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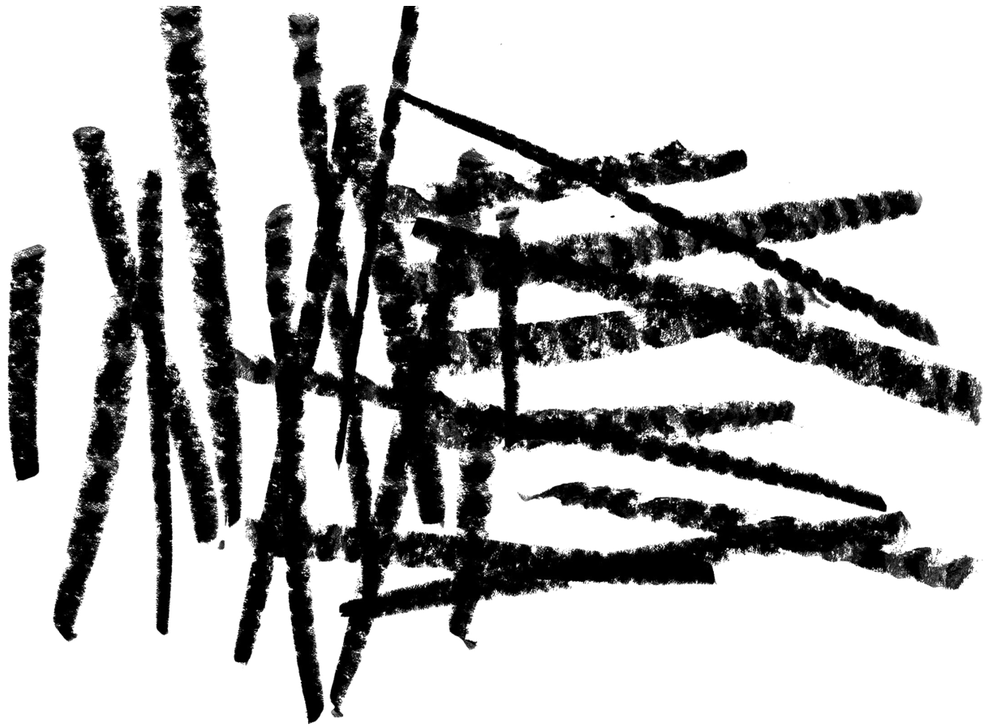
Bexley Estuarine Wetland Socialisation Plan



Christchurch City Council

1 February 2023

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Preliminary Design

Project Vision

To enable the development of a nationally significant estuarine wetland that will be a valuable natural habitat in Otautahi and an exemplar of ecological reclamation and sea level adaptation.

Project Implementation.

It is proposed to remove the existing temporary stopbank in places to allow the river and tidal flow into the site. With minimal site works the site will become inundated to varying degrees allowing different natural wetlands habitats to form. Other areas such as the proposed stopbank and the higher, southern part of the site will remain dry and offer opportunities for access and dryland habitats.

Habitat Types

The aim of the development is to create habitats that naturally occur in this saline wetland environment. The names of these habitat types are shown below and are listed from the lowest (typically in-water) to the highest (typically above water). These are illustrated on the pictorial cross sections on the following page.
On the Preliminary Design and tidal Inundation Plan these are described as they relate to the site and the different heights of the site in relation to sea level.

- Mudflats
- Salt Meadow
- Transitional Salt Marsh Habitat
- Salt Marsh
- Ridge Island
- Salt Meadow Shrubland
- Exposed Coastal Shrubland

Stopbank and Stormwater

Within this site it is required to locate the stopbank that runs along the length of the Otakaro/Avon River Corridor. The location of the stopbank shown maximises the space available for the proposed wetland.
It is also required to locate stormwater detention for Pages and Bexley Roads as well as a large residential area to the west of the site. It is currently proposed to locate the detention for the two roads in naturalised swales beside the roads within the site. The residential area detention is currently being investigated with the favoured option being to locate any basins outside the site. Another option is to locate on the southern part of the site in the area shown as Coastal Shrubland.

