Appendix 6: Ecology assessment

Seadown Drain Relocation: Ecology Assessment

July 2025

Prepared for: Environment Canterbury

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PO Box 1200
Christchurch 8140

TABLE OF CONTENTS

1. INTRODUCTION

Seadown Drain is a tributary of Waitarakao – Washdyke Lagoon that runs along the coastline north of Timaru (Figure 1). Coastal erosion has prompted Environment Canterbury (ECan) to progressively move stopbanks and Seadown Drain landward over the decades. ECan is looking to move Seadown Drain again, in response to ongoing coastal erosion.

This report describes ecological values within Seadown Drain and the wider project area, briefly describes the proposed works, assesses effects of the proposed works, and makes recommendations for protecting and enhancing ecological values as part of the project. The ecological assessment was primarily based on a desktop review of available data sources, supplemented with a walkover site visit, coupled with input from Aoraki Environmental Consultancy Ltd (AECL) and ECan.

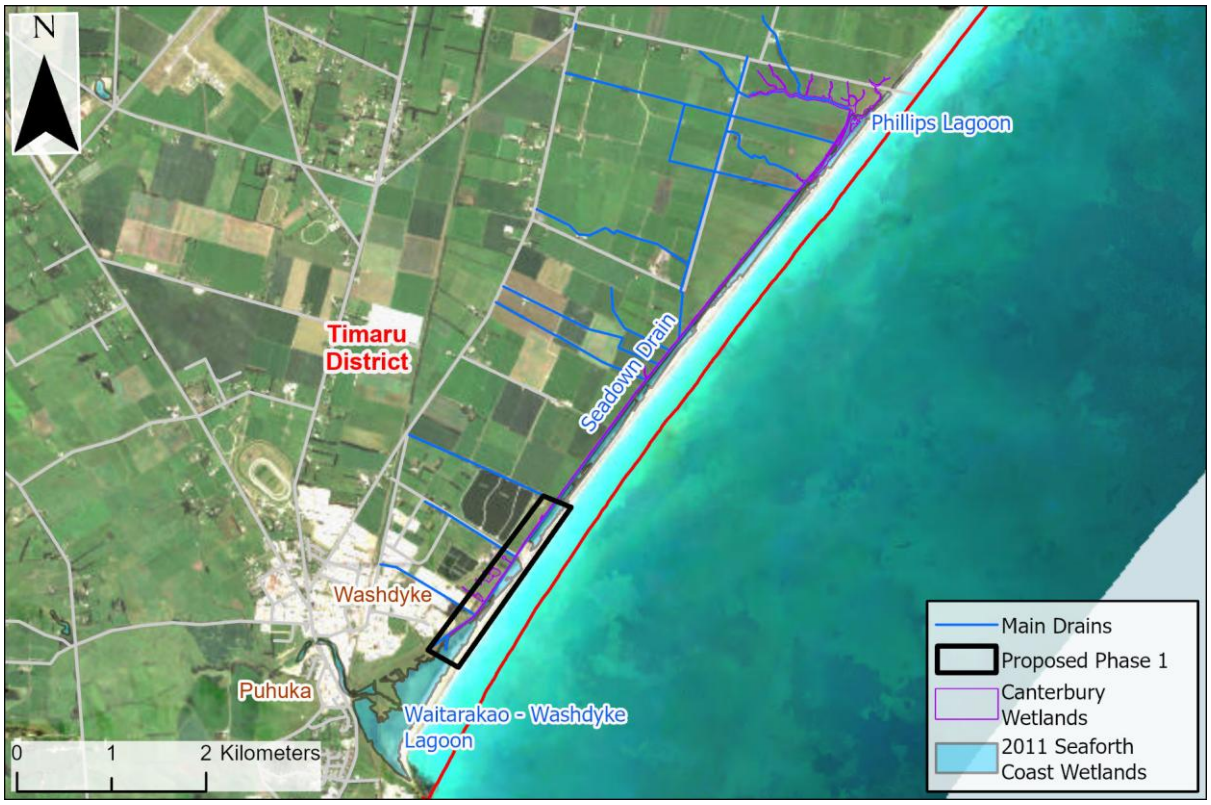

Figure 1: Broader Seadown Drain project area.

2. DESCRIPTION OF THE ENVIRONMENT

2.1. Overview

Historic land survey maps[1] from the mid-1800s indicate the area was once part of an extensive coastal wetland complex that graded from freshwater flax and raupō swamp to salt marsh and

[1] Sourced from 19th Century Canterbury "Black Maps" via Canterbury Maps.

lagoon habitats. Aerial imagery[2] indicates the project area was drained for agriculture over 80 years ago. Agriculture remains the dominant land use along the northern portion of Seadown Drain, while the southern section is surrounded by urban-industrial land use. Seadown Drain is part of a broader flood protection scheme that includes a coastal stopbank to protect these land uses against flooding. One of the present-day functions of the drain is to transport excess irrigation water from the land, and the southern (downstream) section of Seadown Drain receives substantial flow from the Levels Plain Irrigation scheme during the irrigation season.

