NZILA RESENE PRIDE OF PLACE
LANDSCAPE AWARDS 2017

INFRA

Landscape Design:
INFRA Infrastructure
Croftfield Lane

Submitted by
Boffa Miskell

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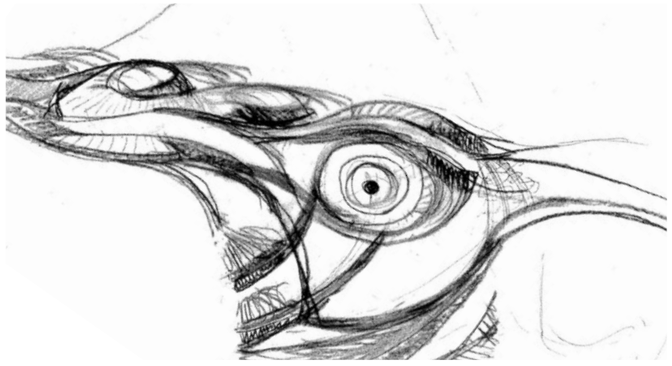
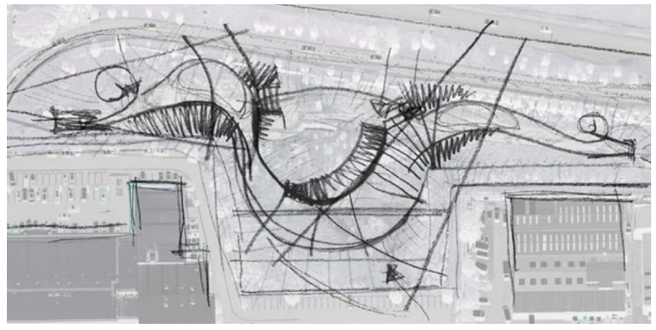
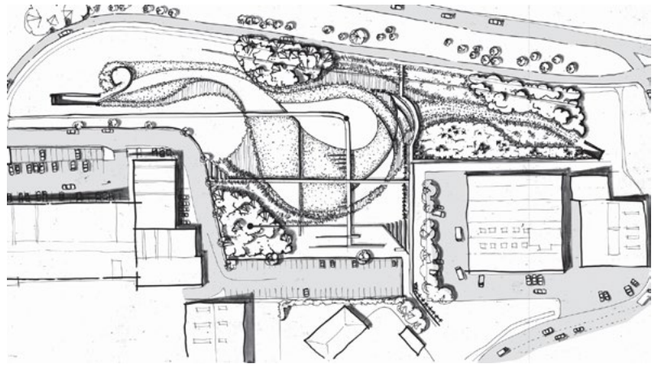
Croftfield Lane Stormwater Wetland







Project Summary:

First presented as a potential project in 2005 Croftfield Lane was a pioneering project for the application of landscape architecture to stormwater wetlands. It was 10 years before physical construction of the project began, due to shifting catchment priorities, but the planning and design process immediately influenced the goal posts for the former North Shore City and then Auckland Council, in terms of directing landscape and ecology values into stormwater projects.

The project brief was to deliver a highly functioning and easily operable stormwater wetland. As a demonstration project, the design stripped back the landscape to its pure functions to derive a simple and expressive site geometry. Layer after layer of landscape media were added - landform, planting, and structures, to enhance stormwater function while additionally providing an expressive landscape that could be engaged with by the public.

The demonstration nature of the project, required the team to present many options to the client and stakeholders, showing the same wetland as an ecological showcase of plants, a landscape of folding landforms, and a series of structural axes and treatment cells. Concepts were presented with diagrams, sketches, physical models and animated sequences in presentations and workshops.

What followed was a distillation of these initial explorations pared back to simple expressions of this functioning landscape in its industrial context.

