

From: [Alice Lin](#)
To: [Plan Hearings](#)
Cc: [Karen Sky](#)
Subject: Proposed Plan Change 7 - Statements of Evidence for Genesis Energy Ltd (Submitter ID 422)
Date: Friday, 17 July 2020 2:02:41 pm
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[Statement of Evidence by Mark Alan Cain \(final 20200717\).pdf](#)
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[20200717- CLWRP PC7 - FINAL Phil Mitchell Statement of Planning Evidence.pdf](#)

Hello

Please find attached, the following statements of evidence-in-chief for Genesis Energy Ltd (Submitter ID 422):

- Mark Cain (Genesis)
- Phil Mitchell (planning)
- Roger Young (ecology)

I would appreciate it if a receipt confirmation email could be provided please. Many thanks.

Kind regards



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**BEFORE THE HEARING
COMMISSIONERS**

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 7 to the Canterbury
Land and Water Regional Plan

**STATEMENT OF EVIDENCE OF ROGER GRAEME YOUNG
ON BEHALF OF GENESIS ENERGY LIMITED**

17 July 2020

Introduction

1. My name is Roger Graeme Young. I hold the qualifications of PhD (University of Otago, 1998) and BSc (Hons) (University of Otago 1992).
2. I am employed as a freshwater ecologist at the Cawthron Institute. I have held this position for 22 years. My responsibilities include co-management of Cawthron's Coastal and Freshwater Group which I've been doing for the last 7 years.
3. I am part of the multi-agency team that developed and operate the Land, Air Water Aotearoa (**LAWA**) website (www.lawa.org.nz), which provides easy-to-access environmental information from throughout New Zealand. I oversee the annual analysis and refresh of the water quality information that is presented on LAWA from about 1400 sites across New Zealand.
4. My scientific work involves a mix of government-funded research on river ecosystems, and commercial projects assisting a range of clients with freshwater management issues. My work has included studies on new tools for river health assessment, minimum flow and water allocation assessments, assessments of environmental effects, relationships between human pressure indicators and river ecosystem integrity, water quality sampling and data analysis, integrated catchment management, synergies between western scientific and cultural indicators of river health, and tools for rehabilitating river ecosystems.
5. I have written 59 scientific papers and more than 80 reports relating to this work over the last 22 years.
6. Over the last two years I have been providing ecological advice to Genesis Energy Ltd (**Genesis**) to assist with the renewal of their consent for operation of the Tekapo Power Scheme. I am familiar with the location and operation of the scheme and its potential effects.

Code of conduct

7. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014 and agree to comply with it. The contents of this statement are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this statement.

Scope of evidence

8. My evidence focuses on the areas that have been identified as providing critical habitat of threatened indigenous freshwater species in the proposed Plan Change 7 to the Canterbury Land & Water Plan (**LWRP**).

9. In preparing my evidence, I have reviewed the following documents:
 - a. Prioritisation of native aquatic species habitat for protection under the LWRP Omnibus plan change (Gray & Allibone 2019).
 - b. Critical habitat for Canterbury freshwater fish, kōura/kēkēwai and kākahi (Allibone & Gray 2018).
 - c. Ecological impacts of braid diversion (Gray & Grove 2019)
 - d. Cumulative aquatic habitat loss, a step change in biodiversity and the case for legislative change (Gray 2019).
 - e. Summary critical habitats report (Mahaanui Kurataiao Ltd 2018).
 - f. Section 42A Report: Plan Change 7 to the Canterbury Land and Water Regional Plan; and Plan Change 2 to the Waimakariri River Regional Plan.
10. This statement has been structured to provide:
 - a. A summary of the high priority species in the vicinity of the Tekapo Power Scheme;
 - b. Areas identified as providing critical habitat of threatened indigenous freshwater species that are potentially influenced by the Tekapo Power Scheme ;
 - c. The implications of Genesis' requirements to maintain the Irishman Creek culvert under the Tekapo Canal.

High priority threatened indigenous freshwater species

11. Gray & Allibone (2019) uses a threat status tree to identify threatened indigenous freshwater species across the whole of the Canterbury Region that would benefit from habitat protection. Prioritisation was driven by threat status, abundance/rarity in Canterbury and whether populations were located in areas of public conservation land.
12. This process resulted in a list of eleven high priority taxa whose distribution was subsequently mapped across the Canterbury Region as areas of critical habitat of threatened indigenous freshwater species.
13. In relation to the Tekapo Power Scheme the high priority species of concern are the Bignose galaxias and the Upland longjaw galaxias (Waitaki).
14. The lowland longjaw galaxias (Waitaki) is also a high priority species and found in the Edwards Stream adjacent to the Tekapo River, but is largely unaffected by the Tekapo Power Scheme.

