

**BEFORE A HEARINGS PANEL APPOINTED BY THE [COUNCIL]**

**IN THE MATTER OF** the Resource Management Act 1991 (“the Act” or “the RMA”)

**AND**

**IN THE MATTER OF** Application RM24.143 by Dunedin City Council to establish  
and operate a resource recovery park

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**STATEMENT OF EVIDENCE OF CLAIRE ELAINE CONWELL ON BEHALF OF  
OTAGO REGIONAL COUNCIL**

**WATER QUALITY**

**23 October 2024**

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## **INTRODUCTION**

1. My full name is Claire Elaine Conwell.
2. I am currently working as a Principal Consultant – Ecology and Marine Science, with SLR Consulting NZ Limited (SLR) (commenced April 2022).
3. Prior to joining SLR I worked as a Senior Associate Consultant – Water Resources, for Jacobs NZ for two years and four months. Prior to Jacobs, I was employed with the Greater Wellington Regional Council (GWRC) as a Senior Coastal Scientist (2017 – 2019) and as a Scientist – Water Quality (2011-2017). Prior to GWRC, I was employed as an environmental consultant for five years at the Cawthron Institute (Nelson), undertaking a range of Assessment of Environmental Effects for a variety of activities in near shore coastal environments around New Zealand.

## **QUALIFICATIONS**

4. I hold a PhD in aquatic ecotoxicology from the University of Melbourne (Australia, 2007), and First Class Honours in aquatic ecotoxicology from the Royal Melbourne Institute of Technology University (Australia, 2000) and a Bachelor of Science from Monash University (Australia, 1999).
5. I have authored more than 70 technical reports in environmental management, produced more than 10 conference presentations in the field of ecotoxicology and water quality, and published several peer reviewed science papers and co-authored a book chapter in marine hydrocarbon pollution.
6. I am a member of the Environmental Institute of Australia and New Zealand, and a member of Water New Zealand (including membership of the Stormwater Group). I am certified as an RMA decision maker through the 'Making Good Decisions' Programme (2024).
7. I have acted as an Expert Witness in surface water environmental discharge related consent hearings in New Zealand for the past six years. I have provided expertise in the fields of stormwater, wastewater discharges to surface water, general effects of activities to surface water quality, and environmental monitoring plan design to a range of industry and regional council/unitary authorities across New Zealand.

## **CODE OF CONDUCT**

8. I advise that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and to the extent that I am giving expert evidence, have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise and I have not omitted material facts known to me that might alter or detract from my evidence. Other than when I state I am relying on the advice of any other person, this evidence is entirely within my area of expertise.

## **SCOPE OF EVIDENCE**

9. I have been engaged by Otago Regional Council (ORC) to undertake a technical review of draft consent application documents (prior to application submission) and the subsequently submitted application documents provided by Dunedin City Council (DCC) for the establishment and operation of a Resource Recovery facility at the current Green Island Landfill.

10. I visited the site on 22 October 2024 to view the site layout and surrounding area.

11. I have been engaged by ORC to prepare evidence in relation to potential effects of the application to local surface water quality.

12. In preparing this evidence I have reviewed the following documents:

- (a) Boffa Miskell, 2024. Applications for Resource Consent and Assessment of Environmental Effects Prepared for Dunedin City Council, Green Island Resource Recovery Park Precinct. 15 March 2024 (relevant sections only);
- (b) GHD Limited, 2024. Appendix 3: Green Island Resource Recovery Park Precinct – Stormwater Management Plan and Assessment of Effects. 19 February 2024;
- (c) Resource Recovery Park Precinct – Draft ORC Conditions of Consent.

The following supporting documents have been cross-checked where they reference or related to surface water and stormwater management aspects:

- (d) GHD Limited, 2024. Appendix 2: Green Island Resource Recovery Park Precinct – Design and Operations Report. 19 February 2024;
- (e) GHD Limited, 2024. Appendix 5B: Green Island Resource Recovery Park Precinct – Draft Erosion and Sediment Control. 14 February 2024;

- (f) GHD Limited, 2024. Appendix 5C: Green Island Resource Recovery Park Precinct – Draft Contaminated Land Management Plan. 16 February 2024;
- (g) GHD Limited, 2024. Appendix 5E: Green Island Resource Recovery Park Precinct – Draft Stormwater Management Operation and Maintenance Plan. 28 February 2024.

13. In giving this evidence, I am relying on the data (including analytical results) provided in the above reports.

## **BACKGROUND**

14. DCC propose to construct and operate a new Resource Recovery Park Precinct (RRPP) at the existing Green Island Landfill.

