BEFORE THE A COMMISSIONER APPOINTED BY THE SOUTHLAND REGIONAL COUNCIL

IN THE MATTER	the Resource Management Act 1991
AND	
IN THE MATTER	of resource consents to occupy the Coastal Marine Area with a tide gate and weir and to dam and divert water
AND	
IN THE MATTER	of an application by **SOUTHLAND REGIONAL COUNCIL**

BRIEF OF EVIDENCE OF COLIN SHEN YOUNG
16 August 2024

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1. My full name is Colin Shen Young.

2. I hold a Bachelor of Engineering from the University of Canterbury. I am a retired Chartered Member Engineer.

3. I was employed by the Southland Regional Council and its predecessors as a hydraulic engineer for 43 years. I have provided the Council with technical and engineering support for catchment flood protection works throughout Southland, including stop bank protection works at Invercargill Airport, Ōreti River and Mataura River. Included in my roles has been time in the Catchment Management Division and Resource Consent Division.

4. I am aware that Environment Southland's Catchment Management Division has applied for resource consents to re-authorise the location and operation of a tide gate and weir on the Titiroa Stream, upstream of the Tokanui-Gorge Road Bridge. While no longer in my previous roles at Environment Southland, I remain employed by it and have assisted with this application and am authorised by Environment Southland to give this evidence.

5. The purpose of my evidence is to briefly explain the history of the tide gates and weir in the context of the immediate Titiroa Stream Catchment and wider Mataura River Catchment. I understand this is to assist you to understand the original and ongoing purpose of the structures and their importance for land uses in the area.

6. I have seen the description of the gates and surrounding environment in the evidence of Dave Connor. I will largely adopt that description to avoid repetition.

7. The tide gates and weir are part of the Lower Mataura Catchment Flood Scheme, the extent of which is shown in Appendix 1. The gates are in the Titiroa Stream Catchment but perform functions associated with the wider Mataura River Catchment.

8. The gates are a strategic piece of infrastructure and have long been viewed this way by Council. What I mean when I use the term 'strategic' is that their historic function has been to manage ground and surface water in a low-lying part of the region to enable more efficient pastoral

farming. Over time this has developed to reflect modern thinking and now the activities the gates enable also allow ecologically beneficial activities, such as the retirement of remnant bush and stream banks funded through revenue directly received from farming that is reliant on the gates.

9. Based on my observations over nearly 40 years, the gates control the water table up to around the old railway embankment, about 7.3km from the application site and shown on Mr Connor's Appendix 1. This is higher in the catchment than Mr. Gardner models to assess the impact of the gate removal.

10. The gates also play a part in managing riverine flooding hazard, but this is difficult to measure and not their primary purpose. I have observed the gates and weir completely submerged during a flood.

11. The gates also help to keep the water table high downstream, where there are long-established areas of lowland swamp/wetland. Additionally, areas of previously grazed land have now been retired and reverted back to wetland.

12. In addition to the matters Mr Connor describes, I have been asked to explain the cut-off diversion between the Titiroa Stream and Mataura River, approximately 9.7km from the gates and shown on Appendix 1 to Mr Connor's evidence. The cut-off is on the Mataura floodway and is an artificial channel.

13. The purpose of the cut-off is to reduce the normal amount of water flowing down the Titiroa Stream floodway area to reduce the water table level on the Titiroa Stream side of the floodway.

14. Stopbanks along the left bank of the cut-off were designed to allow flood flows to spill over into the Mataura floodway when the Mataura River reaches 13.5m on the gauge board at the Seaward Downs hydrological site. This equates to a flow in the Mataura River of 480 cumecs. Any spillover is designed to discharge onto the top of the Mataura floodway then continue flowing downstream into the original Titiroa Stream. This means any increased flows in the Titiroa Stream have the potential to push water back toward the Mataura River in a flood event, although the

impact on riverine flooding is unknown at the moment and may not be significant.

15. The cut-off also means that the flow down the Titiroa Stream is not as great as it would otherwise be, were it not for the cut-off. Thus, removal of the gates would be mitigated by the cut-off, although the impact overall is still likely to be significant as explained by Mr. Gardner's model.

History of the gates

16. The tide gates were installed in 1986 to replace a set of wooden gates built after World War 1, which had been demolished by a significant flood in 1972. These are the gates we see today and were an upgrade of the old wooden structure. I was not involved in the construction of the gates in 1986, so am relying on what I have read and actions taken since that time.

17. The low side-spill weir was constructed to reshape and control the flood spill. Both structures contribute to the lowering of the water level upstream, providing drainage outfall and tidal flood protection to adjacent farmland.

18. Fish passage was considered at the time of construction, but a fish pass facility considered unnecessary as fish passage was not totally impeded.

19. In the 1980s, the Council was also part way through a multi-phase project of flood protection works, including edge protection (e.g. rip-rap), willow removal and stop-banks on the Mataura River, that begun in the 1970s. As part of that project, it had been identified that the cost of building flood banks on the true left of the Mataura River was prohibitive because of the volume of water that could be carried in the main channel of the River[1]. In other words, effective flood banks would have needed to be very large.

20. The solution to that problem was to purchase land in the Titiroa Catchment for further flood protection works.[2] The purpose of the land

[1] 2400 cumecs.
[2] Note that this was in the context of then Government policy that catchment boards were directed to "protect or purchase."

purchases was primarily to mitigate the economic/engineering difficulties associated with providing flood protection.

21. The land was purchased on a willing seller willing buyer basis and the Public Works Act was not used. Importantly, the agreement was that the land acquired would be leased back to the farmer so it could continue to be farmed.

22. In the more than 40 years since these blocks were purchased a number of the lessees have changed. In addition, since the original acquisition the Council has adjusted some boundaries to provide for more logical and efficient farming blocks and required lessees to undertake improvements. It has also undertaken some works itself, including the installation of tile and mole drains and installation of flap gates to assist with drainage.

23. Another benefit of the land purchases was the acquisition of areas of bush and wetland that have over time been excluded from the leases. These areas are managed and maintained by Council for conservation purposes. A number of these areas are discussed in the High Value Area Assessment Report attached as Appendix C to the AEE.

24. There are now 7 leases on Council owned land. The leased properties derive benefit from the gates to differing extents depending on their location and topography.

25. One block on the true left and one block on the true right remain in private ownership. Morton is on the flat on the true right and supports the application. Holm is on the left, including on elevated land and opposes the application.

26. I have made inquiries of the Property Division and understand the leases provide income to the Council. That income is held in a fund for purposes associated with the provision of flood protection works and maintenance in the catchment, including for the gates and is distributed in the annual plan. Such works are not funded from a rate, although I understand some wider flood protection works are paid for by a targeted rate.

27. At present 25% of the annual income from the Mataura Leases can be spent on maintenance and capital works in the floodway. Mataura lease

reserve funds can be used in the Mataura Catchment at the discretion of the Council.

Colin Young

16 August 2024

Appendix 1

Lower Mataura Floodway