Implementing the Ōtākaro Avon River Corridor Regeneration Plan

Update to the Rotary Sunrise Group

May 2025

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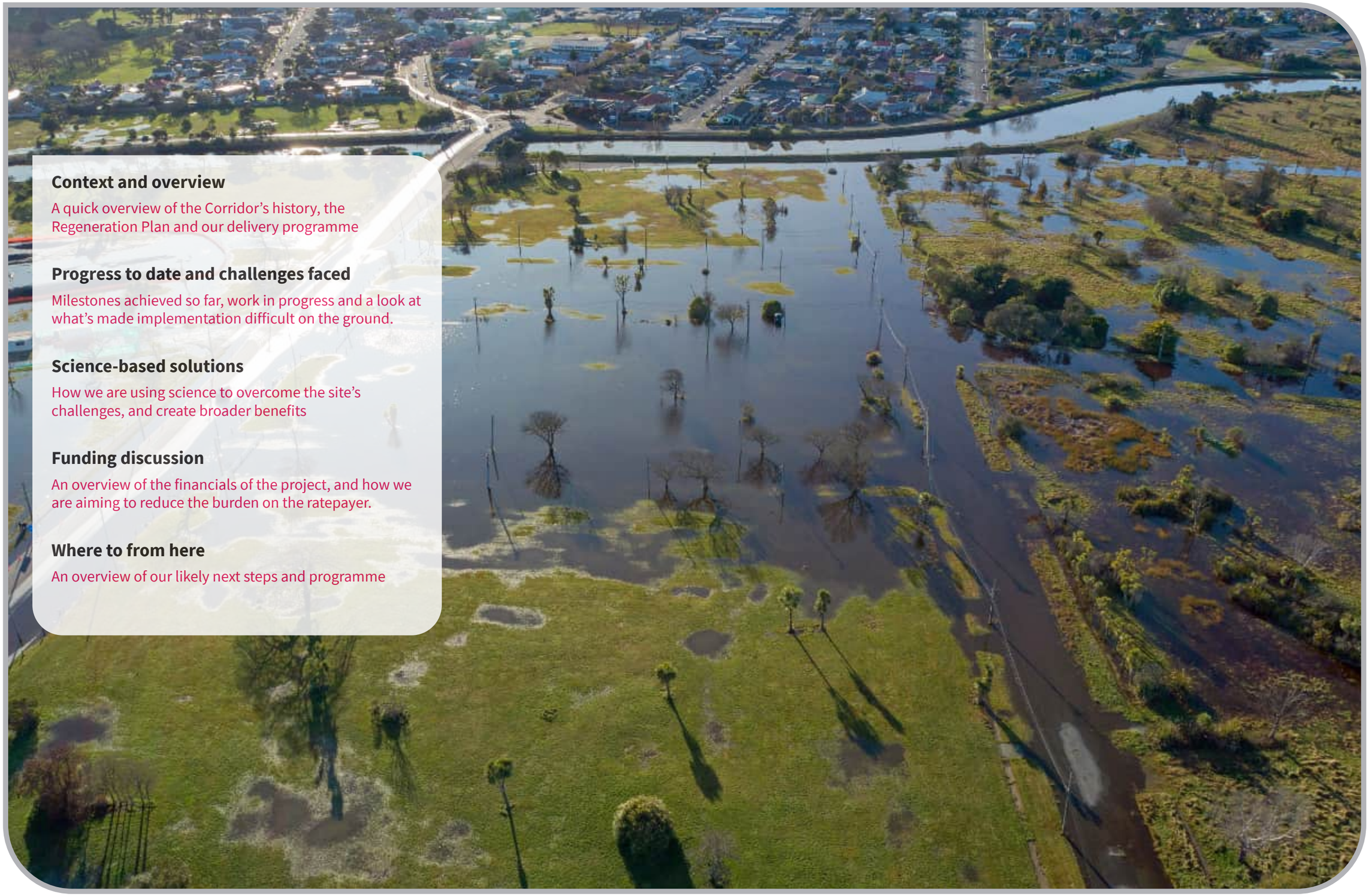
Christchurch City Council

TODAY'S SESSION.



Context and overview

A quick overview of the Corridor's history, the Regeneration Plan and our delivery programme

Progress to date and challenges faced

Milestones achieved so far, work in progress and a look at what's made implementation difficult on the ground.

Science-based solutions

How we are using science to overcome the site's challenges, and create broader benefits

Funding discussion

An overview of the financials of the project, and how we are aiming to reduce the burden on the ratepayer.