15. The Green Island Landfill began operating in 1954 in an unregulated and uncontrolled manner until the 1990s when DCC began management of the waste disposal activities. The landfill is still operational, and the proposed RRPP is to be located on a now closed portion of the landfill which received waste from the 1950s through to the late 1970s

16. The depth of waste in the location of the RRPP is reported to be between six (6) to eight (8) meters deep.

17. In regard to surface water, GHD (2024) in the Appendix 3 of the application set out a clear summary of the key surface water features, being the Kaikorai Stream and Abbots Creek, and associated results of receiving environment monitoring.

18. GHD (2024), as reported in Appendix 3 of the application, also sets out a clear description of the relevant current stormwater management practices (including monitoring results), the relationship to leachate management, and a summary of the results (including trends) in surface water quality.

## **APPLICATION AUDIT**

19. In April 2024, I prepared a Technical Audit Memorandum to respond to questions posed by ORC regarding the application. A copy of this Memorandum is provided as **Appendix A**. My assessment has not changed since preparing this Memo.

## **SUBMISSIONS**

20. I have reviewed the submissions received in relation to the application.

21. The submission from John and Helen Neill requested 'other contaminants' to be monitored at the site boundary (in addition to odour and dust). Any contaminants associated with leachate to surface water or stormwater associated contaminants can be regarded as 'other contaminants'.
22. In terms of water quality, I agree that there shall be no increase in effects as compared to the current situation. This is consistent with the findings set out in my technical memorandum (**Appendix A**).

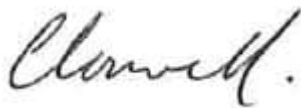
### **PROPOSED CONSENT CONDITIONS**

23. I have reviewed the proposed Conditions of Consent included in the ORC Officers Section 42A report and I am in agreement with the proposed conditions. It is recognised that the proposed Operations Management Plan (with leachate and stormwater management, as well as erosion and sediment controls) as well as the Construction Environmental Monitoring Plan, will include details on the management of activities potentially affecting surface water quality, which I consider adequate.

### **CONCLUSIONS**

24. Overall, I consider that the technical information provided in relation to the management of onsite stormwater, management of contaminants associated with stormwater, and management of effects to surface water in the receiving environment is appropriate. The consent conditions and associated management plans referred therein contain sufficient controls to manage the risk to the environment from construction of the proposed development.

**Authored by:**



**Dr Claire Conwell**

Principal Consultant

**Reviewed by:**

**Tim Baker**, Technical Discipline Manager, Hydrology and Hydrogeology

**Appendices**      Technical Memorandum to Otago Regional Council – Surface Water  
Quality Review

## **Appendix A**

Technical Memorandum – Green Island Resource Recovery Park Precinct Consent, Surface Water Quality Review. Prepared by Claire Conwell, SLR Consulting Ltd. 5 April 2024.

**To:** Shay McDonald  
**From:** Claire Conwell  
**Company:** Otago Regional Council  
**SLR Consulting New Zealand**  
**cc:**  
**Date:** 5 April 2024  
**Project No.** 875.V15838.00002

**RE: Green Island Resource Recovery Park Precinct Consent  
Surface Water Quality Review**

## **Confidentiality**

*This document is confidential and may contain legally privileged information. If you are not a named or authorised recipient, you must not read, copy, distribute or act in reliance on it. If you have received this document in error, please notify us immediately and return the document by mail.*

## **1.0 Introduction**

SLR Consulting NZ (SLR) has been engaged by Otago Regional Council (ORC) to conduct a technical review of the resource consent application (including subsequent attachments) submitted by Dunedin City Council (the applicant, DCC) for the development and operation of the Green Island Resource Recovery Park Precinct (RRPP) (referred to herein as the site).

As part of improvements to Dunedin's waste management and kerbside collection services, the applicant is proposing to develop a new RRPP facility at the existing Green Island Landfill which is coming to the end of its operational life.

SLR has prepared a number of technical memorandums in relation to the application. This technical memorandum relates to surface water quality and stormwater effects and management.

## **2.0 Scope of the Review**

### **2.1 Key Documents Reviewed**

The following key documents, which were submitted as part of the application, have been reviewed in the development of this technical memo:

- GHD Limited, 2024. Appendix 3: Green Island Resource Recovery Park Precinct – Stormwater Management Plan and Assessment of Effects.
- GHD Limited, 2024. Appendix 20: Resource Recovery Park Precinct – Draft ORC Conditions of Consent.