The broader project area covers approximately 7 km of Seadown Main Drain and its tributaries from Waitarakao – Washdyke Lagoon to Phillips Lagoon at Beach Road and will be implemented in Phases (Figure 1). Our understanding is that Phase 1 of the project will span approximately 1.8 km from Waitarakao – Washdyke Lagoon to the northern end of the Timaru Wastewater Treatment Ponds (Figure 2). Our assessment includes descriptions of Seadown Drain, its tributaries and any adjacent wetlands. We also include brief descriptions of the interconnected nearby water bodies, including Waitarakao – Washdyke Lagoon, the Kereta Road Drain tributary, and Phillips Lagoon.

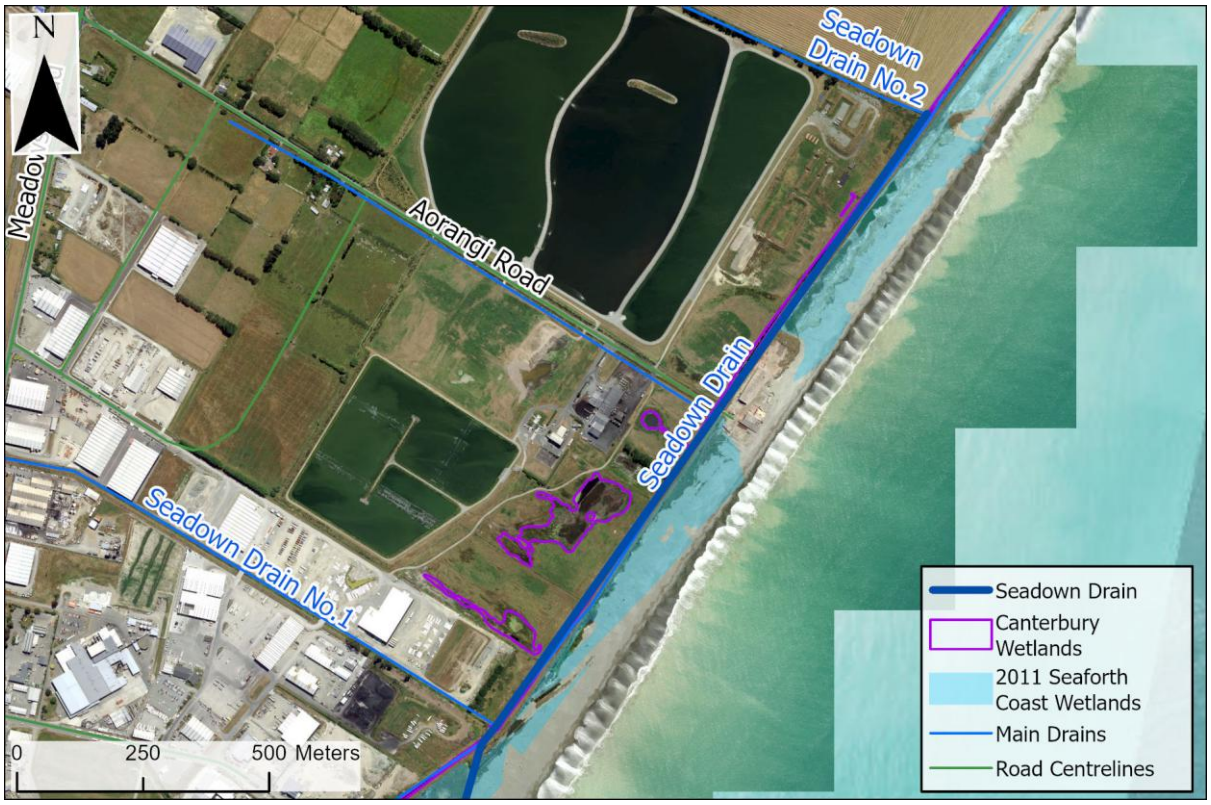

Figure 2: Extent of proposed Phase 1 of the Seadown Drain relocation project.

2.2. Wetlands

Waitarakao – Washdyke coastal lagoon is a nationally significant wildlife refuge and important cultural site for mahika kai. The cultural significance of the area is recognised and protected

[2] Retrolens https://retrolens.co.nz/

via its status as a mātaitai reserve[3], which includes Waitarakao – Washdyke Lagoon, and tributaries, including Seadown Drain and Phillips Lagoon. Seadown Drain is one of the waterways in the Waitarakao – Washdyke catchment that flows into the shallow coastal lagoon. New Zealand Freshwater Fish Database (NZFFD) records show a mixture of estuarine and freshwater species within the lagoon, notably common bully (*Gobiomorphus cotidianus*), common smelt (*Retropinna retropinna),* black flounder (*Rhombosolea retiarii*) and inanga (*Galaxias maculatus)*. A series of threatened saltmarsh wetlands fringe the lagoon and extend north on the eastern side of the coastal stopbank along Seaforth Coast.