- Outer Limit of Stopbank
- Proposed Stopbank Flat Top
- 8m Shrub/Tree Stopbank Setback
- Potential Wetland/Stormwater Treatment Swales

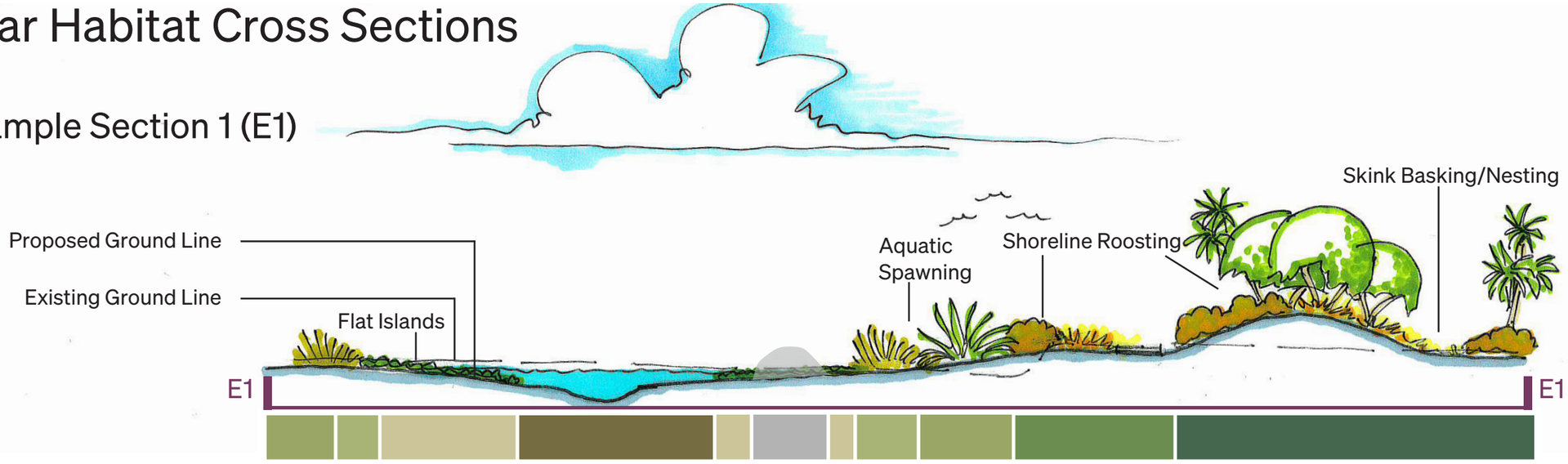
Access and City to Sea Pathway

The City to Sea Pathway runs through the Waitaki Wetland and connects to the Pages Rd Bridge, outside this site. Other connections along surrounding roads are also shown.
A recreation path is proposed on the stopbank and through the southern part of the site with viewing points along its length. These are intended to be well separated from the habitat areas to protect native species.
This plan also shows a formed access to the one remaining residence on the southern part of the site. If this house was removed the formed access would be removed also.

- City to Sea Pathway
- Recreational Shared Path and Pedestrian Connections
- Viewing Point
- House Access
- Residential House.
- Bexley Wetland Project Boundary

Exemplar Habitat Cross Sections

Example Section 1 (E1)



Wetland Meadow and Marsh
Tidally inundated areas where native turf and rush species will colonise based on their ideal environment. Once lightly graded by the proposed siteworks these areas will self-seed with native wetland species borne in by the tides.

