a planting programme followed over successive years, with the lower section of the Creek now fully established in native planting. Follow up weed control continues as required.

Figure 2 Gut Creek Planting and fencing

52. Elliot Lake in the upper Te Rau o Te Huia Stream was fenced by Contact around 2010. Large scale willow poisoning has been undertaken, along with native plant revegetation. Work currently includes maintenance and control of willow and releasing of new plants as required. **Figure 3** below shows the success of this work.

Figure 3 Upper Lake Elliot restoration project

53. The Waikato River banks around Wairākei Station and Wairākei Stream have had significant investment by Contact since approximately 2005. The primary focus of this work was to control invasive weed species, in particular pine, willow and gorse, as shown in **Figures 4 and 5** below. Native plants suitable for the site were planted and have received follow up maintenance since.

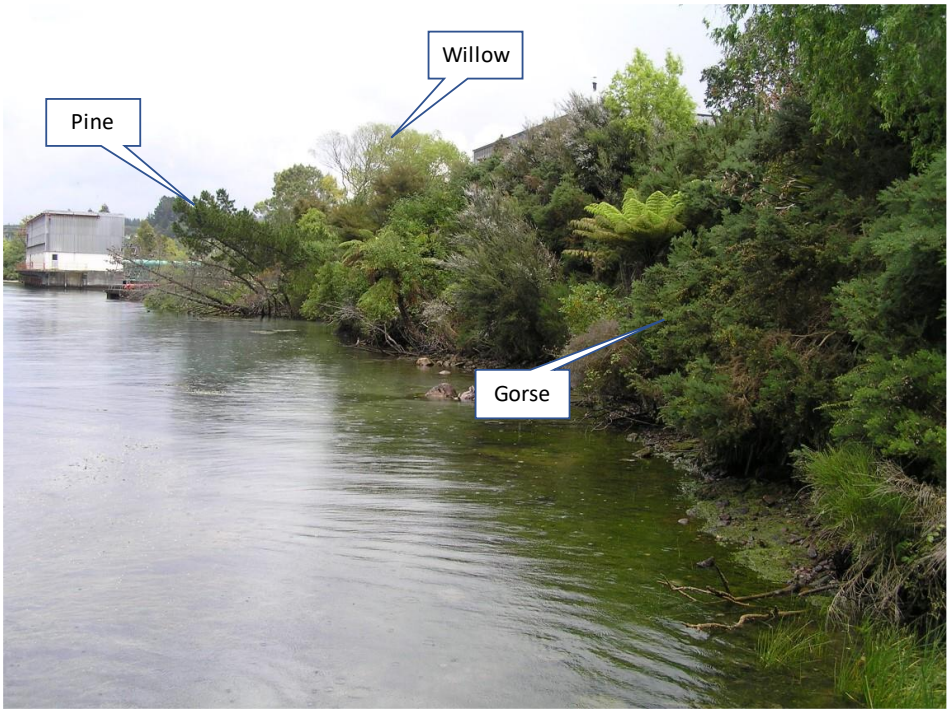

Figure 4 Wairākei Station Waikato River stream bank 2005 approx.

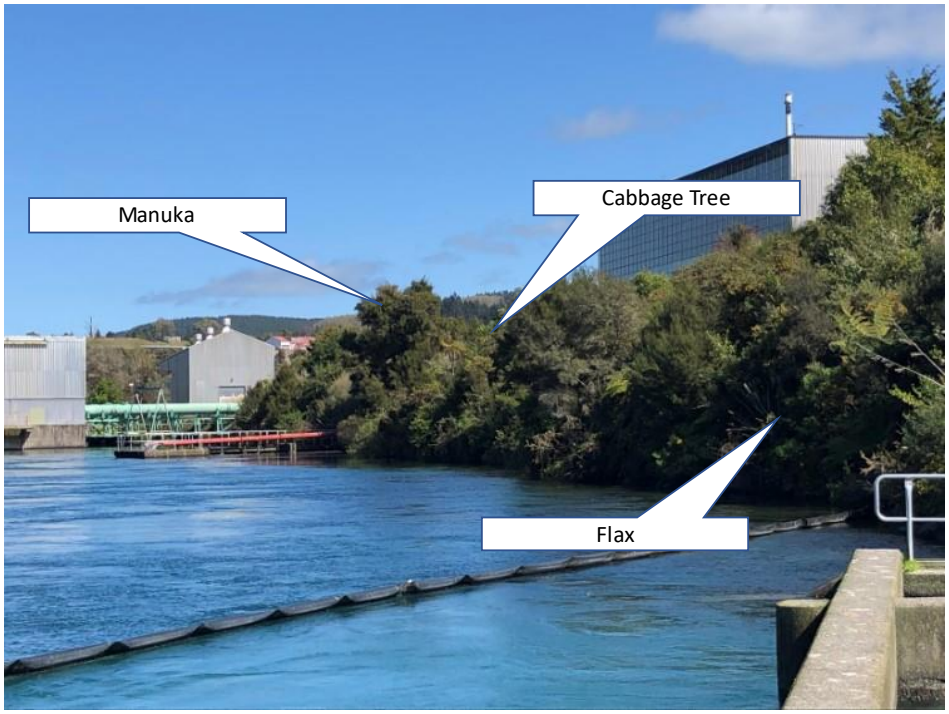

Figure 5 Wairākei Station Waikato River stream bank 2022

Wilding pine control

54. Contact has committed to managing wilding pines within the land it operates on or owns. Significant investment is being made to eliminate seed sources for wilding pines, particularly around culturally and environmentally important geothermal areas such as Waiora Hill (Figure 9).