"THE PROJECT NOT ONLY ENHANCES THE FUNCTIONS AND VALUES OF THIS AREA ITSELF, BUT IS A PERFECT EXAMPLE OF INTEGRATING LANDSCAPE, ECOLOGY AND URBAN DESIGN INTO STORM-WATER MANAGEMENT PRACTICE"

Chris Stumbles, Auckland Council Design & Delivery Manager

"I WAS WORKING MY WAY THROUGH THE SITE (WITH HI-VIS VEST ON), UPDATING THE SNAG LIST. ALL PARTIES WERE AMAZED AT THE SITE AND ENJOYED EXPERIENCING THE WALK THROUGH THE AREA. GREAT JOB BY ALL AND ENCOURAGING TO SEE THE PARK BEING WELL UTILISED ALREADY!"

Cameron Smythe, Auckland Council Contract Engineer

"NOT ONLY DOES THIS AREA LOOK AND FUNCTION MUCH BETTER, BUT LOCALS WILL GET TO ENJOY THIS AREA IN A WAY NOT CURRENTLY POSSIBLE. THE NEW PATH AND BRIDGE PROVIDE SAFE AND ATTRACTIVE WALKING AND CYCLING CONNECTIONS BETWEEN TRISTRAM AVENUE AND LINK DRIVE.
ITS A FANTASTIC USE OF SPACE AND IT LOOKS FABULOUS!"

Kaipātiki Local Board Chair Kay McIntyre

PROJECT INFORMATION

Collaborators or mentors - Internal	Mark Lewis NZILA Reg. Jane Nalder, Chris Punt, Larissa Moyle
Collaborators or mentors - External	North Shore City Stormwater, Auckland Council Healthy Waters AR Civil, WEC Limited
Key contractors	Fulton Hogan Kane Jolly +64 27 495 8036 PO Box 11-900, Ellerslie Auckland 1542
Completion Date	Construction competed Dec 2016

Introduction

The Croftfield Lane design work commenced in 2006, when a stormwater pond was identified for renewal in the commercial area of the Wairau Valley, North Shore City. Boffa Miskell worked with Council planners and engineers to explore broader opportunities for stormwater assets as a deliverable for this project.

The team used sketches, plans, perspectives, and physical and animated models to reveal what was possible for the site. Different media were explored - landform, planting, structure, and water, to reveal how the site could be transformed. Materials were directed to strongly express the site and the inherent processes within the stormwater wetland, and optimise the engineering function, including:

- Attenuation, detention and water quality treatment
- Capture of litter and floatables above the Milford marina
- Ease of maintenance, including weed management

The ‘studies’ became the basis for future design and the client team saw opportunities for additional objectives of the project:

- Enhancing the visual amenity of a Council Asset
- Enhancing aquatic ecologies and fish passage
- Providing public (universal) access
- Showcasing stormwater management through landscape interventions and artworks