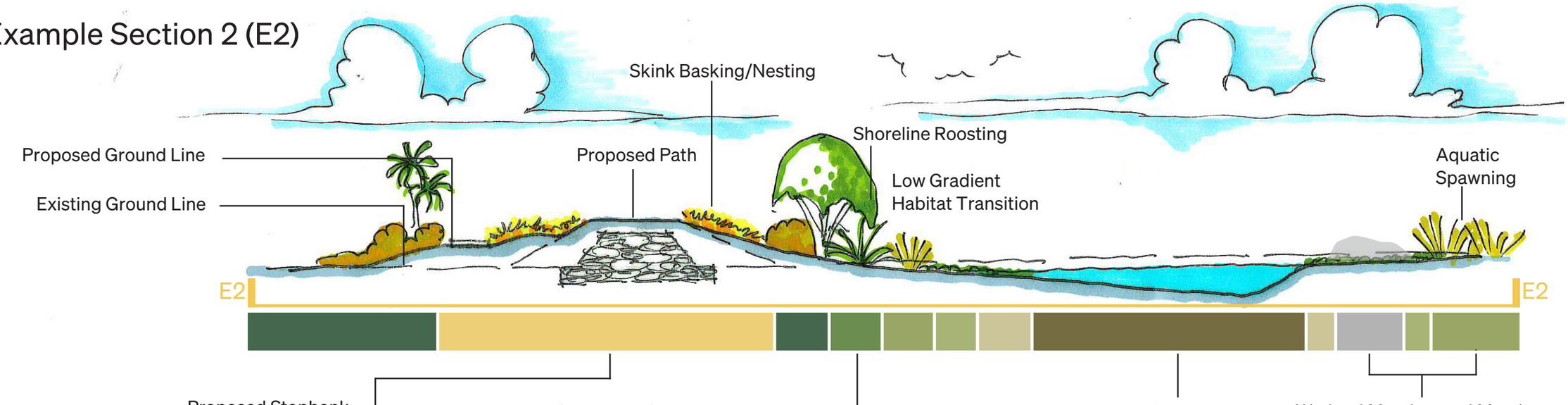
Mud Flats
Formed by natural inundation through Stopbank removal and excavating along existing road corridors to remove hardfill and possibly contaminated road base and relocated onto the drier areas of the site.

Ridge Islands
Formed raised sections of exposed gravel and rocks to provide nesting opportunities.

Salt Marsh Shrubland Zone
The zone above the tidal level which can be partially inundated. This area also contains the existing freshwater springs on the site which will feed into the estuary. This planting (flax and rushes etc) is intended to form a buffer between people, pets and the natural habitat that the project sets out to create.

Exposed Coastal Shrubland
A mix of low duneland planting (tussocks and reeds etc) and higher areas (Ngaio and manuka). Note access path as part of a recreation and landscape viewing network.

Example Section 2 (E2)



Proposed Stopbank
The stopbank is constructed of a compacted gravel core, this is then protected by soil and low planting with non-invasive roots. Outside this protection zone more natural planting is planned (see Concept Plan). On the landward side of the stopbank surplus site fill can be used from the proposed wetland area. An access path is also planned on this side of the stopbank.

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Preliminary Design and Tidal Inundation

Overview

The design creates a large and varied wetland by working with the existing identified wetland vegetation, current and future inundation levels, and the existing contour and site material as much as possible.
At this stage of the design process, the focus is mainly on the site works to create the best possible opportunities for ecological habitat.

The main elements of the design are as follows:

1. Mudflats and Salt Meadow - The flat area of the northern half of the site can be easily inundated by the sea. Minimal siteworks is shown in this area apart from removing any contaminated land or necessary services. These mudflats and salt meadows will be created by breaking through the existing temporary stopbanks to the river. The slopes are varied from 2 – 8.3% to mimic natural slopes. Final configuration and quantity of material will depend on siteworks processes required.

2. Stopbank - Surrounding the proposed wetland is a shallow gradient slope from proposed wetland upto the proposed stopbank on the north and west of the site. The height and shallow angle will allow maximum habitat formation and evolution over time.

3. Eastern Island – Adjacent to the river is the opportunity to create a temporal island which will form a valuable, isolated habitat. Discussion on retaining the existing gabion edge on the eastern side of the island needs to be had.