55. In some areas, Contact owns stands of exotic plantation forests. As these stands come to be harvested Contact's strategy is to have these areas replaced with long term native planting. For

example, on the Karapiti block in 2017, Contact harvested 15 hectares of Pinus Radiata. The following year this area was replanted in manuka seedlings.

56. More recently, Contact has harvested a two-hectare block of Eucalypts adjacent to the Wairākei Stream. This area will now be prepared for planting in native vegetation in the following planting season.

57. Around 2017-18 Contact physically removed a large number of wilding pines from a 10-hectare block adjacent the Te Rau o Te Huia Stream on the Oruanui Block. The logs were harvested where possible, with any remaining pines in inaccessible areas being poisoned. Follow up seedling control continues as the area is left to naturally revegetate from surrounding native seed sources.

58. From 2022, the vast majority of wilding pine trees have now been removed or poisoned from our lands. Follow up weed control targeting seedlings and weed surveillance will be the primary focus of our wilding pine programme going forward.

Te Rau o Te Huia Stream restoration

59. Following the 2008 Te Mihi Power Station consents, Te Kapa o Te Rangiita wanted to improve the state of the Te Rau o Te Huia Stream and gully environment and to engage hapū members, particularly rangatahi (youth) in undertaking these improvement works. Contact committed to working in partnership with hapū to:

    (a) Ensure that the Te Kapa o te Rangiita hapū has access to sites of cultural importance and that the hapū continue to be able to use the gully on an ongoing basis.

    (b) Develop guidelines for the long-term management of indigenous and naturalised vegetation along a section of the upper stream.

    (c) Identify management areas and actions to ensure that the restoration of indigenous vegetation is ecologically-sustainable, ecologically-appropriate, and cost-effective to manage.

    (d) Systematically restore indigenous vegetation within the Te Rau o Te Huia Stream gully by controlling pest plants and undertaking targeted restoration planting.

    (e) Improve habitat for indigenous fauna along stream.

    (f) Enable hapū to assess fisheries and aquatic values in Te Rau o Te Huia Stream.

    (g) Identify measures to enhance aquatic and cultural values in the Te Rau o Te Huia Stream.

60. In 2018, Contact engaged Wildlands Consultants to prepare a decadal restoration management plan to identify native species at risk and provide a plan to protect and enhance the flora and fauna of the Te Rau o Te Huia Stream and gully area. The plan outlines different management techniques to address risks to native species and prioritises workstreams across the project area. These workstreams include removal of pest plants, as well as targeted revegetation. This works is demonstrated in **Figure 6** below.

Figure 2 Poisoning of willow, poplars and blackberry followed by harakeke planting

61. Te Kapa o Te Rangiita and Contact have been working on restoration of Te Rau o Te Huia Stream since the restoration plan was finalised by Wildlands. Together we have planted approximately 20,000 native plants along 1.2km of riparian margin. The Te Rau o Te Huia Stream and gully project has included the eradication of 1,900 pest animals including possums, rats and hedgehogs since the project began and these numbers continue to grow.

62. Contact allocates an annual budget for restoration works and provides project management and supervision support to the Te Rau o Te Huia Stream and gully area project. This work includes pest plant control, ground preparation, native planting and maintenance and monitoring of restoration progress.

63. In addition, Contact allocates the majority of the lease rental income from the Oruanui block to support more work to be completed annually as part of the Te Rau o Te Huia Stream and gully area project.

64. I support the proposed commitment in the conditions and discussed in the evidence of **Mr Drayton**, for Contact to fund an additional $100,000 for the restoration and enhancement of Te Rau o Te Huia Stream and its aquatic values and anticipate it will provide further significant ecological and biodiversity benefits.

Pest Animal control

65. In 2017, Contact launched a pest control programme installing 97 traps around the Wairākei operational area. Over the successive years we have increased this network and now have over 300 traps around our operations on the Wairākei and Tauhara fields.

66. Contact is continuing to enhance our programme and trial new tools that target specific pest animals. The trap network is made up of a number of different manual and automated traps. We also have over 100 bait stations within the steamfield to provide an additional method of control as pest numbers reduce.

67. The traps are generally positioned around areas of indigenous vegetation plantings, waterways, and geothermal areas. Two networks of traps are shown in **Figures 7** and **8**. These networks exist around our operations and are operated by different pest contractors.