ECan recently carried out delineation and vegetation assessments for previously unmapped natural freshwater wetlands inland of the Seaforth coastal stopbank (Jack 2025). Two newly identified natural inland wetlands[4] totalling 2.14 ha were mapped south of Aorangi Road and a third new 0.01 ha wetland was mapped adjacent to the rifle range, north of Aorangi Road (Jack 2025). Wetland extent largely consisted of open water and *Juncus* rushland surrounded by exotic grassland. Two areas of existing wetland were deemed constructed wetlands. Five hectares of wetland was mapped around Phillips Lagoon, and the Seaforth coastal wetland boundaries adjacent to the lagoon were updated. Further details of the ECan assessment including Figures and vegetation descriptions can be found in Jack (2025).

Seadown Drain originates at Phillips Lagoon, a saltmarsh lagoon at the northern extent of the broader project area (Figure 3). Tributaries into the lagoon are classified as Spring-Fed Plains in the Canterbury Land and Water Regional Plan (LWRP) and the lagoon mouth is mapped as part of the Seaforth coastal wetlands. Aerial imagery shows the lagoon and its tributaries have minimal shading and a narrow riparian buffer generally less than 5 m from surrounding landuse. The ECan wetland assessment identified patches of raupō reedland within the lagoon and recognized it as providing habitat for waterfowl (Jack 2025). Recent NZFFD records from 2023 identified longfin eel (*Anguilla dieffenbachii)*, shortfin eel (*A. australis)*, inanga, and juvenile eels (elvers) within the lagoon. Longfin eel and inanga have an 'At-Risk' conservation status (Dunn et al. 2018), and the presence of inanga indicates unimpeded access to the ocean.

The Seaforth Coast wetland complex was last mapped via ground survey in 2011. Aerial imagery comparing 2011 to more recent 2023 imagery downstream of the Seadown Drain No.2 tributary, reveals the reduction in the size of the Seaforth Coast wetland complex, due to coastal erosion (Figure 4).

The existing wetlands provide habitat of limited quality and extent and are of varying ecological significance (Jack 2025). Despite being highly modified, they still retain high ecological value as they are threatened ecosystems and there is considerable potential for ecological enhancement within the area.

[3] Mātaitai reserves "recognise and provide for traditional fishing through local management. They allow customary and recreational fishing but usually do not allow commercial fishing." https://www.mpi.govt.nz/fishing-aquaculture/maori-customary-fishing/managing-customary-fisheries/

[4] As per National Policy Statement for Freshwater Management 2020 natural inland wetland criteria.

Figure 3: Seadown Drain at Phillips Lagoon facing south (left) and the coastal arm of the lagoon from the stopbank separating the western and coastal arms (right). Photos were taken during a site visit on 7 May 2025.

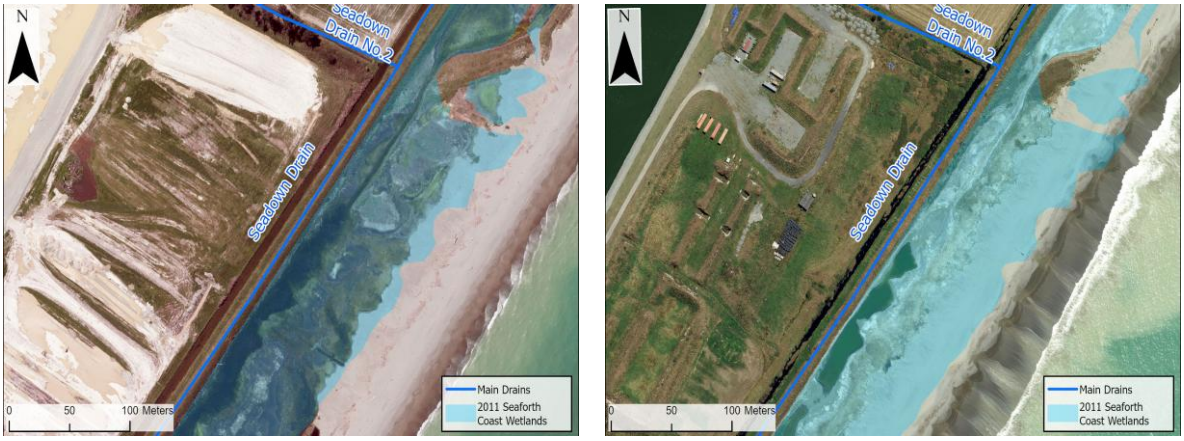

Figure 4: Aerial imagery from 2012 (left) and 2023 (right), highlighting the impact of coastal erosion on wetlands mapped by ECan in 2011 (blue shading).