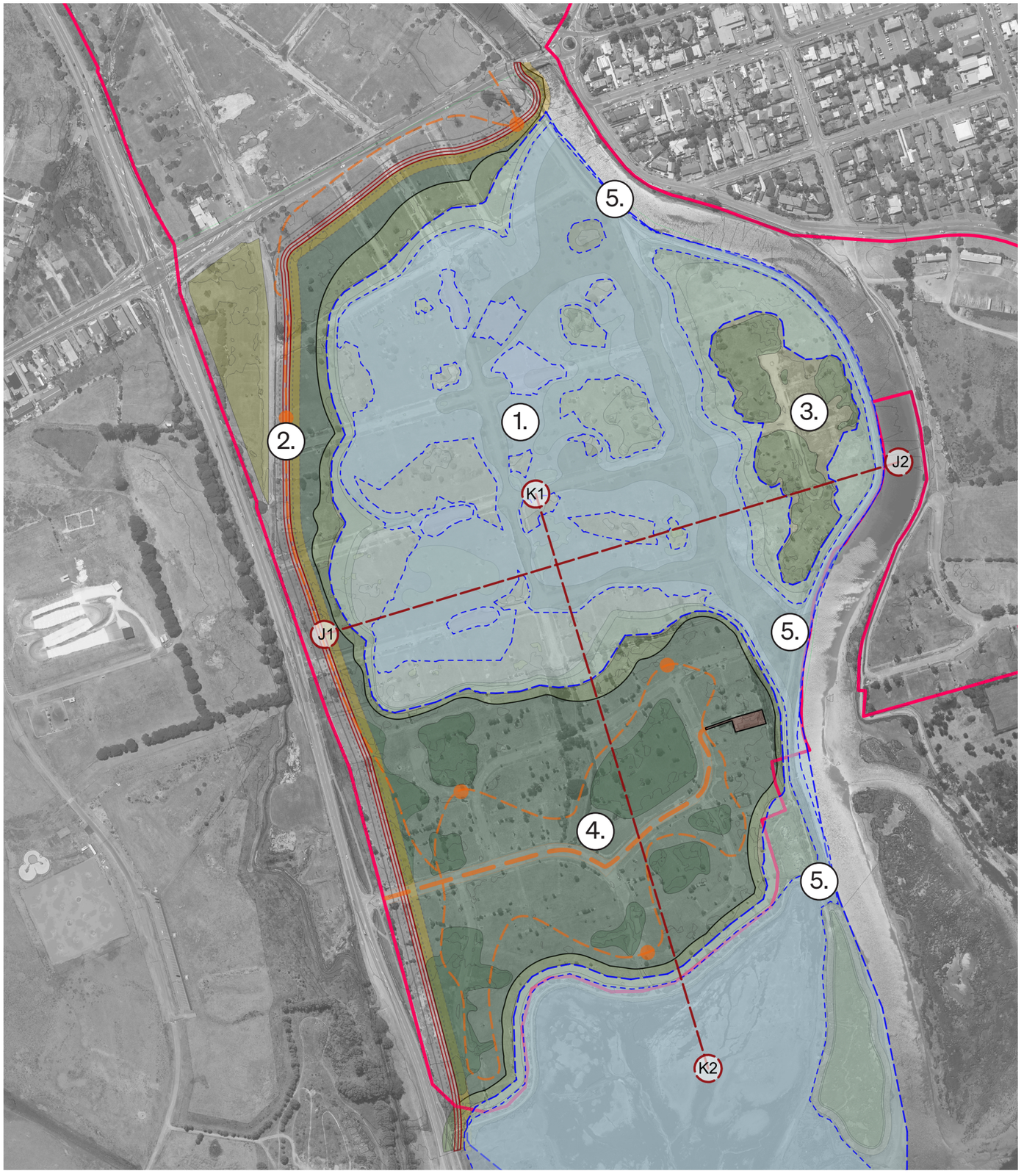
4. Southern Site – The southern part of the site is higher than the north by approximately 1.0 metre. This allows for the creation of dryland habitat in the short term and this variation from the north will be retained as the sea level rises. As this area is removed from the initial wetland formation, there is more opportunity for public access. Accordingly access paths and viewing points are proposed in addition to continued access to the remaining residence on the site.

5. Tidal inlets - in these areas the temporary stopbank will be removed to allow for inundation.

J1
K1 Sea Level and Cross Sections - This plan shows the inundation into the site that will occur under high tide scenarios (spring - monthly highest tide and neap-monthly lowest high tide) The following page illustrates full tidal ranges with habitat types.

