

**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**

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## **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