Where to from here

An overview of our likely next steps and programme

CONTEXT + OVERVIEW

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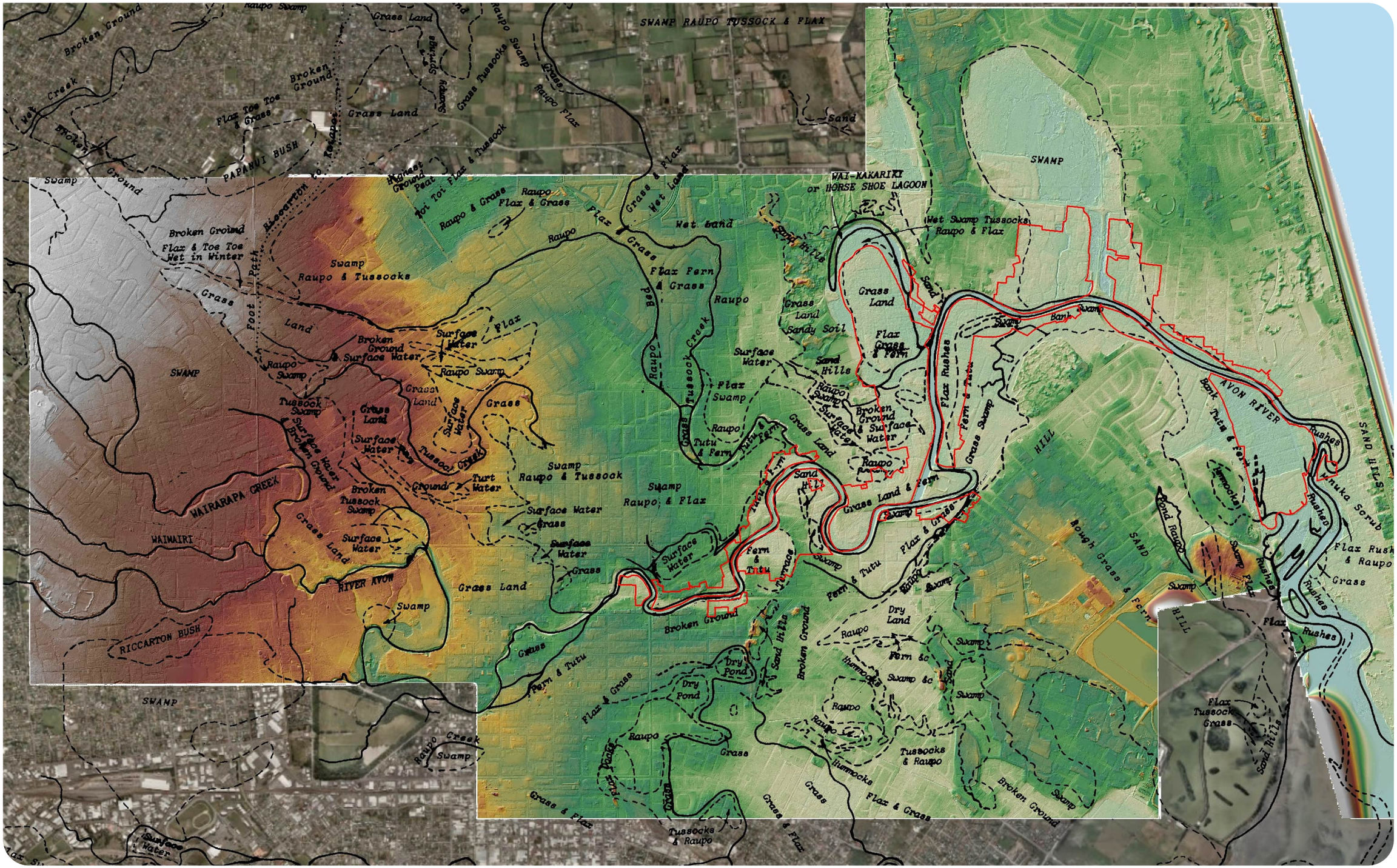
ENVIRONMENTAL CONTEXT.



CONTEXT LAND DAMAGE AND THE RED ZONING PROCESS.

Effects of the 2010-2011 Canterbury earthquake sequence were particularly pronounced in alluvial and coastal soils, particularly those surrounding the Otakaro-Avon river.

Damaging effects in these areas mostly stemmed from liquefaction, lateral spread (cracking) and resultant flooding/drainage issues. The impacts meant that damage was not limited to buildings themselves but rather that the land underneath it was no longer suitable for the type and standard of development that it supported.

8000 homes red zoned in total due to land damage caused in the 2010-2011 earthquake sequence.

7400 of these were in the flatlands; including Kaiapoi, Brooklands, South Shore and the Ōtākaro-Avon River Corridor.

5400 individual properties currently make up the Ōtākaro-Avon River Corridor.