2.3. Seadown Drain

Seadown Drain is a straight channelised waterway with homogenous flow and habitat (Figure 5 and Figure 6). The drain is 6.5 – 7 m wide, approximately 0.4 m deep and has a bed dominated by soft fine sediment (Instream Consulting Limited 2024). Seadown Drain was included within the recent ECan wetland delineation report where they concluded it contained highly modified wetland habitat (Jack 2025). The drain lacks any significant native riparian vegetation and is prone to nuisance growths of aquatic plants that are removed 2-3 times per year by ECan as part of drainage maintenance.

Ecological monitoring has occurred since 2019 as part of stormwater discharge consent requirements for the Washdyke Industrial Expansion Zone Area. Monitoring results show degraded conditions for invertebrates with recent invertebrate monitoring in 2023 recording Quantitative Macroinvertebrate Community Index (QMCI) scores of 3.3 and 3.9 (Instream Consulting Limited 2024). These scores are below the QMCI national bottom-line of 4.5 in the National Policy Statement for Freshwater Management (NPS-FM). The LWRP Freshwater Outcome for Spring-fed Plains Urban waterways is a QMCI value of 3.5.

Figure 5: Photos of Seadown Drain taken on 7 May 2025. The photo on the left was taken at the southern end of Seadown Drain facing upstream (north), while the photo on the right was taken in the same location but facing downstream (southwest) toward Waitarakao – Washdyke Lagoon.

Figure 6: Photos of Seadown Drain taken on 07 May 2025. Left photo was taken from the end of Aorangi Road facing upstream and the right photo was taken from northern edge of the industrial area (edge of proposed Phase 1) facing downstream.

Freshwater fish database records from within the past five years show that Seadown Drain supports numerous native fish species. The recorded fishing catch is dominated by common bully, inanga, and elvers, as well as freshwater shrimp (*Paratya*). Giant bully (*Gobiomorphus gobioides*), longfin eel, upland bully (*G. breviceps),* and redfin bully (*G. huttoni*) were also recorded in low numbers. All recorded fish are native, while longfin eel, inanga and redfin bully have an At-Risk conservation status (Dunn *et al.* 2018). Supporting eDNA results reinforce the dominant species and showed additional "true detections" (i.e., sequence counts > 100 in 2 or more replicates) for common smelt (*R. retropinna*) and shortfin eel (*A. australis*) (Melchior and Baker 2023). It is likely that shortfin eel are very abundant in Seadown Drain, given the proximity to the coast, sluggish flows, and dominance of fine sediments. Overall, Seadown Drain supports a reasonable diversity of native fish due to its proximity to the coast and suitable depth and flow characteristics. Combined, these factors suggest there is considerable potential for ecological enhancement.

2.4. Tributary Drains

Seadown Drain No.1 is a main tributary feeding into Seadown Drain within the Phase 1 project area (Figure 7). The drain has comparable riparian and aquatic habitat characteristics to Seadown Drain. Its QMCI scores are below the national bottom line and recent fishing and eDNA data showed lower numbers of fish with no additional species to those recorded from Seadown Drain. The main notable differences to Seadown Drain are that it is narrower (< 3 m), shallower (ca., 0.3 m) and is intermittent in its upstream reaches, thus reducing its habitat potential for fish.

Figure 7: Photos of Seadown Drain tributaries taken on 07 May 2025. Top left is Seadown Drain No.1 facing upstream/inland at the Seadown Drain confluence. Top right is the tributary drain at the end of Aorangi Road facing upstream/inland. Bottom left is Seadown Drain No.2 at the northern extent of the industrial area and wastewater treatment ponds, taken from the stop bank facing upstream/inland, and the bottom right is Kereta Road Drain at the junction of Phar Lap Road and Kereta Road, facing downstream/south.

Two other notable tributaries feeding into Seadown Drain within the Phase 1 project area are open drains at Aorangi Road and Seadown Drain No.2 at the northern extent of the industrial area and treatment ponds (Figure 7). These are both highly modified lowland drains, and it is reasonable to infer that they have similar ecological values to Seadown Drain No. 1.

Kereta Road Drain discharges into Seadown Drain approximately 2 km north of the Industrial area. The aquatic habitat is of poor quality, typical of highly modified lowland waterways.

There were no invertebrate or fish data available for this site. Unlike the southern tributaries. the surrounding land-use is agriculture and routine macrophyte removal is less likely. Dense macrophyte growth was observed during the site visit (Figure 7).

2.5. Summary

The area was historically once a large wetland complex that has since been drained for development and agriculture. The wetlands and waterways that remain are highly modified and degraded. Despite this, the wetlands and waterways retain high ecological value and there is considerable potential for restoration and enhancement within the broader plan to migrate and protect assets from coastal erosion and sea level rise.

