

Ravensdown Napier Works

Water Discharge Adaptive Management Plan

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Date: November 2021

Document Information

DOCUMENT ID	
DOCUMENT OWNER	Helen Hurring – Napier Consents Manager
ISSUE DATE	23 November 2021


Document History

VERSION	STATUS	ISSUE DATE	AUTHOR	CHANGES
V1.0	Draft for review	1 October 2021	Andrew Torrens - Ravensdown Helen Caley - Aurecon	
V1.1	Approved for consent application	27 November 2021	Andrew Torrens - Ravensdown Helen Caley - Aurecon	

Document Review

ROLE	NAME	VERSION
Partner – Mitchell Daysh Ltd.	Stephen Daysh	V1.1

Document Sign-off

ROLE	NAME	SIGNATURE	DATE
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1. Purpose

This Adaptive Management Plan (**AMP**) has been prepared as part of the November 2021 Ravensdown Napier Works resource consent applications and covers the following matters:

- A background discussion
- The process taken to determine discharge water quality conditions.
- The improvements proposed for the site water management and timeframes for completion.
- Monitoring to validate effectiveness of the improvements.

2. Background

The Napier Works Sustainable Site Project (**NWSSP**) embraces a step change on site in the management and treatment of discharges. This step change is reflective of:

- The strong desire for Ravensdown to be outward looking, responsive and respectful towards both its Napier neighbours and wider stakeholders by championing excellence in environmental performance and compliance.
- The location of the Site adjacent to the significant Waitangi Estuary area, and on a main arterial route between Napier and Hastings.
- The new requirements for water quality set out in national and regional planning documents.

Early in the process of preparing for the 2021 replacement resource consents Ravensdown initiated an assessment of alternative options for the treatment and discharge of the stormwater and process water from the site to review both the method of treatment and the receiving environment utilising a Multi Criteria Decision Analysis process (**MCD**A). This MCDA process led to the preferred option being irrigation of the water onto land. Through the consent process Ravensdown have formed a Technical Focus Group (**TFG**), made up of representatives from key stakeholder groups including mana whenua. The TFG provided input and advice regarding both the development of feasible alternative options for the treatment and discharge of stormwater and process water from the site, and in deciding on the consenting pathway that Ravensdown has chosen for the site.

In order to achieve the company's volunteered water quality discharge conditions a multi-step treatment train will be installed. Details of the proposed treatment devices are in the Discharge to Water Strategy – *Ravensdown (November 2021b)* and Water Discharge Project Description located in the assessment of environmental effects prepared for the NWSSP applications. Supporting the objective of long-term sustainability, the devices will be engineered and commissioned in a phased approach over time.

The potential receiving environment water quality standards are complex as there are overlapping regional and national requirements applying to the Waitangi Estuary, with both coastal and freshwater regulations relevant. In addition, there are a multitude of discharges into the Waitangi Estuary area by other parties, where Ravensdown can only control its own discharges. The different regulatory documents have differing water quality standards, with different parameters specified, and various methods of measurement. Ravensdown have therefore taken a conservative approach and used the most stringent water quality discharge standards in formulating the resource consent conditions where more than one is prescribed.

3. Management Plan Objectives

The overall project objective for the NWSSP is:

“To establish the most sustainable long-term solution for treatment and discharges from the Ravensdown Napier Works to enable the continued operation of the site”

The specific objective of the AMP is:

“To stage and implement an engineered series of storm and process water treatment devices to meet the long-term water quality conditions volunteered by Ravensdown in the most effective, efficient and timely way.”