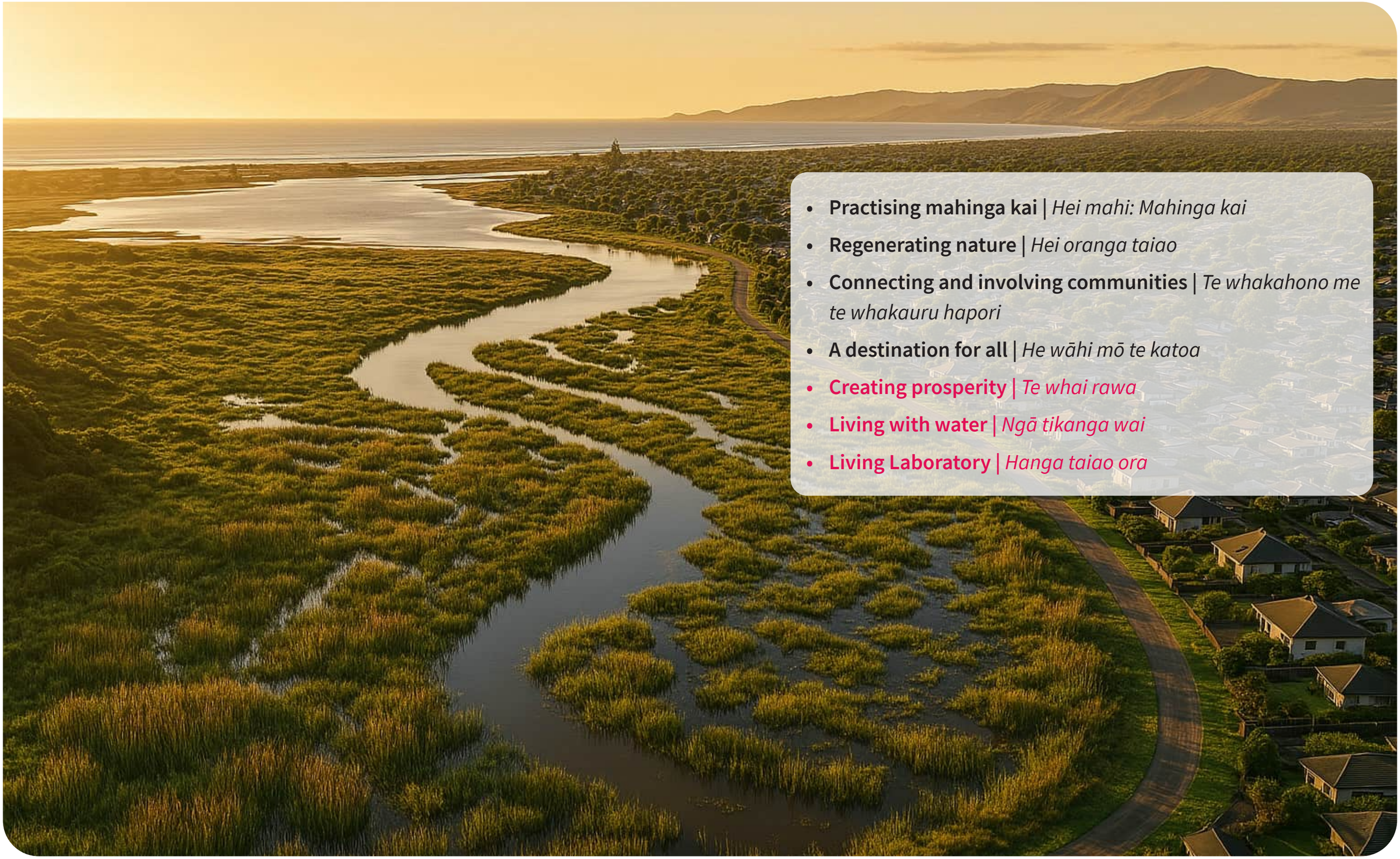
602 hectares of open space created along the Ōtākaro-Avon river corridor as a result.

The Ōtākaro-Avon River Corridor subsided significantly during the quakes, by an average of **500mm**

To deal with sea level rise, permanent stopbank levels are planned to be around **1m** higher than the interim ones.

IN THE LONG-TERM, FIGHTING AND SEEKING TO CONTROL OUR NATURAL ENVIRONMENT WILL NOT BE SUCCESSFUL.

SETTING THE SCENE OBJECTIVES OF THE REGENERATION PLAN



- **Practising mahinga kai** | *Hei mahi: Mahinga kai*
- **Regenerating nature** | *Hei oranga taiao*
- **Connecting and involving communities** | *Te whakahono me te whakauru hapori*
- **A destination for all** | *He wāhi mō te katoa*
- **Creating prosperity** | *Te whai rawa*
- **Living with water** | *Ngā tikanga wai*
- **Living Laboratory** | *Hanga taiao ora*

SETTING THE SCENE THE OARC ‘GREENPRINT’.

THE GREENPRINT IN DETAIL

TE WHAKAMĀRAMA MŌ TE TĀKĀKĀRIKI

HORSESHOE LAKE REACH
A place of food and culture

Significant ecological restoration opportunities in the Horseshoe Lake Reach include 30 hectares of stormwater management, wetlands and ponds. The land could support community gardens, urban and sustainable farming, and education and cultural experiences focused around mahinga kai. It has potential for a water-based adventure park (whitewater, surf or cable).

ŌTĀKARO LOOP REACH
A place of activity and play

The Ōtākaro Loop Reach is the ideal location for recreational family activities, such as walking, biking, nature playgrounds and backyard sports. Other opportunities could include ecotourism, cultural experiences, pay-to-play recreational activities and food destinations.

EASTERN REACHES
Experiencing nature

The saltmarsh and wetland environments of the Eastern Reaches provide ecological restoration opportunities. Away from the naturalised area, opportunities include trial and edge housing, ecotourism, sustainable farming and recreational activities that appeal to families.

THE GREEN SPINE
Connecting people and place

The Green Spine forms the core of the Regeneration Area. About eleven kilometres long and 345 hectares in size, it extends along both sides of the river and provides the thread that brings the Area together. The Green Spine supports public access to the river, which in turn will stimulate community ownership of and identity with the Area. Seating, picnic and BBQ areas will encourage families and friends to meet up and enjoy time near the river.

Ecological restoration of natural habitats

Raised/terraced stopbanks extending the full length of the corridor reduce flood risk to houses and create attractive riparian margins

New footbridges

Potential realignment of SH74

Extended mahinga kai exemplar

Extended Bower Park

Stormwater management area

Horseshoe Lake Reach Activity Area

Proposed east-west road and bridge link

Network of trails and walkways

Community spaces, shared gardens and orchards that provide seasonal food harvests

Ecological restoration of natural habitats

Ecological restoration of natural habitats

CITY TO SEA PATH

Stormwater management area with potential trial housing

Ōtākaro Loop Reach Activity Area

Widening and deepening of the river in some locations to provide enhanced facilities for flatwater sports

Stormwater management area

Trial housing area

BURWOOD

NORTH NEW BRIGHTON

NEW BRIGHTON

AVONDALE

RICHMOND

WAINONI

TRAVIS LANDING

RĀWHITI LANDING

BEXLEY LANDING

AVONDALE LANDING

AVONSIDE LANDING

AVON LOOP LANDING

WAINONI LANDING

DALLINGTON LANDING

CITY TO SEA PATH

BOWER AVE

BREEZES RD

GAYHURST RD

STANMORE RD

FITZGERALD AVE

WOODHAM RD

WAINONI RD

BRIGHTON MALL

PAGES RD

KEY

- Boundary
- Green Spine
- Ōtākaro Loop Reach
- Horseshoe Lake Reach
- Eastern Reaches
- City to Sea path
- Landings
- Community spaces
- Stormwater management
- Road links
- Footbridges
- Trial and edge housing