3. PROPOSED WORKS

The new stopbank and Seadown Drain alignment will be shifted west of their current alignments, with the new stopbank located east of the new waterway alignment. The draft designs in Appendix 1 show the following features relating to Phase 1:

- 1.8 km of stopbank and Seadown Drain moved inland.
- 1.6 km of the old Seadown Drain alignment will remain open
    - ~200 m will be filled in, where it falls within the new stopbank footprint.
- The old stopbank alignment will remain in place.
- A more sinuous, natural-looking channel for Seadown Drain compared to the current alignment, where space permits.
- The new alignment of Seadown Drain will have a low-gradient batter on the true right (west) bank, to enhance ecological values, and a steeper bank on the true left (east) side, to allow for access along the bank for maintenance vehicles.
- Incorporation of existing wetlands into the new waterway alignment.
    - Hydraulic controls (low gradient rock ramps) at the outlet of each wetland extent will be used to mimic current water levels.
- Ecological naturalisation, ultimately covering an area of approximately 11.6 hectares.

Expanding on the features in the attached plans, the following design features have been proposed, to minimise potential negative effects and optimise potential ecological benefits:

- Leave the old stopbank in place, rather than removing it, as there are potential positive and negative ecological effects of removing the stopbank.
    - An adaptive management approach is proposed, whereby the old stopbank could be breached in the future, if new information suggests breaching the stopbank presents ecological benefits.
- Leave the old Seadown Drain alignment open, rather than completely filling it in.
    - The aim is to allow the old channel to slowly infill with organic material overtime, allowing wetland values to develop naturally.

- To address potential concerns about poor water quality due to lack of flow in the old Seadown Drain channel, a small proportion of flow could be maintained at the northern end of the old alignment, via a pipe with a flap gate.
    - The flap gate would be either held closed or allowed to operate, based on monitored water quality. The pipe does not need to be designed for fish passage, because fish can pass up the new alignment.
- Greater habitat complexity in the new Seadown Drain alignment compared with the existing channel. Given the importance of the drain for protecting existing infrastructure, a hybrid approach to naturalisation is proposed. This entails:
    - East Bank: Relatively steep, comparable to the existing channel, to facilitate waterway maintenance, with a maintenance access track along the top of bank; and
    - West Bank: Enhanced edge complexity, including a mix of steeper and lower gradient banks.
- Minimise the amount of channel lining with rocks and boulders to stabilise the new banks.
    - Although the careful placement of boulders and cobbles can be used to enhance habitat diversity, excessive rock lining of the banks reduces habitat quality and space for native plantings.
    - Some rock edging may be required around tributaries inflows and pipe discharges, but aim to keep channel lining to a minimum (below 10% across the project length).
- Plant native trees and shrubs along the new waterway alignment and throughout the "Future Ecological Enhancement" area shown on the draft plans in Appendix 1.
    - The goal is to help shade the waterway, enhance biodiversity, and provide greater natural resilience to erosion.
    - The west bank will be planted with a mix of native species, appropriate for the location and selected to provide a mix of shade and biodiversity enhancement.
    - The east bank will be planted with exotic grass or low native plantings such as sedges and rushes, to allow access for waterway maintenance crews. This bank may eventually be planted with taller native trees and shrubs over time, should the mature plantings on the west bank indicate that shading both sides would remove the need for weed maintenance access.
- Change the name of Seadown Drain, to acknowledge the other values it supports beyond drainage.

4. ASSESSMENT OF ECOLOGICAL EFFECTS

4.1. Short-term Construction Effects

Sediment generation and fish stranding are the two key potential negative effects associated with the construction period. Overall, we consider that these potential effects are short-term and readily mitigated using best practice construction methods, as outlined below. In addition,

construction effects will be limited to Seadown Drain and its tributaries, with no physical works in Waitarakao – Washdyke Lagoon. This is an important point, given the ecological and cultural significance of the lagoon.

An erosion and sediment control plan will be a requirement of consent. The plan will need to cover key risk areas, particularly around excavation of the new Seadown Drain alignment. Sediment generation can be minimised by constructing the new channel "offline" and gradually introducing water into the new channel by opening the downstream end first, letting sediment settle for around 2 weeks, and then introducing flow into the channel via a cut at the upstream end. The use of silt curtains may necessary, to minimise the downstream transport of fine sediment.

Fish stranding in the old channel can be readily mitigated by the combination of fish relocation and keeping the old channel open at the downstream end. A fish management plan will be a requirement of consent, and this will need to be prepared collaboratively with ecologists and AECL. The fish management plan should include the requirement to undertake fish relocation to the new alignment. This will not involve moving every fish but rather moving some fish to populate the new channel.