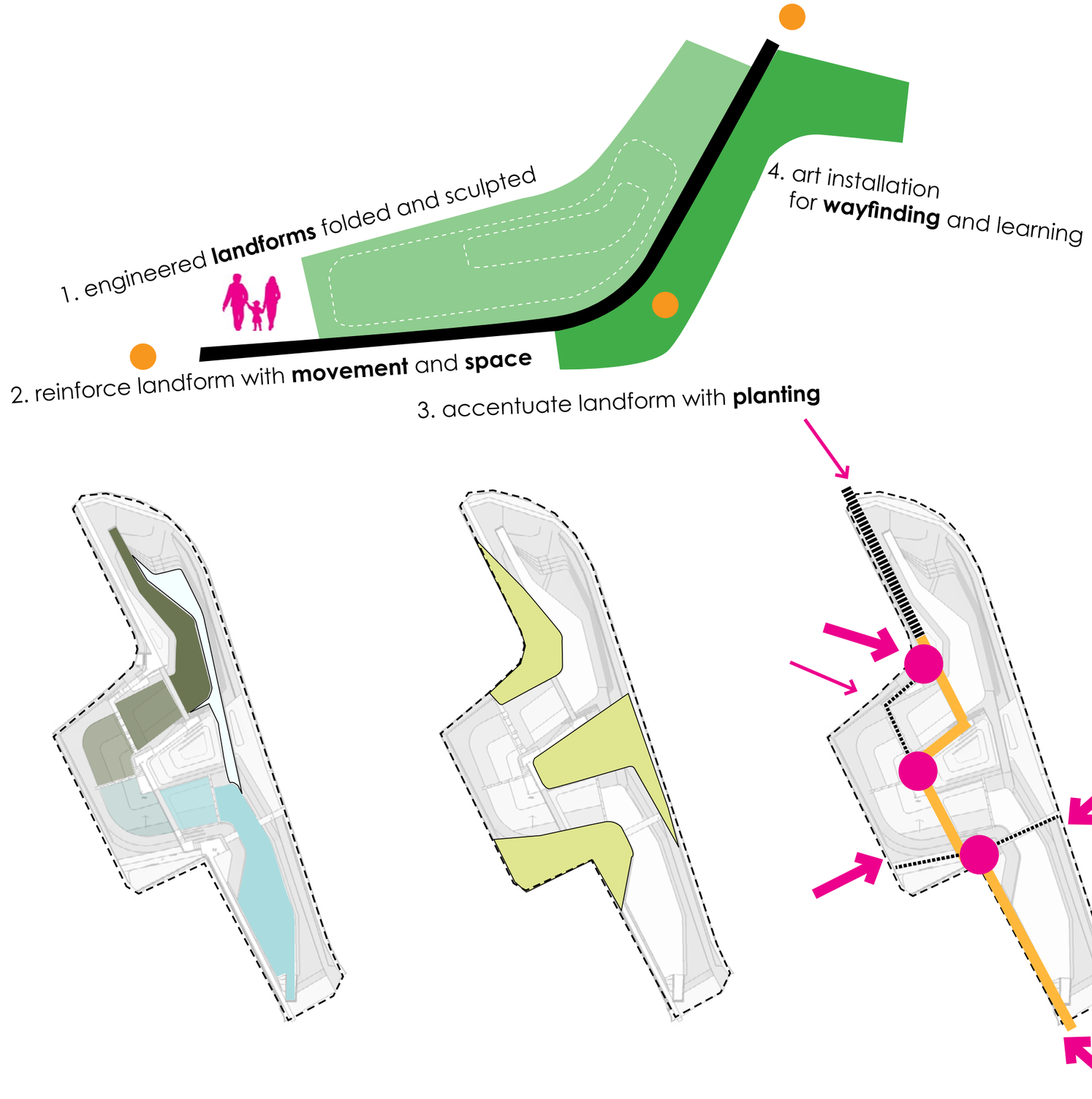
Concept Geometry

As the primary element, folded landforms direct the flow of stormwater within the site. The landform shapes mimic the engineered motorway bunds adjacent to the site, and deflect off the rigid site boundaries, dropping to form wetland bays, rising to create entrances and vantage points, and bending to direct stormwater to water treatment and overflow areas.

The central landform rises above the surrounding roads offering seating on its gentle slopes and provides an excellent elevated vantage. Boffa Miskell worked with the artist Elke Finkenauer to model a playable artwork on the central mound, which references the twisting lines of the Wairau’s natural stream systems in the upper catchment.

The visitor moves through the site along strong axes, sometimes at elevated levels, and other times close to the water, including taking advantage of an existing wastewater trunk alignment. At pathway intersections restive spaces occur with seating and vantage points. Seats are simple and durable, sometimes incorporated into low walls and terraces.

Planting relates to hydrological regimes, particularly in relation to stormwater treatment functions. Planting is proposed as large singular blocks of planting to accentuate landforms and treatment processes, and call-out any weed infestations. Diverse assemblages of higher stature trees and shrubs are located at three locations that in-time will partially enclosing the site. Grass areas are located on folded and cut landforms providing a variety of vantages above the sunken site.



Functional Design

Operation was a key consideration of the wetland design. There is access to a forebay along a reinforced shared pedestrian/bike path. This path crosses a bridge to a central island that acts to directs water into a treatment wetland. The bridge doubly acts as a readily-accessible litter trap device. The treatment wetland is divided into cells formed by weirs that sit on an existing trunk sewer alignment. Weirs are fitted out with stepping stones for maintenance access and opportunities for the public to engage with the wetland. Wetland cells can be isolated and re-circuited if any problem weeds need long term controls, without the need for decommissioning the whole wetland.