68. From 2019 until now, Contact has removed over 9500 animal pests from these areas including possums, mustelids, rats, cats, and hedgehogs. We have also removed over 100 pigs from the steamfield and geothermal areas, significantly reducing damage to fragile geothermal ecosystems.

Figure 7 3 ARCO trap network (202 traps in total). Note this is only one contractor's network, with others in place around Waiora hill.

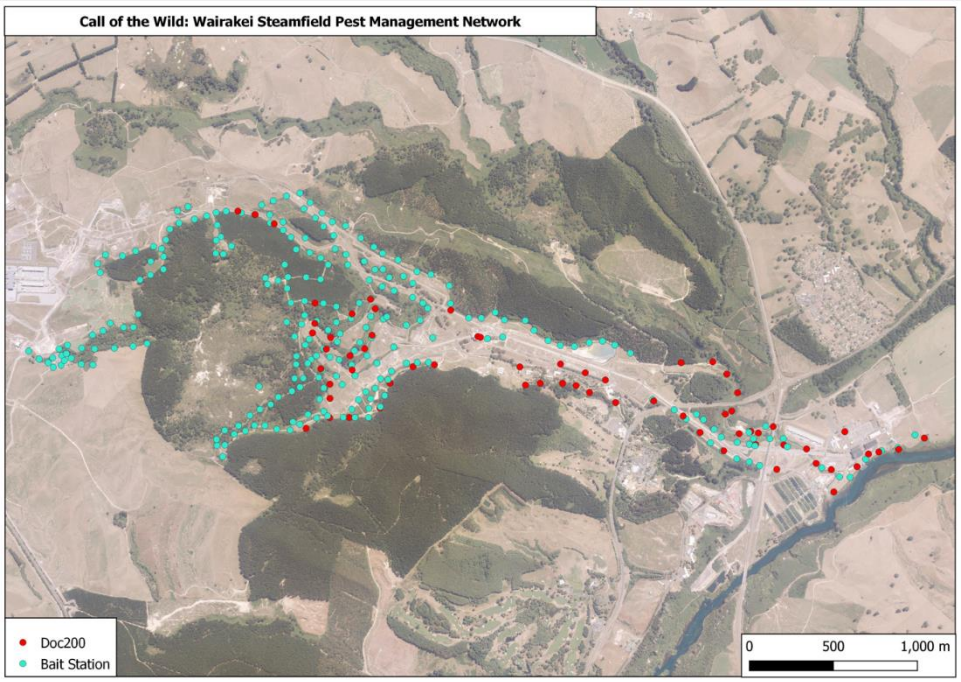

Figure 4 Call of the Wild trap network (Red- Doc200 traps, Teal - bait stations).

Waiora Hill geothermal area

69. The Waiora Hill geothermal area is culturally significant to tangata whenua and the second largest in the Wairākei - Tauhara Field. It has been identified by Wildlands, the Waikato Regional Council and the DOC as being home to at-risk/threatened geothermal vegetation, including three geothermal ferns. The area had been heavily invaded by pest plants and animals which were threatening the existence of the precious geothermal flora.

Waiora Hill Geothermal Area Enhancement Project

70. In 2019, WRC, in conjunction with Contact, engaged Singers Ecological Consultants to prepare a management plan to address pest plant and animal issues and prioritise control areas to focus efforts. The long term weed control objectives were to achieve:

    (a) Eradication of all invasive weeds in the core geothermal area.

    (b) Zero density of pampas.

    (c) Establishment of a native buffer of regenerating secondary forest.

    (d) Long term surveillance and control of wilding pines and other pest plants.

    (e) Development of a pest animal programme to deal with possums and pigs.

71. Since 2019, WRC and Contact have funded the initial treatment (control of pest plants) with help from MPI funding which covered an area of 59.5 ha. This work is demonstrated in **Figure 9** below. Since then, LINZ (landowner) has come on board to contribute towards surveillance of the site, control of further pest plants and development of a pest animal programme for the area.

Figure 9 5 Waiora Hill wilding pine control

72. Contact has contributed $10,000 per annum towards the project from the Environmental Budget and has committed to covering maintenance of new AT220 trapline (shown in **Figure 10**).

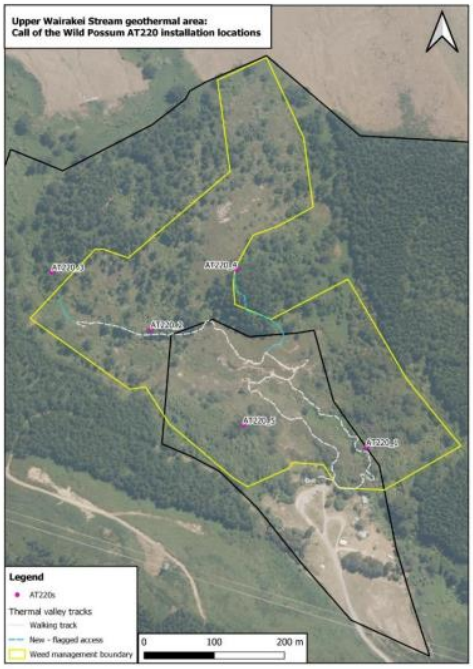

Figure 9: Map of AT220 installation locations, Upper Wairakei Stream.