The old channel should be monitored and additional fish salvage undertaken if needed. This should involve visual checks during the first week, looking for any stranded fish and issues such as fish gasping at the surface. We also recommend monitoring of water temperature and dissolved oxygen, due to the potential impacts of low flow on high water temperatures and low oxygen levels. ECan have proposed deploying a water temperature and dissolved oxygen logger that is telemetered, so that water quality can be monitored remotely. We recommend that the monitoring should extend from 1 November to 30 April for the first year following construction, when temperatures are highest and the risk to fish is the greatest. This approach should provide sufficient time to assess water quality risks and adjust flows through the old channel, as required.

4.2. Permanent Effects

The new stopbank and Seadown Drain alignment could result in a mixture of positive and negative permanent effects. The key potential negative effect is the "footprint" effect of placing the new waterway and stopbank on top of existing natural values. Neutral to positive overall effects can be achieved depending on the degree of naturalisation associated with the old and new waterway alignments. Based on the draft designs provided by ECan, we consider the project will have an overall positive ecological effect, as discussed in the following paragraphs.

The primary ecological concern about the new waterway and stopbank is the impact on wetland values. As noted in Section 2.2, despite being highly modified, the existing wetlands have high ecological value as they are threatened ecosystems. This means that any loss of wetland extent and condition needs to be avoided or offset by the creation and enhancement of wetlands of a greater extent. The proposal to incorporate existing wetlands into the new Seadown Drain alignment will maintain wetland extent but could alter wetland hydrology. However, impacts on wetland hydrology can be minimised using hydraulic controls (low gradient rock ramps) at the outlet of each wetland. This approach is widely used in the conservation and enhancement of natural and constructed wetlands, and it is feasible in this highly modified context. The condition and quality of existing wetlands can be further enhanced with native planting and weed control.

In addition to minimising impacts on existing wetland values, wetland extent and quality can be enhanced through the combination of leaving the old Seadown Drain channel in place, enhancing physical habitat in the new waterway compared to the old (through channel shaping), and enhanced riparian habitat (through native planting and weed control). We consider that wetland creation is readily achievable, due to the combination of high groundwater levels and because wetlands have developed within artificial excavations in the project area. The cross-section in Figure 8 below provides an example of how riparian wetlands can be created through bank shaping and planting along the new channel. The width of the riparian buffer along the new waterway alignment will typically be at least 10 m, but it will vary depending on proximity to infrastructure, as indicated on the plans in Appendix 1. More details on the channel designs will be prepared as part of the detailed design phase of the project.

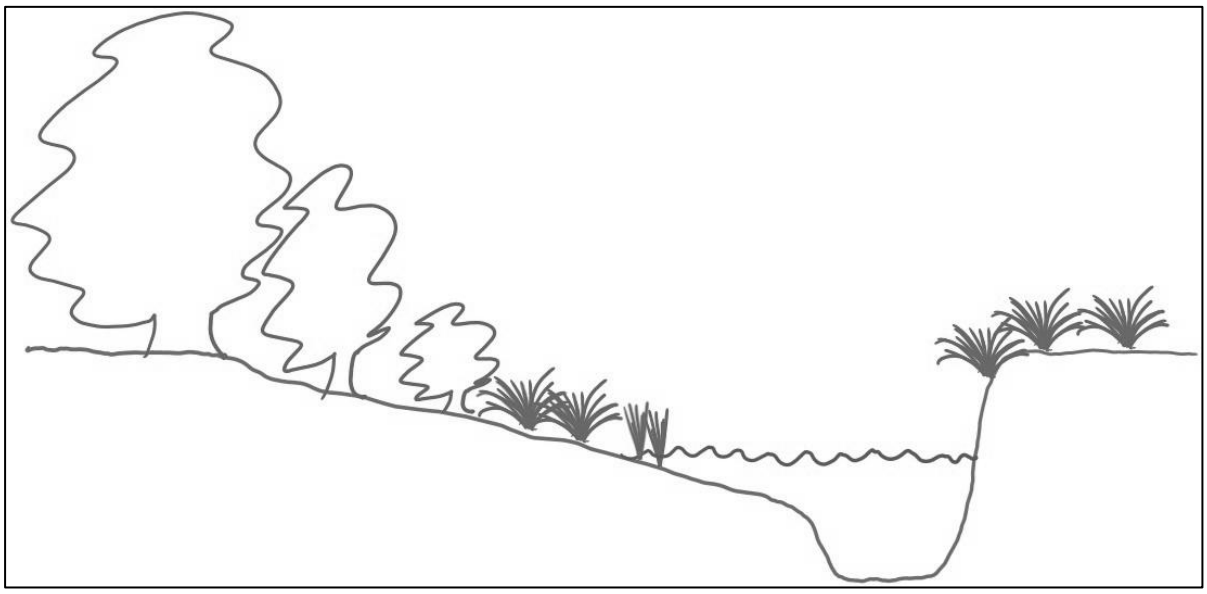

Figure 8: Concept sketch showing a cross-section of the future Seadown Drain alignment, with a low gradient west bank that allows for a succession of native reeds, rushes, shrubs, and trees, and a steeper east bank for maintenance access.