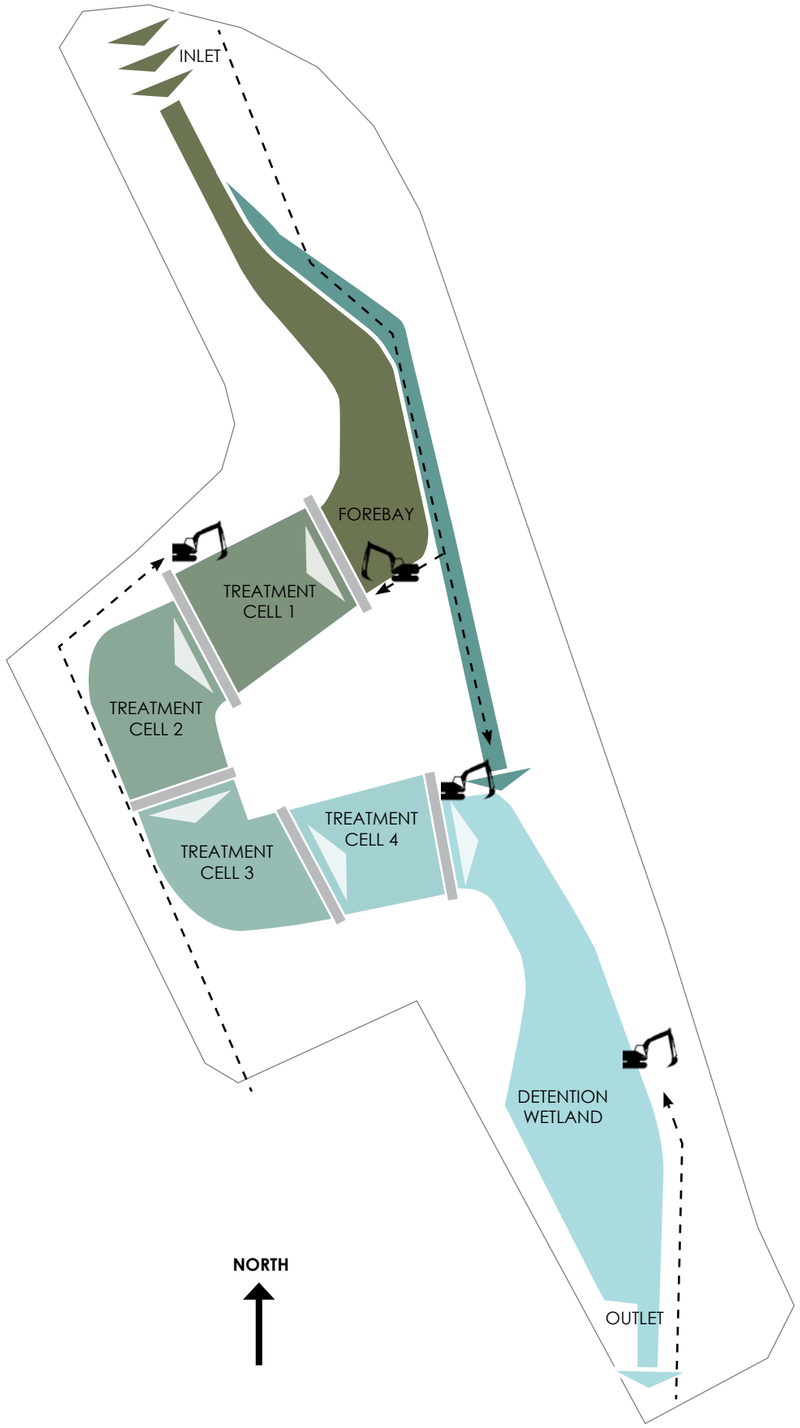
Hard infrastructure such as pathways and seating are basic and repeatable designs. These elements are made from durable materials to account for constant inundation, with the whole of the site being underwater at the approximate 2-year ARI. Deck structures, boardwalks and bridges are formed by FSC certified hardwoods. Long seats are made from recycled jarrah wooden power poles, with off-cuts being upturned to use as bollards. One of these jarrah power poles is still in operation adjacent to the site, as a reference.