Figure 10: Six possums killed at one AT220 trap in a week (photo taken at Trap 1, 7 July 2022).

Figure 6 Waiora Hill Trap network- and results of one successful trap

73. I support the proposal made by Contact as part of the GeoFuture consent applications (as discussed in the evidence of **Mr Drayton**) to commit $150,000 per annum for environmental enhancement or protection works and manaaki whenua projects across the Wairākei Geothermal Field. In my experience, I expect this guaranteed pūtea will considerably broaden the scope, extent, and intensity of the biodiversity efforts Contact is already carrying out alongside hapū and other partners described in my evidence.

RESPONSE TO SUBMISSIONS

74. I have reviewed the submissions. Those specifically relating to Contact's restoration and enhancement projects and mitigation of GeoFuture's effects on biodiversity values are from Mr Peter and Mrs Vanda Marshall.

75. While **Mr Drayton** and **Dr Bycroft** provide a more fulsome response to the Marshalls' submission, I wish to respond to their concern that ecological mitigation for the decline in geothermal flora is potentially not sufficient. On my reading of the suite of environmental mitigations proposed for GeoFuture, especially when coupled with the past and continuing work Contact is undertaking on the Wairākei – Tauhara field and beyond (as discussed above), I consider that the works will provide at least sufficient ecological mitigation.

76. The funding boost that these projects will receive through the various mitigation packages will ensure Contact's own manaaki whenua projects can continue and expand. The long term guaranteed funding of $150,000 per annum to the Wairākei Environmental Mitigation Charitable Trust (**WEMCT**) proposed as a consent condition will also ensure that resources are available to

expand environmental and biodiversity projects in geothermal and other environmentally sensitive areas outside of Contact's own sites.

77. The Te Kiri o Hinekai project for which Contact is committing $100,000 will provide for a major boost to the restoration of this Stream and will provide for a well-planned and maintained habitat for rare geothermal ferns. The proposed new funding package for the Wairākei Thermal Valley project of $200,000 will also ensure the ongoing ecological health of the valley and will provide for the types of works programmes proposed by the Marshalls.

78. The mitigation package as proposed will address the items covered in the Marshalls' submission.

RESPONSE TO COUNCIL OFFICER'S SECTION 42A REPORT

79. I have read the section 42A report prepared by Grant Eccles and reviewed the draft consent conditions.

80. With regard to terrestrial ecology and thermotolerant vegetation, I do not intend to respond in my evidence, other than to document Contact's restoration and enhancement projects at present, providing assurance that Contact is capable of undertaking the works and activities proposed through the mitigation packages more fully described in **Mr Drayton's** evidence. The evidence of **Dr Bycroft** will also reflect the terrestrial ecology matters raised in the section 42A report.

81. There are however, two operational matters which I have concerns with as follows:

    (a) the proposed imposition of accuracy standards that are more stringent than that documented in the National Environmental Monitoring Standard for Water Temperature (2017) QC 600; and

    (b) the proposal to condition each of the water take consents to include data to be telemetered directly to WRC.

82. These matters are addressed below.

Waikato River temperature accuracy standards

83. I agree with the proposed insertion of a condition requiring continuous monitoring of the temperature data as described Resource Consent AUTH144070.08.01, Condition 15. However, the consent condition proposed in the section 42A report includes the addition of an accuracy standard for the temperature monitoring proposed, namely to an accuracy standard of +/- 0.1 degrees Celsius.

84. For many years, Contact has monitored temperature through the Waikato River in order to comply with resource consent conditions and monitor plant efficiency.

85. Temperature monitoring is undertaken at a range of sites throughout the Waikato River in particular, at Reids Farm (Hipapatua) Reserve, Rapids Jet Jetty (downstream of Aratiatia) and at 1km downstream of the Wairākei Power Stations.

86. The Reids Farm and Rapids Jet jetty monitoring sites are deemed to be our compliance points for our temperature limits imposed under the 2001 Wairākei Consents. As such, we engage an independent third-party contractor to monitor these sites on Contact's behalf.

87. NIWA are engaged by Contact to operate these monitoring sites. Data is supplied to Contact via data transfer in no less than 15-minute intervals.

88. In relation to temperature data collection, the terms of reference for the NIWA hydrometric engagement contract states the following:

> 4.7.3 Water temperature
>
> (a) Field practice shall conform to the standards specified in NIWA's Hydrology Manuals.
>
> (b) All data collected and archived shall be within +/- 0.5 °C of a traceably calibrated reference thermometer.

89. The standard referred to by NIWA is based on the National Environmental Monitoring Standards (**NEMS**) for Water Temperature (2017) which is set out below in **Figure 11**. The NEMS standard is a set of quality guidelines for environmental monitoring in New Zealand. The standard's purpose is to provide a nationally consistent quality coding schema, covering a series of fundamental underlying principles of quality management. Under the standard, a series of Quality Codes (**QC**) are identified, with QC 600 being the best quality data available.