The following supporting documents have been cross-checked where they reference or related to surface water and stormwater management aspects:

- GHD Limited, 2024. Appendix 2: Green Island Resource Recovery Park Precinct – Design and Operations Report
- GHD Limited, 2024. Appendix 5B: Green Island Resource Recovery Park Precinct – Draft Erosion and Sediment Control
- GHD Limited, 2024. Appendix 5C: Green Island Resource Recovery Park Precinct – Draft Contaminated Land Management Plan
- GHD Limited, 2024. Appendix 5E: Green Island Resource Recovery Park Precinct – Draft Stormwater Management Operation and Maintenance Plan



## 2.2 Pre-Application Review and Questions

Prior to this application being formally submitted, the SLR technical review team had the opportunity to carry out a pre-application review. This provided an opportunity to understand the application and provide some general questions on the application.

The Applicant responded to these initial questions and provided a summary spreadsheet (RRPP Technical Peer Review Spreadsheet) of where amendments to the application documents had been made. This process provided clarity on the proposed operation and the likely effects to surface water and clarification regarding stormwater management.

## 3.0 Response

ORC posed the following questions which SLR respond to in turn:

### Part A: General Audit Questions

- 1. Is the technical information provided in support of the application robust, including being clear about uncertainties and any assumptions? Yes, or no. If not, what are the flaws?**

The surface water/ stormwater technical assessment (Appendix 3 report) provides an adequate summary of the potential and likely effects of the proposed RRPP development on surface water and stormwater management. It describes concisely, but with sufficient detail, the current state of water quality, describes current catchment water management, and describes concisely current stormwater and leachate management practices.

The background information is a summary of information previously presented as part of the landfill closure application (Green Island Landfill Closure Surface Water Technical Assessment, GHD 2023).

- 2. Are there any other matters that appear relevant to you that have not been included? Or is additional information needed? Please specify what additional info you require and why. Please explain.**

There are no other matters for consideration.

- 3. If granted, are there any specific conditions that you recommend should be included in the consent?**

In relation to surface water management there are no specific conditions that are required in addition those set out (both in Schedule 1 General Conditions, or D Discharge of Stormwater to the Kaikorai Stream conditions).

Regarding proposed condition 11, which refers to

*'monitoring of surface water quality in accordance with the relevant conditions of resource consent 3840C-V1 for the discharge of surface water and stormwater to the Kaikorai Stream for the wider Green Island Landfill'*

It is noted that Section 5 of the Draft Stormwater Management Operation and Maintenance Plan, the process of Adaptive Management is referred to for responding to increased contaminants reported during routine monitoring, and a review if trend analyses indicate reduced water quality. It is recommended that this be specifically referred to in this proposed consent condition so that this intent, and linkage to the closed landfill, is clear.



## **PART B: Surface Water Quality and Quantity**

- 4. Do you agree that the proposed leachate management system (capture and pipe leachate directly to pump stations and to WWTP, including contingency measure for Pump Station 6 as described in 6.1.1.1 of App. 3)) will ensure that there will be no adverse effects on surface water quality resulting from RRPP (operational phase) leachate? Please explain.**

I agree the proposed leachate management system described for Catchment A (Section 6.1.1.1) will ensure there are no adverse effects incurred. The premise of the design is that all runoff (including runoff from the Organic Processing Facility, glass bunker and truck wash) is managed as leachate (and disposed to the WWTP via PS6). The proposed design for PS6 allows for flow to be re-directed to holding tanks in high rainfall, and in dry weather, for the holding tanks to release flow back to PS6 for disposal to the WWTP.

- 5. Do you agree that the mitigation measures within the draft ESCP, CLMP, and CEMP are appropriate for the proposed works and will ensure that the effects of any construction discharges (stormwater, sediment, contaminants) on surface water are avoided or minimised? Please explain.**

The CLMP and CEMP provide detailed arrangements for management of effects of any construction discharges.

The general purpose of the ESCP is to identify the methods and devices implemented to minimise erosion and sediment loss from a construction site as a result of soil disturbing activities. The draft ESCP (Appendix 5B) does not set out a detailed process of methods/devices for managing sediment during construction. Relevant device details are however identified in the figures, but the accompanying text refers only to a general list of principles which should be adhered to. This list is also repeated in Section 7 of Technical Report 3. It is acknowledged that final details of the ESCP will be required to be specified in detailed design drawings and require input from the appointed contractor. The draft ESCP, however, should provide a template for this process (i.e. a written methodology as well as any relevant site plans), so it is evident to this review and ORC that the required elements of an effective ESCP are being included. The written methodology component of the draft ESCP provided is generally lacking in the required details, even at a high level or templated format. The Draft CLMP sets out a detailed framework which I would envisage the draft ESCP to also set out (for relevant matters).