Modular concrete retaining walls (found as surplus items with minor imperfections) provide a cut-off through the large central mound for larger stormwater overflows. This spillway has bottom-draw plans and a designed capacity to accommodate a half-pipe skate ramp, based on the appetite of the newly elected Local Board. Otherwise planting will mask any visible imperfections in the concrete units.

Operation Phase

The project was completed very recently (Dec 2016) and is being maintained to achieve robust plant growth. Boffa Miskell have worked through this project for nearly 10 years with changing Council clients, but have maintained a presence through detailed design and in an engineer's representative role with AR Civil and WEC engineering.

The project was originally selected in 2007 for its visibility and hence usefulness as a demonstration project, with little expectation that its context within large box retail would deliver crowds of patrons. However, a scheduled cycle path is now programmed through this area, and surprisingly, many people specifically visit the site to interact with the work. Despite its proximity to large scale retail and the motorway, members of the public will spend considerable time here, often lying on their backs on the grass or seats looking at the emerging wetland. Children will clamber over stepping stones and artwork, and run across bridges and boardwalks to stand on top of the landforms.



A. Shallow marsh rush
(Baumea rubiginosa)

B. Deep marsh rush
(Eleocharis sphacelata)

C. Deep marsh tall rush
(Baumea articulata)

D. Fine sedges
(Carex virgata, secta, dissita)

E. Sword sedges
(Carex lessoniana, Cyperus ustulatus)

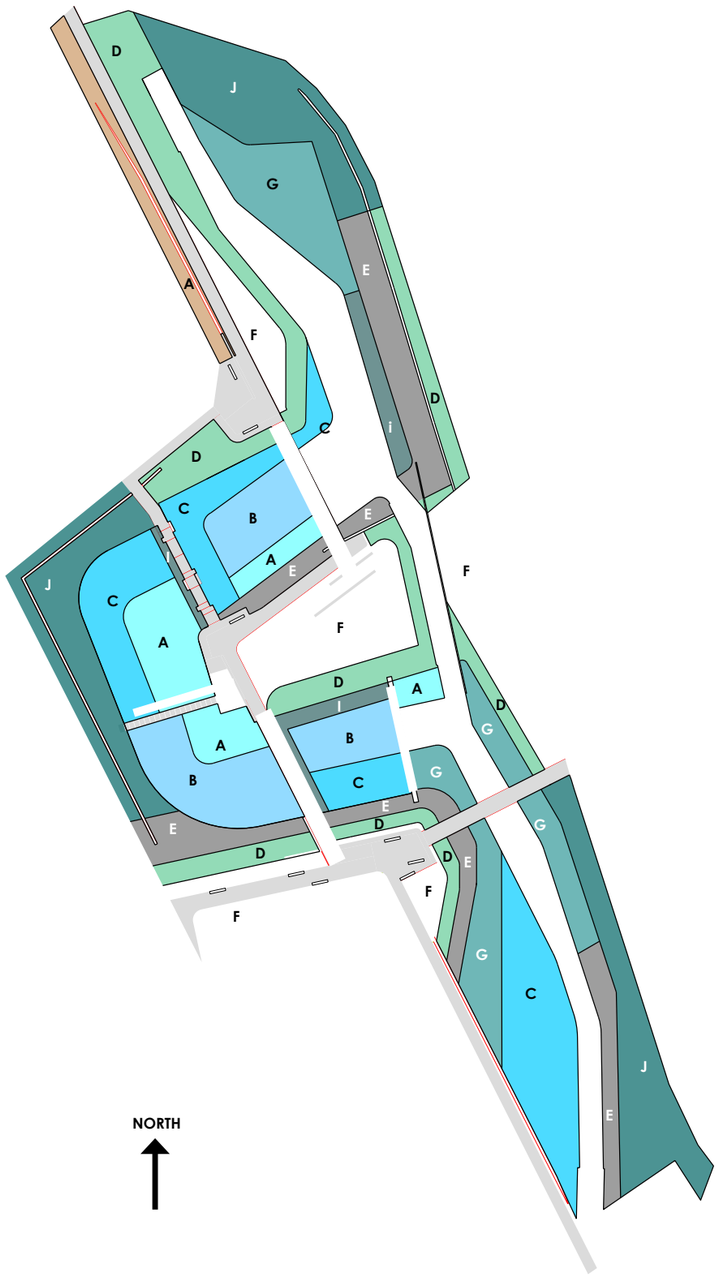
F. Lawn areas
(low mow rye grasses)