N

0 500m 1000m 1500m 2000m (2km)

WHY THIS MATTERS

Climate Adaptation/Resilience

- Delivers a major **flood defence system** (22km stopbanks, pump stations) designed for long-term resilience, protecting thousands of homes from river flooding and future sea-level rise impacts
- Restores **floodplain capacity** by setting stopbanks back

Improved Water Quality (Ōtākaro & Ihutai/Estuary):

- Creates extensive **stormwater management infrastructure** (detention ponds, treatment wetlands), treating urban stormwater runoff before it enters the Ōtākaro Avon River.

Enhanced Biodiversity/Habitat

- Nationally significant **restoration of intertidal vegetation** (saltmarsh, brackish wetlands) within an urban context, creating vital habitat lost elsewhere due to development and earthquakes.
- Provides space fo**r intertidal habitats** to migrate to as sea levels rise.
- Creates/restores **habitat** supporting numerous threatened, at-risk, and Ngāi Tahu Taonga species (e.g., Bittern, White Heron, Inanga, wetland birds).

Economic Benefits

- Direct **economic stimulus** through construction.
- Creates a major regional **tourism asset**, attracting visitors and supporting local businesses.
- Potential **uplift in value** for 25 000 surrounding properties due to improved resilience and amenities
- Enables limited **new housing** opportunities on the corridor edge and designated trial housing areas
- Fosters **innovation** in cost-effective land remediation practices - with potential wider applications.

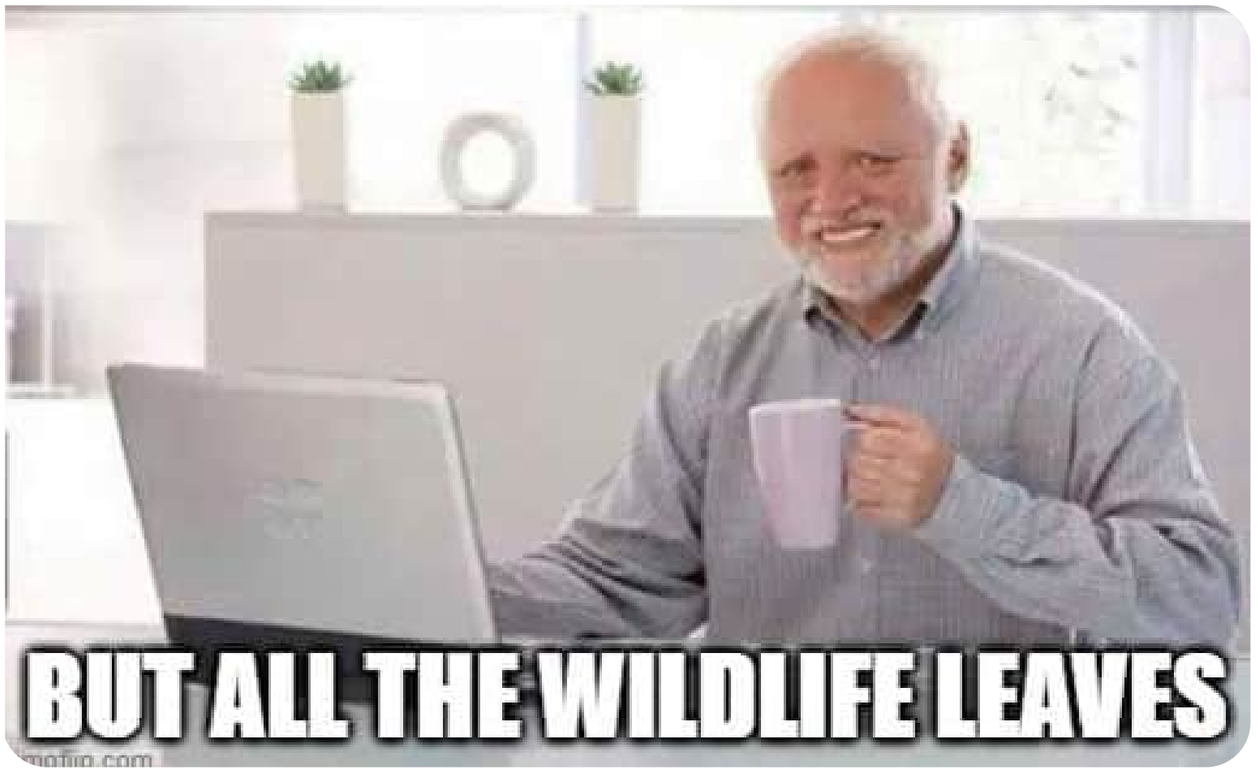
Community Wellbeing

- Improves **connectivity** between communities and open spaces
- Provides increased local **recreational opportunities,** supporting healthy lifestyles
- Creates **community facilities,** fostering social connections and bump spaces for residents.