90. NIWA operate the temperature sites for Contact to the QC 600 Quality Code. For this standard to be achieved, a temperature instrument requires a precision of 0.1 degrees Celsius, with an accuracy in the instrument of +/- 0.5 degrees Celsius.

91. NIWA checks the Reids Farm and Rapids Jet Jetty sensors on a monthly basis, comparing the recorded temperature to a gold standard referenced calibrated thermometer. This information is loaded into a calibration spreadsheet held by the NIWA Rotorua Field office.

92. The temperature data is processed and archived quarterly. Any deviations from the calibration standard are noted and if not within NIWA standards would be replaced.

93. Conditions proposed in the section 42A report (Resource Consent 144070.08.01, Condition 14) include the addition of an accuracy standard to achieve +/- 0.1 degrees Celsius. This accuracy standard is not able to be realistically achieved and is significantly more stringent than the accepted standards for QC 600 as set out in the NEMS guidelines.

94. Contact's view is that the accuracy requirement for temperature probes should be based on the established NEMS guidelines, and as such temperature probes should be maintained to an accuracy standard as defined by the NEMS for Water Temperature QC 600 standard.

The Standard – Water Temperature

For data to meet the Standard, the following shall be achieved:

Sensor Accuracy	Water temperature	± 0.5°C
Stationarity	Stationarity of record shall be maintained.	

Requirements

As a means of achieving the Standard (QC 600), the following requirements apply:

Units of Measurement		Express units in degrees Celsius
Resolution		0.1°C
Timing of Measurements	Maximum recording interval *Estuarine*	5 minutes
	Maximum recording interval *Rivers, ocean, groundwater and lakes*	15 minutes
	Measurement	Instantaneous value *No greater than 20 s averaging*
	Resolution	1 second
	Accuracy	± 90 seconds/month
	Time zone	Express time as New Zealand Standard Time (NZST). *Do not use New Zealand Daylight Time (NZDT).*
Validation (In Situ Sensor)	Observation tolerance	0.8°C (sum of sensor accuracy and reference sensor accuracy)
	Frequency	At least once every 2 months
Reference Thermometer (Calibration)	Accuracy	± 0.3°C
	Frequency	Annually
	Method	Water bath using two traceable reference thermometers *See 'Annex B – Calibrating a Reference Thermometer'*

Continued on next page...

Figure 7 NEMS standards for Water Temperature Monitoring

Use of telemetry for water takes

95. The section 42A report proposes that *"…each of the water take consents be conditioned to require take data to be* reported *to WRC directly through a Council approved telemetry system…".* [1]

[1] Section 42A report page 39.

96. Although the above statement in the section 42A report suggests that the condition is to apply broadly across all water takes, the draft conditions have only been amended in relation to the water take applied for by NZ Prawns.

97. I want to provide some additional clarifications for context. I understand that the current fresh water take data by NZ Prawns is provided by telemetry to WRC, but none of the other fresh water or geothermal water takes are. In my opinion this is reasonable, because:

    (a) Huka Prawn Park's water take (proposed under AUTH144073.01.01 - To take up to 6,240 cubic metres per day of water from the Waikato River) is the only continuous water take that has some element of consumption to it, and will be subject to further clarification by **Mr Chrisp**;

    (b) Contact's water take (proposed under AUTH144070.06.01 - To take and use up to 10,000 cubic metres per day of water in total from the Waikato River and Lake Elliot) is an intermittent take only and is therefore understood not subject to the WRC allocation calculator for the Waikato River;

    (c) Contact's water take for cooling purposes (proposed under AUTH144070.05.01 - To take and use up to 11.7 cubic metres per second of water from the Waikato River for cooling) is a non-consumptive take and is also therefore understood not to be subject to the WRC allocation calculator for Waikato River. Also, the draft consent conditions recognise that this water take has been and will be calculated based on pumps in service and does not have dedicated flow meters;

    (d) Contact's water take for Otumuheke Stream flow augmentation (proposed under AUTH144070.21.01 - To take up to 3,600 cubic metres per day of water from the Waikato River via the Tauhara Water Intake Structure) is also a non-consumptive water take and is therefore understood also not subject to the WRC allocation calculator for the Waikato River;

    (e) Lastly, Contact's geothermal water take (proposed under AUTH144070.01.01 - To take and use up to a maximum of 280,000 tonnes of geothermal water per day) cannot practically be metered in real time because it is made up of a large number of steam and geothermal water measurements that, combined with various calculations, results in the overall geothermal water take values. Contact's operators do manage to a value generated by our DCS, but this is generally conservative, and an accurate record requires significant Quality Assurance and checking via mass balance to ensure a reliable measurement of total flow. When Contact is operating near the consent limit this occurs as a priority in near real time. This metering of the geothermal fluid take is further discussed by **Mr Mannington** in his evidence in response to the section 42A report suggestions around device calibration.