4. Proposed Timelines

TABLE 1: PROPOSED IMPLEMENTATION TIMEFRAMES

TIME FROM CONSENT GRANT	PROJECT COMPLETION
Year One	<ul style="list-style-type: none"> ▪ Design and engineering of Stage One water treatment devices as detailed in the Water Discharge Project Description. ▪ Design and engineering of precision irrigation system. ▪ Design and earthworks for the HARP Wetland project. Hydroseeding for ground stabilisation. ▪ Installation of groundwater monitoring bores. ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Monitoring and reporting of discharge water quality ▪ Monitoring and reporting of shallow and deep groundwater quality.
Year Two	<ul style="list-style-type: none"> ▪ Installation and commissioning of Stage One water treatment devices. ▪ Installation and commissioning of precision irrigation system. ▪ Filling of the HARP Wetland with water. Planting to create habitat. ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Monitoring and reporting of discharge water quality. ▪ Monitoring and reporting of shallow and deep groundwater quality.
Year Three	<ul style="list-style-type: none"> ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Monitoring and reporting of discharge water quality. ▪ Monitoring and reporting of shallow and deep groundwater quality. ▪ Monitoring of the HARP Wetland ecology.
Year Four	<ul style="list-style-type: none"> ▪ Design and engineering of Stage Two water treatment devices as detailed in the Water Discharge Project Description. ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Monitoring and reporting of discharge water quality. ▪ Monitoring and reporting of shallow and deep groundwater quality. ▪ Monitoring of the HARP Wetland ecology.
Year Five	<ul style="list-style-type: none"> ▪ Installation and commissioning of Stage Two water treatment devices. ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Redirection of discharge water outfall to the HARP Wetland. ▪ Monitoring and reporting of discharge water quality. ▪ Monitoring and reporting of shallow and deep groundwater quality. ▪ Monitoring of the HARP Wetland ecology.

TIME FROM CONSENT GRANT	PROJECT COMPLETION
Year Six	<ul style="list-style-type: none"> ▪ Disestablishment of the “Ravensdown Drain”. ▪ Completion of actions detailed in the Source Control Management Plan. ▪ Monitoring and reporting of discharge water quality. ▪ Monitoring and reporting of shallow and deep groundwater quality. ▪ Monitoring of the HARP Wetland ecology. ▪ Decision whether further treatment devices are required.