Cultural Values

- Restored habitat/improved water quality, supports future **mahinga kai practices** (key objective). Also supports Taonga species and culturally significant ecosystems like wetlands and the Ihutai estuary.
- Strengthens partnership with Te Ngāi Tūāhuiriri in design, implementation, monitoring and governance, **reflecting Treaty principles.**


WHEN YOU BUILD A
PATH TO SEE THE WILDLIFE


BUT ALL THE WILDLIFE LEAVES

DELIVERY TO DATE AND WORK IN PROGRESS

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COMPLETED PROJECTS WALKING + CYCLING BRIDGES

COMPLETED PROJECTS DALLINGTON LANDING

COMPLETED PROJECTS (PARTIAL) WAITAKI STOPBANK AND TIDAL WETLAND

DELIVERY COMPLEXITY AND UNDERLYING CAUSES.

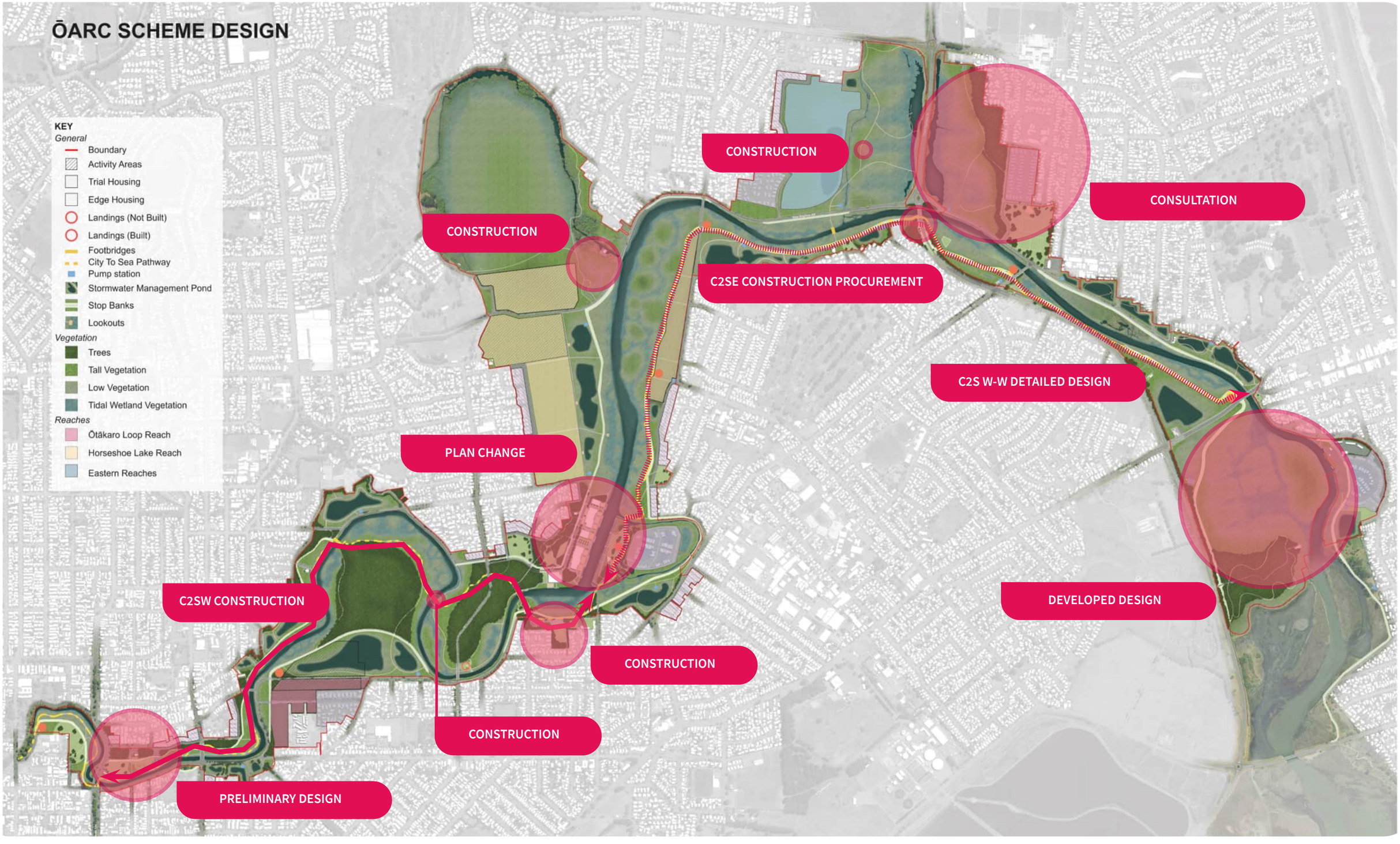
CUT AND FILL BALANCE, FUTURE EARTHWORKING