98. Due to the complexities of measuring geothermal mass takes in real time, this proposed new telemetry condition should not be applied to geothermal takes. The other takes from Contact operations are all classified as non-consumptive or are intermittent takes, so also should not trigger the need to be telemetered in real time. This leaves the NZ Prawns consent, which currently is telemetered to WRC, and this is proposed to continue.

99. Based on the above I suggest that the conditions relating to requiring of telemetered takes and discharges, as proposed in the Section 42A report should not be implemented across all consents

and the use of telemetry in the context of this consent application should be limited to NZ Prawns consent AUTH144073.01.01.

Todd Baldwin

23 September 2022

EXHIBITS

EXHIBIT TMB1 - *EMAIL FROM ATIF KHAN AT WAIRĀKEI HOTEL REGARDING ACCESS TO TE KIRI O HINEKAI STREAM*

From: Todd Baldwin
Sent: Monday, 19 September 2022 10:13 am
To: Atif Khan <atif.khan@Wairākei .co.nz>
Cc: Nishane Fernando <maintenance@Wairākei .co.nz>; Derek Yan <derek.yan@bayviewhotels.com>
Subject: RE: Restoration proposal for Te Kiri o Hinekai stream

Thanks Atif,

I have booked in Wildlands ecological consultants to undertake a survey and assessment next month, and they will use that to write up a plan.
Ill be in touch closer to the time and if you would like to come and speak with them and see what they suggest that would be great.
Thanks for your support.

Regards,
Todd.

From: Atif Khan <atif.khan@Wairākei .co.nz>
Sent: Monday, 19 September 2022 10:07 am
To: Todd Baldwin <Todd.Baldwin@contactenergy.co.nz>
Cc: Nishane Fernando <maintenance@Wairākei .co.nz>; Derek Yan <derek.yan@bayviewhotels.com>
Subject: RE: Restoration proposal for Te Kiri o Hinekai stream

Hi Todd,

We will eb willing to give access to the stream for the restoration project . I have copied Derek Yan who is our VP of Projects and Development to keep him in the loop.

Best regards,

Atif

Atif Khan I Hotel Manager I **Wairākei Resort Taupō**
Tel +64 7 374 9004 I **Fax +64 7 374 8485** I Mob +64 272339375 I **Web** www.Wairākei .co.nz

From: Todd Baldwin <Todd.Baldwin@contactenergy.co.nz>
Sent: Thursday, 15 September 2022 10:21 am
To: Atif Khan <atif.khan@Wairākei .co.nz>
Cc: Nishane Fernando <maintenance@Wairākei .co.nz>
Subject: RE: Restoration proposal for Te Kiri o Hinekai stream

Hi Atif,

Thanks for the call just now.
As discussed, Contact has proffered a resource consent condition to fund a restoration project on the stream, with an initial fund of $100,000 to kick this off.

Further to that, we have also committed $150,000 per year for the life of the consent to fund other projects relating to biodiversity and land management. The Te Kiri o Hinekai project could also be funded through that fund going forward.

I am drafting up an agreement document that would outline an agreement between the resort and Contact that would outline the project and the access in a formal sense.

Just to confirm, there is no requirement from the hotel for funding, financial inputs or other management. The hotels only input is to provide access to the site to enable some restoration to occur to improve the area for the long term. Any other inputs from the hotel would be at your discretion, so is not a requirement unless you want to provide additional resource.

Can you confirm that the resort is willing to give access to the stream to enable this restoration project, so I can document this in my evidence for the resource consent hearing? Access would be subject to the agreement and the project plan, which will need to be agreed by the hotel and Contact.

Thank you.

Regards,
Todd.

From: Atif Khan <atif.khan@Wairākei .co.nz>
Sent: Wednesday, 7 September 2022 2:32 pm
To: Todd Baldwin <Todd.Baldwin@contactenergy.co.nz>
Cc: Nishane Fernando <maintenance@Wairākei .co.nz>
Subject: Re: Restoration proposal for Te Kiri o Hinekai stream

This will be a positive step forward .

Thanks Todd.
Sent from my iPhone

On 7/09/2022, at 1:35 PM, Todd Baldwin <Todd.Baldwin@contactenergy.co.nz> wrote:

Thanks Atif,

The only requirement from the resort is to provide access to the stream to enable the initiative to kick off.
All funding will come from Contact and will form part of our mitigation measures to support our resource consents.

I can draft an agreement between the resort and Contact that will set out the access arrangements and expectations so it is formally documented what is proposed and what the expectations are.

I will also engage wildlands consultants to draft up a plan so we can show what areas are to be progressed.

Thanks for your interest in the project and I will be in touch shortly with some more details to progress.

Regards,
Todd.

From: Atif Khan <atif.khan@Wairākei .co.nz>
Sent: Monday, 5 September 2022 3:08 pm
To: Todd Baldwin <Todd.Baldwin@contactenergy.co.nz>; Nishane Fernando <maintenance@Wairākei .co.nz>
Subject: RE: Restoration proposal for Te Kiri o Hinekai stream

Hi Todd,

We are happy to support the initiative ,will be great to see some mote details on what is involved so this project is sustainable and can ne managed without adding more resources from our end . We will need clarity what input will be required from the resort during and after implementing this initiative.