Ecological enhancement of wetlands and waterways is consistent with Outcome 1 of the Waitarakao Washdyke Lagoon Catchment Strategy, which is "*Ecological revitalisation or restoration achieves and sustains thriving, healthy, functioning ecosystems.*" In particular, ecological enhancement would meet the following targets within Outcome 1: sustainably increase the coverage of desired ecosystems; sustainably increase the populations of target flora and fauna species; and achieve a net increase of effective wetland area. Wetland enhancement would also be consistent with relevant sections of the National Policy Statement for Indigenous Biodiversity and the Canterbury Regional Policy Statement.

Overall, we consider there to be considerable potential for positive ecological effects of the project, if the final designs incorporate considerable ecological enhancement. We therefore recommend that the resource consent includes a requirement for ecological input to the final designs, with the goal of achieving a net positive ecological outcome (i.e., greater extent and condition of wetland habitat).

5. RECOMMENDED MITIGATION MEASURES

Construction is the key period when adverse ecological effects can occur. We therefore recommend the following mitigation measures to avoid negative ecological effects and promote positive effects:

- Construction contractors are responsible for following industry best-practice for works around waterways in the National Works in Waterways Guideline (Ministry for the Environment 2021). This includes, but is not limited to:
    - Erosion and sediment control (including implementation of an erosion and sediment control plan).
    - Avoiding discharge of contaminants, such as fuel, grease, and oil, through appropriate control and containment procedures.
    - Avoiding the disturbance, injury, and mortality of terrestrial fauna, such as lizards.
    - Avoiding the mortality and stranding of freshwater fauna, such as fish.
    - Avoiding critical periods for fish migration and spawning (particularly spring and autumn).
    - Maintaining fish passage during and after construction.
    - Avoiding transfer of pest species to the site (e.g., through soil on dirty machinery).

- **Good practice erosion and sediment control.** This is important, to minimise loss of soil into waterways and associated impacts on water quality, and deposited sediment smothering the bed. We have assumed an erosion and sediment control plan will be prepared by the contractor and that they will be responsible for implementing it.

- **Fish salvage.** As per the previous section, a fish management plan should be prepared by a suitably qualified and experienced ecologist in collaboration with AECL, prior to the works commencing, and this should be a condition of consent. The fish management plan should be reviewed by ECan ecologists before it is implemented.

- **Avoid using Bidim and other plastic geotextile liners.** Bidim is made of plastic, which should not be intentionally placed in waterways, due to its long-term impact on aquatic environments. Natural alternative materials to plastic include jute and coconut fibres.

- **Ecology input to final designs and construction.** An ecologist should have input to the detailed designs and provide on-site guidance to the construction team, to ensure ecological restoration opportunities are fully realised. Critical steps in the final design and construction process include decisions around waterway form, wetland creation, and native plant selection.

    - The design plans should consider a staged approach to native revegetation, given the large area and cost involved. A staged approach would have an initial focus on planting and weed control in existing wetlands and along the banks of the new Seadown Drain. Native planting in the wider area could then be done progressively over time.

APPENDIX 1: DRAFT DESIGNS FROM KASTORWORKS

Proposed Design Alignments

Project: Seadown Stopbank & Channel Realignment

Client: Environment Canterbury Regional Council

Description: General Overview Plan

Notes:
1. Alignments are proposed and feedback is encouraged within the reasonable planning timeframe.
2. ECan to work with all parties of interest to collaborate on No.1 Drain Stormwater and how the proposed ponds will integrate.
3. Excavation of new channel will be performed from a downstream location near the industrial park and progress upstream.

Mapped by: LKu
Date: 06-June-2025
Project No: 24006-01
Revision: 1.0

Legend

- New Box Culvert Crossing Location
- Adaptable Water Level Control Structure
- Channel Invert
- Bottom of Channel Bank
- Top of Planting Berm Edge (TRB)
- Top of Channel Bank (TLB)
- Track Edge
- Crown of New Stopbank
- Top of New Stopbank
- Toe of New Stopbank
- Existing Channel
- Existing Stopbank
- Consent Stage 1 Transition Area
- Land (Road) Raising Area
- Inland Flood Protection Bund
- TDC Future SW Pond Area
- Areas of Future Ecological Enhancement

100 0 100 200 300 m

Scale: 1 : 6000 for standard A3.
Vertical Datum: NZVD2016
Grid: NZGD2000 / New Zealand Transverse Mercator 2000

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Contact: 021 247 4256

Proposed Design Alignments

Project: Seadown Stopbank & Channel Realignment

Client: Environment Canterbury Regional Council

Description: Zoomed Plan 01

Notes:
1. Alignments are proposed and feedback is encouraged within the reasonable planning timeframe.
2. ECan to work with all parties of interest to collaborate on No.1 Drain Stormwater and how the proposed ponds will integrate.
3. Excavation of new channel will be performed from a downstream location near the industrial park and progress upstream.