VANDALISM AND ANTI-SOCIAL BEHAVIOUR

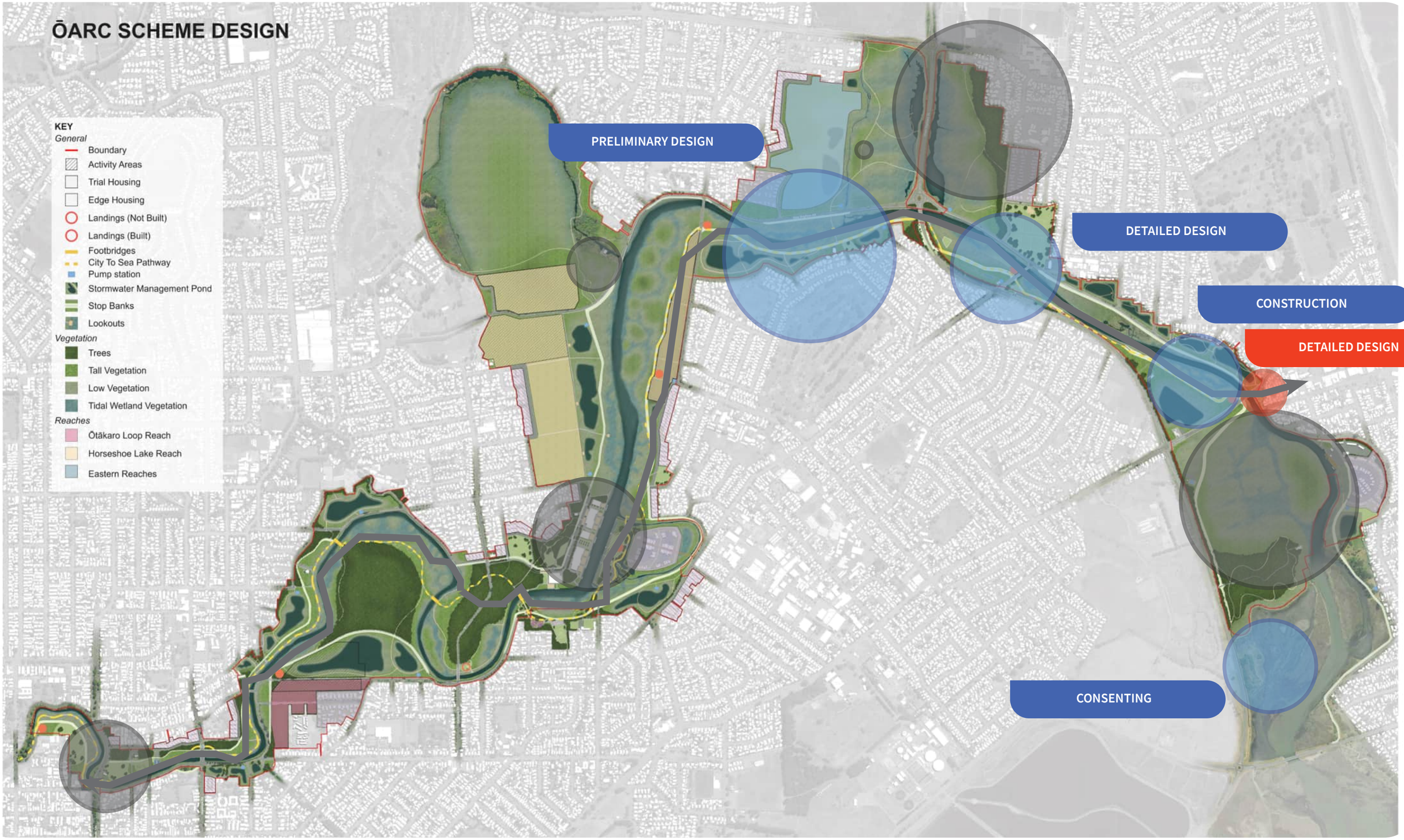
PROPERTY OWNERSHIP UNRESOLVED IN PLACES

COMPLEX PLANNING/REGULATORY ENVIRONMENT

DELIVERY PARKS PROJECTS UNDERWAY



DELIVERY THREE WATERS + TRANSPORT PROJECTS UNDERWAY



DELIVERY 200 000+ NATIVE PLANTS THIS SEASON

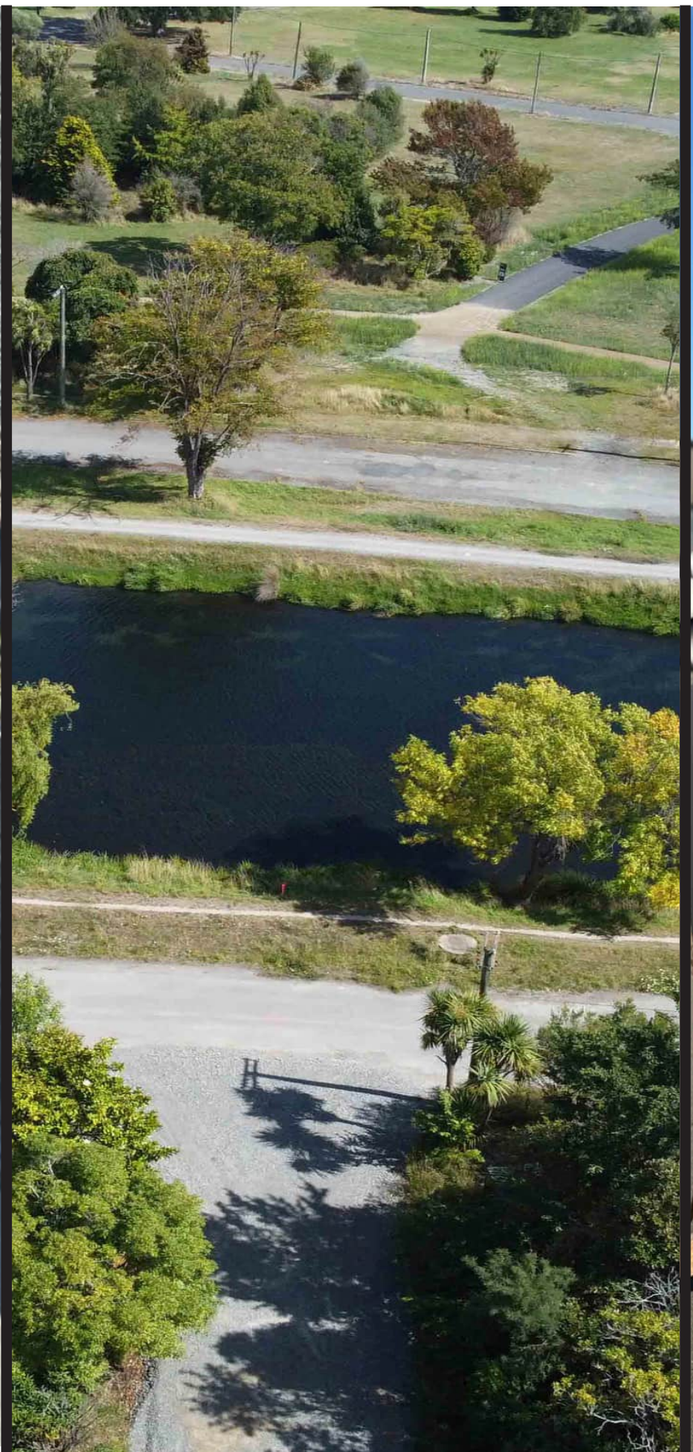
To date. we have managed planting of around 50 000 plants per season, so this is a significant increase which we expect to sustain.