G. Harakeke
(Phormium tenax and
Cordyline australis)

I. Short shallow marsh rush
(Isolepsis prolifer)

J. Swamp forest
(Dacrycarpus dacridioides, Syzgium
maire, Rhopastylis sapida, etc)

K. Low fern and ground covers



Planting Design

The primary function of plants at Croftfield Lane is water quality treatment, including stabilising soils in overland flows, filtering stormwater, transpiration, and shade. Low stature plants, such as sedges and rushes, are located in the path of water flows. Tall vegetation provides for shading and for capture of litter blown from off-site.

Large swathes of planting reinforce the abstracted landforms, which in turn reflect the stormwater treatment stages through the site. Blocks of wetland plants also reflect the function of discreet wetland treatment cells. Large lawn areas provide vantage points and north facing slopes for public to engage with the wetland.

Planting is generally in strong singular-species bands, primarily comprised of rushes and sedges. These contrast with occasional, areas of diverse, representative assemblages, such as swamp forest. The vegetation at the edge of the site is managed for physical and visual permeability, while also defining entryways and framing views.

Essential Criteria Checklist

1. Clarity

Boffa Miskell seized an opportunity on this project to demonstrate the benefits of integrating landscape and ecology into stormwater wetlands. These elements were deliberately formed and refined to educate the public about stormwater management processes.

2. Sense of place

The site was rebuilt layer by layer from a “scruffy” and weed infested hole in the ground. The bending landforms, reminiscent of the NZTA SH1 ramps adjacent, elevate the site, and strongly express its function. The planting in strong bands responds to the scale of the adjacent large box retail and industry, and represents vegetation that would have historically occurred in this area. Structures are strong and durable to align with the industrial context and the seating and bollards are re-purposed power poles that are still operational on site.

Pathways and entrances respond to existing desire lines by the public and vegetation frames views from highly trafficked areas, or captures litter from the direction of prevailing winds.

4. Value

The Local Board and client are thrilled with the project for the multiple benefits they have achieved from previously under-valued infrastructure.

“It’s a great outcome from a comunity point of view” (Local Board Chair).

5. Innovation

The project was a pioneer in exploring landscape and ecology values in stormwater assets.

The project was significant in changing the paradigms for how we look at our assets and how much more we can do for the community” (Auckland Council Project Manager, Tom Mansell)

6. Execution

Boffa Miskell worked closely with the contractor to deliver a quality outcome in a winter programme in a highly floodable landscape. Materials were modified according to availability of materials, including sustainablly sourced and re-purposed products.

7. Plantsmanship

Refer to planting design above. Planting was a strong element that reinforced the basic geometry of the design, assists the function of the wetland, and is representative of historic native species for the site.

8. Environmental stewardship

The project achieves multiple values within degraded public infrastructure, providing demonstrable environmental improvement, while adding appreciable value to one of our public assets.

“The effectiveness of this wetland in capturing cotaminants at an early operational phase has been staggering” (Cameron Smythe, Auckland Council Conract Engineer)

9. Significance and influence

The project was pioneering in its design and has strongly influenced the North Shore City Council officers that went on to contribute to celebrated stormwater amenity projects within the unified Auckland Council.

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