Best regards,

Atif

Atif Khan I Hotel Manager I **Wairākei Resort Taupō**
Tel +64 7 374 9004 I **Fax +64 7 374 8485** I Mob +64 272339375 I **Web** www.Wairākei .co.nz

From: Todd Baldwin <Todd.Baldwin@contactenergy.co.nz>
Sent: Tuesday, 23 August 2022 2:23 pm
To: Atif Khan <atif.khan@Wairākei .co.nz>; Nishane Fernando <maintenance@Wairākei .co.nz>
Subject: Restoration proposal for Te Kiri o Hinekai stream

Hi Atif and Nishane,

Just further to our recent discussions around the proposed project to look at an ecological restoration of the Te Kiri o Hinekai Stream, I would like to just confirm that you are interested in the project and would like us to progress into getting some plans and proposals drawn up.

As a bit of background, Contact is reconsenting its operations on the Wairākei-Tauhara Geothermal Field, in a project known as 'GeoFuture'. Within the RMA consenting process, Contact is proposing a range of mitigation measures, including ecological restoration and protection projects, with a particular focus on unique geothermally influenced habitats.

One of the proposed sites for restoration is on the margins of the Te Kiri o Hinekai Stream, of which a significant portion flows through the Wairākei Resort property and is located on land managed by

Wairākei Resort. The site is unique in that it flows with hot water which provides a unique environment for geothermal species, such as rare geothermal ferns.

Contact would like to develop a programme of restoration and secure access to that part of the Te Kiri o Hinekai Stream which flows through land managed by the Wairākei Resort. This will enable a range of ecological restoration initiatives on the margins of the stream in partnership with the Wairākei Resort.

Any work undertaken would obviously be in partnership with the resort, so as not to prevent the resort from being able to undertake any ongoing maintenance activities or other activities as you see fit.

I would like to confirm that the resort is keen to progress the concept, so that we can draft up a proposed project and document some of the initiatives and how we go about them.
This will include drafting up an access agreement and developing the project plan, largely based on the attached scope of works from Wildland consultants.

As an interim step, can you confirm that the resort is interested in this proposal and wants to pursue it. If you could respond outlining your interest, I can move the project forward.

Happy to discuss again in person, over the phone, or anytime that suits you.
Thank you.

Regards,
Todd.

Todd Baldwin
Environmental Advisor
Generation & Trading

M: +64 22 535 0239 | E: todd.baldwin@contactenergy.co.nz
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Wairākei Power Station
Te Aro Road, Wairākei
Taupō, 3384, New Zealand
contact.co.nz

EXHIBIT TMB 2- *Schedule of biodiversity / land improvement projects 2018-2022 from contacts geothermal biodiversity management plan*

FY 2023		
Action	**Due Date**	**Status**
Identify two planting sites for winter 2023 for a minimum of 25,000 indigenous species to be planted.	January 2023	Complete
Implement Otumuheke stream restoration project with partners/stakeholder/tangata whenua	July 2022	In progress
Implement Aratiatia (Waikato Awa corridor) Restoration project with tangata whenua, DoC, Bike Taupō and Greening Taupō	July 2022	In progress
Follow-up willow and poplar control at Te-Rau-o-te-huia stream	November-Jan 2022-23	Scheduled
Implement Biodiversity management plan to control pest plants within hot ground and culturally significant areas at Ohaaki	July 2022	In progress
Follow-up - removal of old man wilding pines from Contact Land (Karapiti focus)	February 2023	Scheduled
Identify thermotolerant site within Wairākei /Tauhara and start enhancement/protection programme (Oruanui/Huka)	March 2023	Scheduled
Infill planting on Waipuwerawera stream restoration sites	June 2023-August 2023	Scheduled
Ohaaki – Torepatutahi wetland pest plant and animal control followed up with indigenous planting	Annual	In progress
Work with Te Kapa o te Rangiita on restoration of Te-Rau-o-te-huia. Provide project manager experience and financial support where required.	Monthly	In progress
Initiate FEP's with lessee's and implement as appropriate	Annual	Ongoing
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing
Continuation of Kids Greening Taupō, Kiwi for Kiwi, Wingspan and Greening Taupō planting site	Annual	Ongoing

FY 2022		
Action	**Due date**	**Status**
Infill planting Ohaaki bund	August 2020	On hold
Develop/draft ecological restoration projects for Otumuheke stream and Aratiatia scenic reserve	Jan 2022	Completed
Identify two planting sites for winter 2021	January 2021	Completed
Follow-up willow and poplar control at Te-Rau-o-te-huia stream	Jan 2022	Completed
Implement Biodiversity management plan to control pest plants within hot ground and culturally significant areas at Ohaaki	July 2021	On hold
Removal of wilding pines and pampus from Alum Lakes (Wai ora Hill) geothermal vegetation in Wairākei steam-field.	Jan 2022	Completed
Removal/poisoning of old man wilding pines from Contact Land	March 2021	In progress