CONSTRUCTION UNDERWAY AVON PARK, EST COMPLETION AUGUST

CONSTRUCTION UNDERWAY CITY TO SEA PATHWAY (WEST), EST COMPLETION JUNE

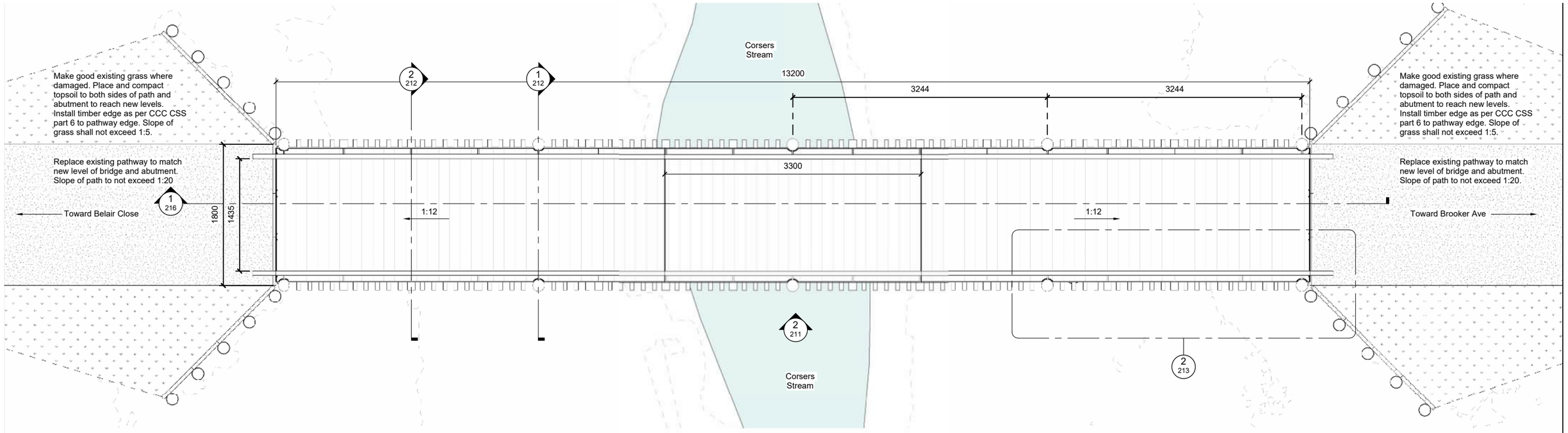
CONSTRUCTION UNDERWAY DALLINGTON BRIDGE, EST COMPLETION AUGUST

CONSTRUCTION UNDERWAY DALLINGTON BRIDGE

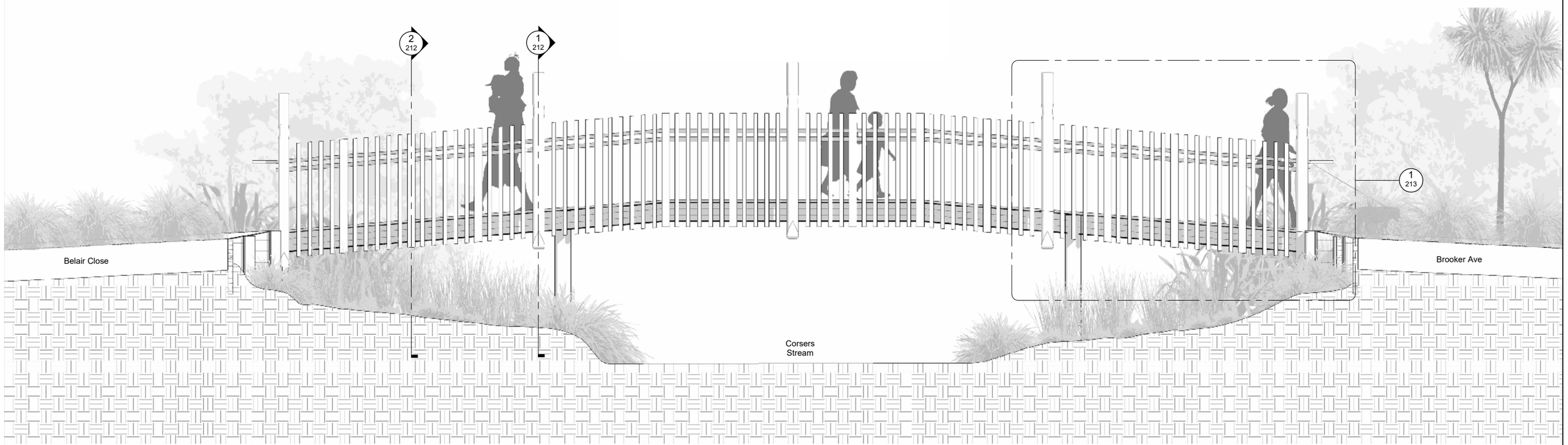


CONSTRUCTION UNDERWAY GOODMAN STREET WETLAND, EST COMPLETION SEPT

NEXT UP BROOKER BRIDGE (CONSTRUCTION ABOUT TO START)