- 6. Does the application adequately describe and assess the effects of the northern leachate pond overflowing into perimeter swales and Kaikorai Stream (for the period where the NLP is receiving stormwater and leachate)? Please explain.**

The description in Section 6 adequately sets out the context for leachate and stormwater management across the main catchment and sub-catchment areas.

The current state of water quality is described in Section 3, but effects from the NLP are largely inferred (i.e. not stated directly).

It is noted Section 8.2.2 refers to cumulative impacts, citing the summary of existing water quality data provided in Section 3.5. The concluding statement that '*the cumulative impact from stormwater discharges from the RRPP redevelopment is not considered to result in a significant impact to the receiving environment*' appears to relate only to the contaminant loads generated from the predicted increased vehicle movement.

The assessment of cumulative effects is generally broader, and encompasses combined impacts of past, present and future activities. In the context of the assessment of effects discussed, in my view the issue of cumulative effects has not been adequately discussed.



Notwithstanding the above limited assessment of cumulative effects, overall the assessment infers the following:

- Discharges to the NLP are managed as leachate;
- During overflow any volume is highly diluted;
- Receiving environment monitoring describes current water quality state as highly impacted by the upper catchment, with no discernible effects from the GI activity; and
- The findings from the ecological assessment are in agreement that risks to ecological values are adequately quantified and assessed.

From this, it can be inferred that cumulative effects of the RRPP are not discernible above those which may be incurred from the upper catchment. If activities (and risks) are managed in accordance with appropriate management plans (i.e. ESCP, CLMP, EMP), then long term risks of cumulative effects from the RRPP will be minimised.

**7. Do you agree that the proposed stormwater treatment processes (filters/pods followed by eastern sedimentation pond and constructed wetland for catchments B and C, and the northern leachate pond for catchment A) are appropriate to ensure that the discharge of stormwater from the RRPP will not result in any change to receiving water quality? Please explain.**

The proposed treatment train is described in Section 6.3.1, and is also set out in Appendix 5E Draft Stormwater Management Operation and Maintenance Plan (refer Section 3) and encompasses the following:

- Filter pods - provide for initial capture of gross pollutants and may (to some extent) absorb dissolved contaminants. Any material passing through (smaller than 90 micron, i.e. likely to be in finer particulate sediment or dissolved phase contaminants) will enter sediment ponds.
- Sediment ponds – the retention time in the sediment pond will be sufficient for them to retain the bulk of sediment entering the ponds sediment ponds. The bulk portion of suspended sediment (and any associated contaminates) will deposit out of the water column.
- Constructed wetland (Eastern Constructed Wetland) will serve as a ‘polishing’ step for stormwater – serve to entrain contaminants, and for nutrients, ability to attenuate.

On this basis, if the proposed process is maintained and performs to intended operational design, stormwater discharging from the RRPP will not result in any change to receiving water quality. In addition, Section 5 of the Draft Stormwater Management Operation and Maintenance Plan covers the process of Adaptive Management, whereby if there any increase in the level of contaminants, the site specific maintenance schedules can be reviewed and unforeseen increasing trends in monitoring, then on site actions and remedial actions will be implemented.

**8. Do you agree that the increase (as compared to current situation) in stormwater runoff from the operational RRPP being discharged to Kaikorai Stream will not result in any change to the receiving water (Kaikorai Stream) flood levels? Please explain.**

Yes, I agree that the increase in runoff will not have any adverse effect on flood levels in the Kaikorai Stream. The 9,800 m<sup>2</sup> stormwater catchment areas of the proposed RRPP is very small compared to the overall contributing catchment to flows in the Kaikorai Stream so is unlikely to have a measurable effect on flood levels.



**9. Do you agree that no surface water monitoring is required for the RRPP other than monitoring that is proposed for the landfill (as described in Appendix A to the stormwater report)? Please explain.**

Yes, I agree no additional monitoring other than that provided for the main landfill is required.

## **4.0 Closure**

The consent application and additional information provided to support the application are considered adequate to manage the risks to human health and the environment for the proposed development.

Should you have any questions, please do not hesitate to contact the undersigned.

Regards,

**SLR Consulting New Zealand**



**Full name, Credentials**

Principal Consultant

Review: Tim Baker, Principal Consultant