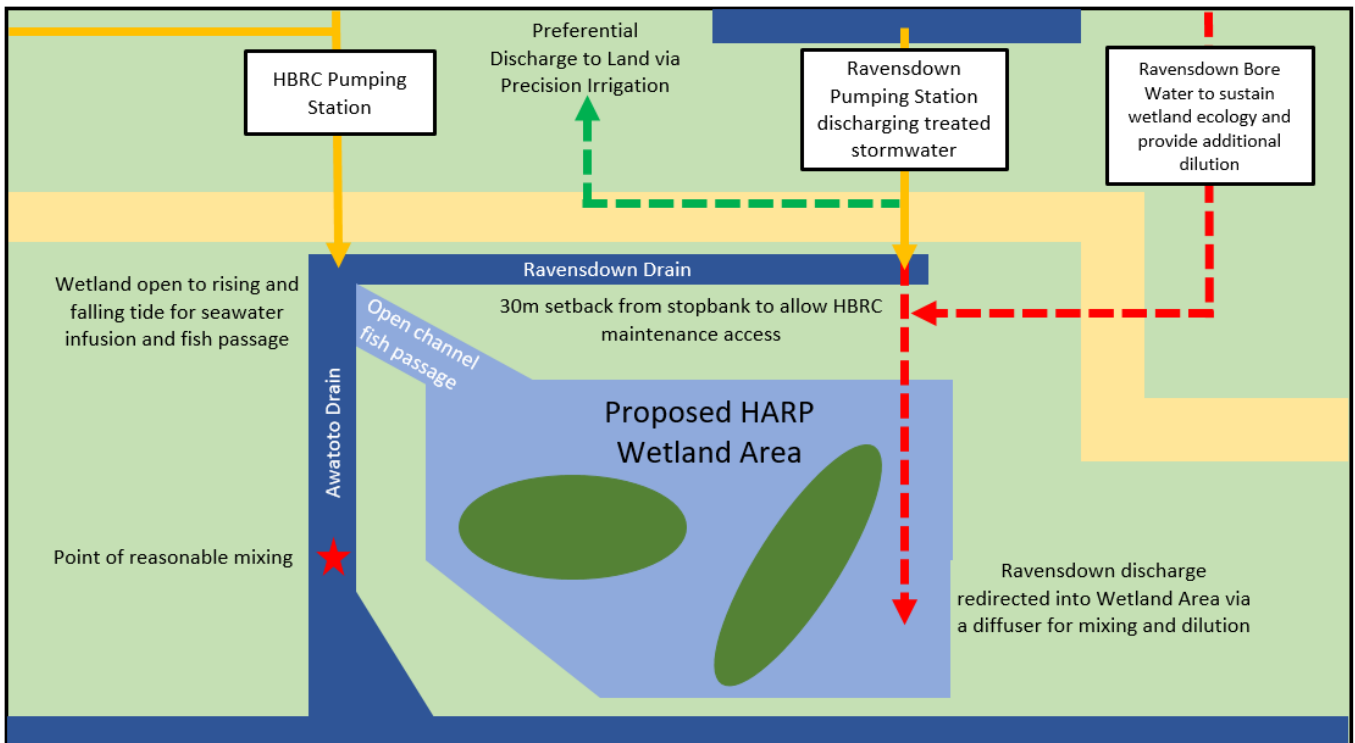


FIGURE 1: SCHEMATIC REPRESENTATION OF FUTURE STATE RAVENSDOWN WATER DISCHARGE ARRANGEMENT

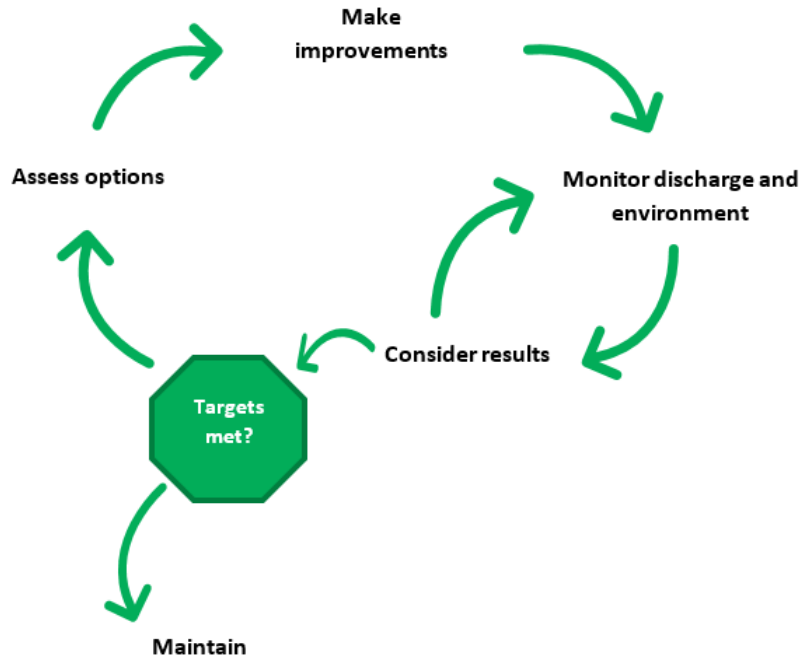
5. Monitoring and Reporting

Ravensdown will monitor the discharge water quality, and report to Council, through the conditions proposed in the application.

Ravensdown will consider the results of discharge water monitoring and assess whether adjustment of the treatment train is required to meet the water quality conditions over the 6 years of the Adaptive Management Programme set out in Table 1.

Sample points will be incorporated in the treatment devices installed. This will allow Ravensdown and their engineers to:

- Identify sources of higher water contamination that require further source controls.
- Assess the efficacy of the treatment devices.
- Aide ongoing system engineering and troubleshooting during commissioning and operation.



Ravensdown will monitor the wetland created through the HARP Plan – Ravensdown (November 2021e). Ravensdown will liaise closely with mana whenua and other interested stakeholders results of the water and ecological monitoring as set out in the resource consent conditions.

6. Review

This plan is a living document and should respond to changes on the site. It will be reviewed annually and updated as necessary as set out in the resource consent conditions.