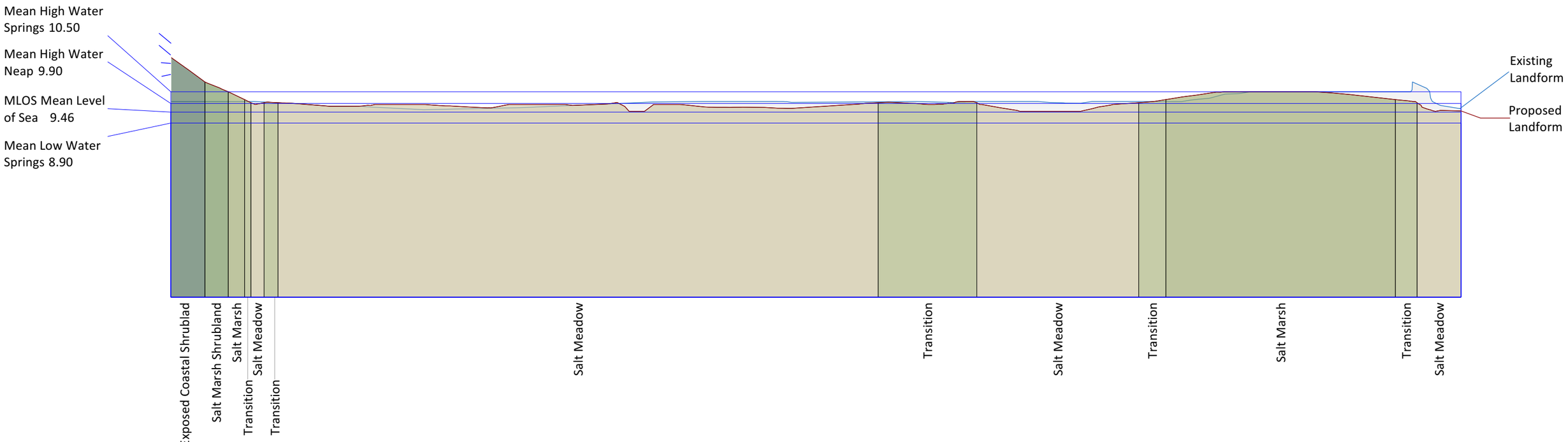
Mean Spring High Tide Level

Mean Neap High Tide Level



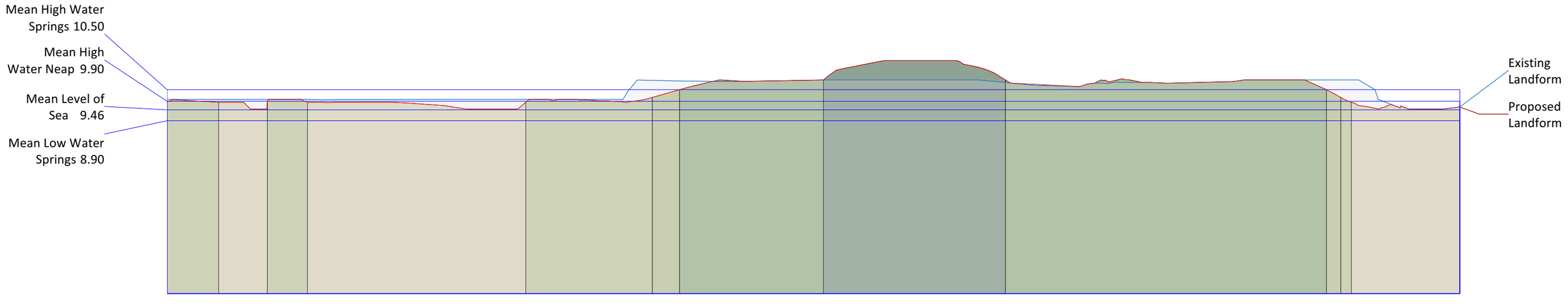
RMM Scale 1:5000@A3

Concept Cross Section



1 Section J Current Sea level and Habitat

Vetical Scale 1:200
Horizontal Scale 1:2000



2 Section K Current Sea level and Habitat

Vetical Scale 1:200
Horizontal Scale 1:2000

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