Identify thermotolerant site within Wairākei /Tauhara and start enhancement/protection programme (Oruanui/Huka)	March - May 2022	In progress
Infill planting on WK407 landslide site	June 2021-August 2022	Completed
Ohaaki wetland 3 (landward side), pest plant and animal control followed up with planting	Annual	In progress
Work with Te Kapa o te Rangiita on restoration of Te-Rau-o-te-huia. Provide project manager experience and financial support where required.	Monthly	In progress
Install water usage meters on water bores to track usage	Sept 2021	On hold
Initiate FEP's with leasee's and implement as appropriate	Annual	Ongoing
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing
Continuation of Kids Greening Taupō, Kiwi for Kiwi and Greening Taupō planting site	Annual	Ongoing

FY 2021		
Action	**Due date**	**Status**
Infill planting Ohaaki bund	August 2020	Completed
Identify two planting sites for winter 2021	January 2021	Done (Karapiti Boundary & Oruanui)
Follow-up willow and poplar control at Te-Rau-o-te-huia stream	November-Jan 2021	Completed
Implement Biodiversity management plan to control pest plants within hot ground and culturally significant areas at Ohaaki	July 2020	In progress
Removal of old man wilding pines from Contact Land	March 2021	In progress
Identify thermotolerant site within Wairākei /Tauhara and start enhancement/protection programme (Oruanui/Huka)	March - May 2021	Moved to next year
Infill planting on WK407 landslide site	June 2021-August 2022	Completed
Ohaaki wetland 3 (landward side), pest plant and animal control followed up with planting	Annual	In progress
Work with Te Kapa o te Rangiita on restoration of Te-Rau-o-te-huia. Provide project manager experience and financial support where required.	Monthly	In progress
Install water usage meters on water bores to track usage	Sept 2020	Discussion with farmer
Initiate FEP's with leasee's and implement as appropriate	Annual	Ongoing
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing
Continuation of Kids Greening Taupō, Kiwi for Kiwi and Greening Taupō planting site	Annual	Ongoing

FY 2020		
Action	**Due date**	**Status**
Plant final section of Ohaaki bund	August 2019	Completed
Identify two planting sites for winter 2020 (Oruanui Totara forest, Te Aro Road, look-out, Karapiti Manuka plantation)	January 2020	Completed
Spray willows and remove poplars from Te-Rau-o-te-huia stream	February 2020	Completed

Weed control Ohaaki east steamfield – Landcorp land	March 2020	Completed
Biodiversity management plan to control pest plants within hot ground and culturally significant areas at Ohaaki	March 2020	Completed
Removal of old man wilding pines from Contact Land	March 2020	Completed
Identify thermotolerant site within Wairākei /Tauhara and start enhancement/protection programme - **Alum lakes, Huka and Oruanui**	March - May 2020	Completed
Meet healthy river requirements and submit NRP's	May 2020	Completed
Restoration planting on WK407 landslide site	June 2020-August 2021	Completed
Ohaaki wetland 3 (landward side), pest plant and animal control followed up with planting	Annual	In progress
Work with Te Kapa o te Rangiita on restoration of Te-Rau-o-te-huia. Provide project manager experience and financial support where required.	Monthly	Ongoing
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing
Continuation of Kids Greening Taupō, Kiwi for Kiwi and Greening Taupō planting site	Annual	Ongoing

FY 2019		
Action	**Due date**	**Status**
Pest plant control within identified hot ground area at Ohaaki	April 2019	Focused on completion of Bund so moved to FY20
Ohaaki wetland 3 (landward side), pest plant control	Annual Feb	Completed
Work with Te Kapa o te Rangiita on restoration of Te-Rau-o-te-huia. Provide project manager experience and financial support where required.	Monthly	Ongoing
Identify thermotolerant site within Wairākei /Tauhara and start enhancement/protection programme – Alum Lakes	May 2019	Completed
Identify two planting sites	June 2019	Completed
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing
Continuation of Kids Greening Taupō, Kiwi for Kiwi and Greening Taupō planting site	Annual	Ongoing

FY 2018		
Action	**Due date**	**Status**
Pest plant control within Te-Rau-o-te-huia hot ground cave area	February 2018	Completed – annual checks required
Ohaaki wetland 3 (landward side), pest plant control	Annual Feb	In progress
Undertake ecological survey of Te-Rau-o-te-hui stream and develop restoration plan	January 2018	Completed
Willow control around Lake Elliot	March 2018	Completed
Review land use of all steamfields	May 2018	Ongoing
Planting of two sites – Lake Elliot (where pine trees are being removed) and steamfield lookout.	June – Aug 2018	Completed
Maintenance of previous planting sites	3 times per year	Ongoing
Continuation of pest control programme	Monthly	Ongoing

Continuation of Kids Greening Taupō, Kiwi for Kiwi and Greening Taupō planting site	Annual	Ongoing