Areas of critical habitat of threatened indigenous freshwater species in the vicinity of the Tekapo Power Scheme

15. The main area of critical habitat of threatened indigenous freshwater species close to the Tekapo Power Scheme is the section of Irishman Creek that runs through the culvert under the Tekapo canal.
16. Bignose galaxias have been recorded in Irishman Creek above and below the culvert, and at sites further upstream and downstream in Irishman Creek. Hence, these areas have been mapped as critical habitats for threatened indigenous freshwater species.
17. There is no indication of genetic isolation among these populations, although there is a long section of the lower Irishman Creek which is often dry and will presumably restrict movement between populations at times.
18. Gray & Allibone (2019) indicate that critical habitat for Bignose galaxias needs to be protected from activities such as straightening, drainage and abstraction, and ideally from salmonids via salmonid passage barriers.
19. There are also some sections of the lower Irishman Creek, near the Mary Burn confluence, where Bignose galaxias have been found and are identified as critical habitats. These areas appear to be on a terrace away from the Tekapo River channel and therefore not likely to be affected by flows released down the Tekapo River.

Implications of Genesis requirements to maintain the Irishman Creek culvert under the Tekapo Canal

20. I understand that Genesis wishes to maintain the ability to maintain the Irishman Creek culvert.
21. The Section 42A report maps of critical habitat of threatened indigenous freshwater species show a short gap in the identified critical habitat that corresponds with the section of Irishman Creek beneath the Tekapo Canal.
22. This change was discussed in the Section 42A report and was made in response to submissions from Genesis, Meridian and TrustPower on the original plan and provides for a 40 m buffer from critical habitat for nationally significant hydroelectricity generation infrastructure.
23. I understand that Genesis engineers have indicated that a buffer up to 100 m upstream and downstream of the culvert is required to conduct maintenance activities.

24. A further reduction of about 200 m in the length of Irishman Creek marked as being critical habitat represents 1.3% of the approximately 15 km of critical habitat marked in Irishman Creek. I also note that only some parts of Irishman Creek upstream of the culvert have been marked as being critical habitat, but there is approximately 6 km of stream length that likely provides additional habitat for Bignose galaxias.
25. Therefore, an extension of the proposed buffer to enable maintenance activities within 100 m upstream and downstream of the Canal would only affect a very small part of the available critical habitat.
26. I also understand that Genesis' current consent for maintaining the culvert requires that maintenance is avoided between 15 May and 15 September; intention to conduct maintenance activities is notified to relevant parties; disturbance to birds and fish during maintenance is avoided as much as possible; fish within areas that will be disturbed are relocated to adjacent areas; and flow is maintained through the disturbed area as much as practicable.
27. Given the fact that maintenance clearing has been undertaken for decades since the Tekapo Canal was created in 1970, the recent recording of Bignose galaxias in Irishman Creek above and below the culvert suggests that the clearance activity is not incompatible with the presence of the Bignose galaxias population.

Summary

28. Bignose galaxias have been recorded in Irishman Creek above and below the Tekapo Canal culvert, and at sites further upstream and downstream in Irishman Creek. Hence, these areas have been mapped as critical habitats for threatened indigenous freshwater species.
29. Genesis wishes to maintain the ability to maintain the Irishman Creek culvert and have indicated that a buffer up to 100 m upstream and downstream of the culvert is required to conduct maintenance activities. This activity has been undertaken for a number of decades and is not incompatible with the presence of the Bignose galaxias population.
30. The Section 42A report maps of critical habitat of threatened indigenous freshwater species show a short gap in the identified critical habitat that corresponds with the section of Irishman Creek beneath the Tekapo Canal.
31. An extension of the proposed buffer to enable maintenance activities within up to 100 m upstream and downstream of the Canal would only affect a very small part of the available critical habitat.
32. Current consent conditions for maintenance of the culvert require that disturbance to fish during maintenance is avoided as much as possible.

33. In my opinion, occasional maintenance activities that avoid disturbance to fish populations within the small additional part of the available critical habitat are unlikely to threaten the viability of the Bignose galaxias population within Irishman Creek.

Roger Young
17 July 2020