Mapped by: LKu

Date: 06-June-2025

Project No: 24006-01

Revision: 1.0

Legend

- Adaptable Water Level Control Structure
- Channel Invert
- Bottom of Channel Bank
- Top of Planting Berm Edge (TRB)
- Top of Channel Bank (TLB)
- Crown of New Stopbank
- Top of New Stopbank
- Toe of New Stopbank
- Existing Channel
- Existing Stopbank
- Inland Flood Protection Bund
- Areas of Future Ecological Enhancement

1,461,000

1,461,200

1,461,400

5,087,200

5,087,000

30 0 30 60 90 m

Scale: 1 : 1500 for standard A3.
Verticall Datum: NZVD2016
Grid: NZGD2000 / New Zealand Transverse Mercator 2000

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Proposed Design Alignments

Project: Seadown Stopbank & Channel Realignment

Client: Environment Canterbury Regional Council

Description: Zoomed Plan 02

Notes:
1. Alignments are proposed and feedback is encouraged within the reasonable planning timeframe.
2. ECan to work with all parties of interest to collaborate on No.1 Drain Stormwater and how the proposed ponds will integrate.
3. Excavation of new channel will be performed from a downstream location near the industrial park and progress upstream.

Mapped by: LKu

Date: 06-June-2025

Project No: 24006-01

Revision: 1.0

Legend

- Channel Invert
- Bottom of Channel Bank
- Top of Planting Berm Edge (TRB)
- Top of Channel Bank (TLB)
- Crown of New Stopbank
- Top of New Stopbank
- Toe of New Stopbank
- Existing Channel
- Existing Stopbank
- Inland Flood Protection Bund
- TDC Future SW Pond Area
- Areas of Future Ecological Enhancement

1461,200
1461,400
1461,600
5,087,600
5,087,400

30 0 30 60 90 m

Scale: 1 : 1500 for standard A3.
Verticall Datum: NZVD2016
Grid: NZGD2000 / New Zealand Transverse Mercator 2000

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Proposed Design Alignments

Project: Seadown Stopbank & Channel Realignment

Client: Environment Canterbury Regional Council

Description: Zoomed Plan 03

Notes:
1. Alignments are proposed and feedback is encouraged within the reasonable planning timeframe.
2. ECan to work with all parties of interest to collaborate on No.1 Drain Stormwater and how the proposed ponds will integrate.
3. Excavation of new channel will be performed from a downstream location near the industrial park and progress upstream.

Mapped by: LKu

Date: 06-June-2025

Project No: 24006-01

Revision: 1.0

Legend

- New Box Culvert Crossing Location
- Channel Invert
- Bottom of Channel Bank
- Top of Planting Berm Edge (TRB)
- Top of Channel Bank (TLB)
- Crown of New Stopbank
- Top of New Stopbank
- Toe of New Stopbank
- Existing Channel
- Existing Stopbank
- Land (Road) Raising Area
- Inland Flood Protection Bund
- Areas of Future Ecological Enhancement

30 0 30 60 90 m

Scale: 1 : 1500 for standard A3.
Vertical Datum: NZVD2016
Grid: NZGD2000 / New Zealand Transverse Mercator 2000

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Proposed Design Alignments

Project: Seadown Stopbank & Channel Realignment

Client: Environment Canterbury Regional Council

Description: Zoomed Plan 04

Notes:
1. Alignments are proposed and feedback is encouraged within the reasonable planning timeframe.
2. ECan to work with all parties of interest to collaborate on No.1 Drain Stormwater and how the proposed ponds will integrate.
3. Excavation of new channel will be performed from a downstream location near the industrial park and progress upstream.

Mapped by: LKu

Date: 06-June-2025

Project No: 24006-01

Revision: 1.0

Legend

- Channel Invert
- Bottom of Channel Bank
- Top of Planting Berm Edge (TRB)
- Top of Channel Bank (TLB)
- Track Edge
- Crown of New Stopbank
- Top of New Stopbank
- Toe of New Stopbank
- Existing Channel
- Existing Stopbank
- Consent Stage 1 Transition Area
- Areas of Future Ecological Enhancement

5,088,400
5,088,200
1,461,800
1,462,000
1,462,200

30 0 30 60 90 m

Scale: 1 : 1500 for standard A3.
Verticall Datum: NZVD2016
Grid: NZGD2000 / New Zealand Transverse Mercator 2000

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