1 200 Bridge - Plan
Scale: 1 : 25



NEXT UP LAKE KATE SHEPPARD/BOWER PARK (CONSULTATION UNDERWAY)

SITE PERSPECTIVE

- Primary pathway through site
- (1) Expanded wetlands
- (2) Bower Park sports fields
- (3) Play space
- (4) Car parking
- (5) Fitness circuit pathway
- (6) Driveway access
- (7) Mounded lookout + activity node
- (8) Pump track / bike skills area
- (9) Bike track through planting
- (10) Forest buffer planting
- (11) Existing community planting
- (12) 'Wetland ribbons'
- (A) Location of 'Ground Perspective View A' (following pages)
- (B) Location of 'Ground Perspective View B' (following pages)

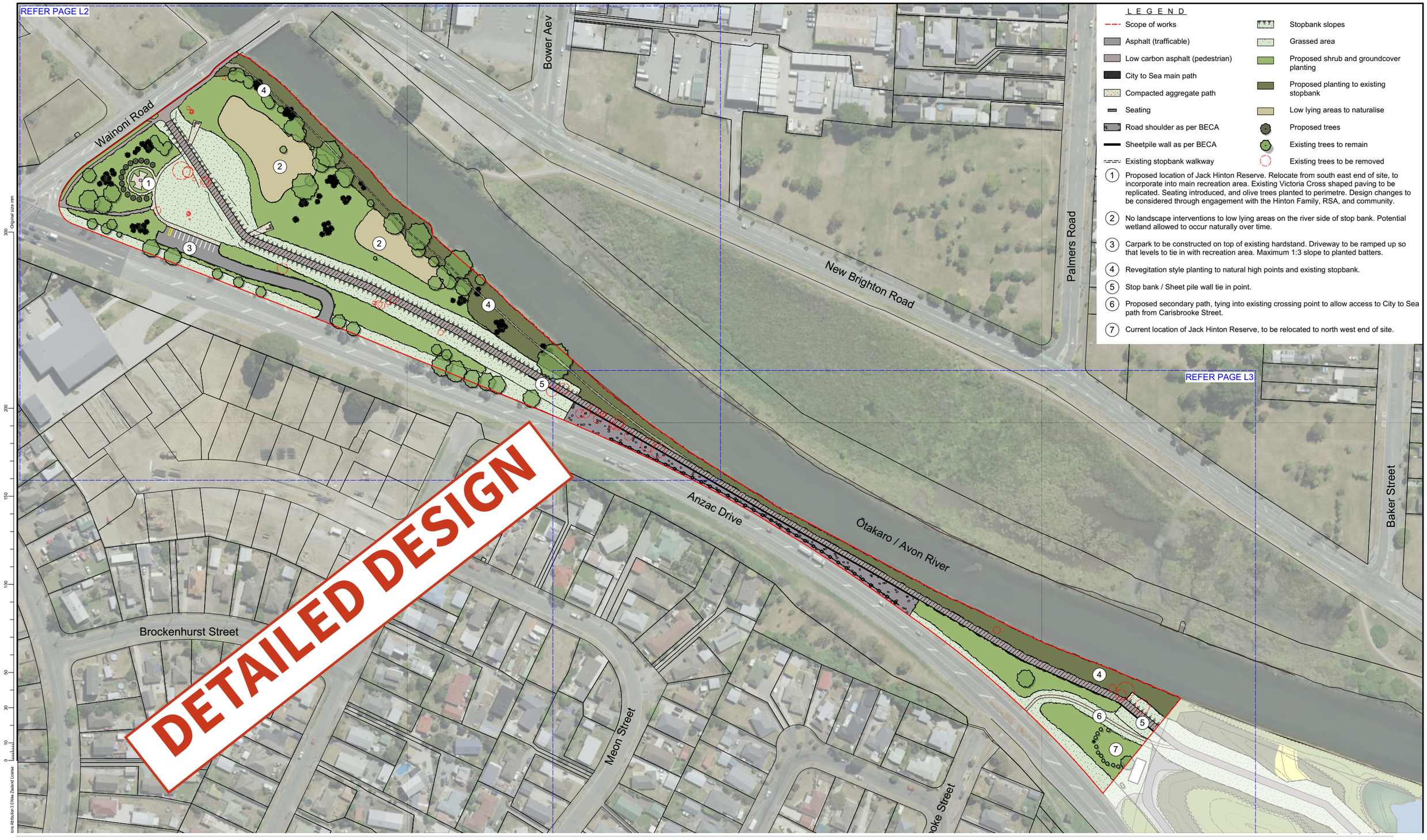
3W PROJECTS COMING UP WAITAKI STORMWATER MANAGEMENT AREA

TENDERING

3W PROJECTS COMING UP WAINONI SW TREATMENT

DETAILED DESIGN

3W PROJECTS COMING UP WAITAKI-WAINONI STOPBANK



DELIVERY CHALLENGES AND SOLUTIONS

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THE CHALLENGE TRADITIONAL CONSENTING COMPLEXITY.

- **Scale & scope:** Huge area, multiple interacting activities over 30+ years.

- **Piecemeal consenting issues:** Time consuming, expensive ($50m+ potential cost), resource intensive, risk of delays, inconsistent conditions.

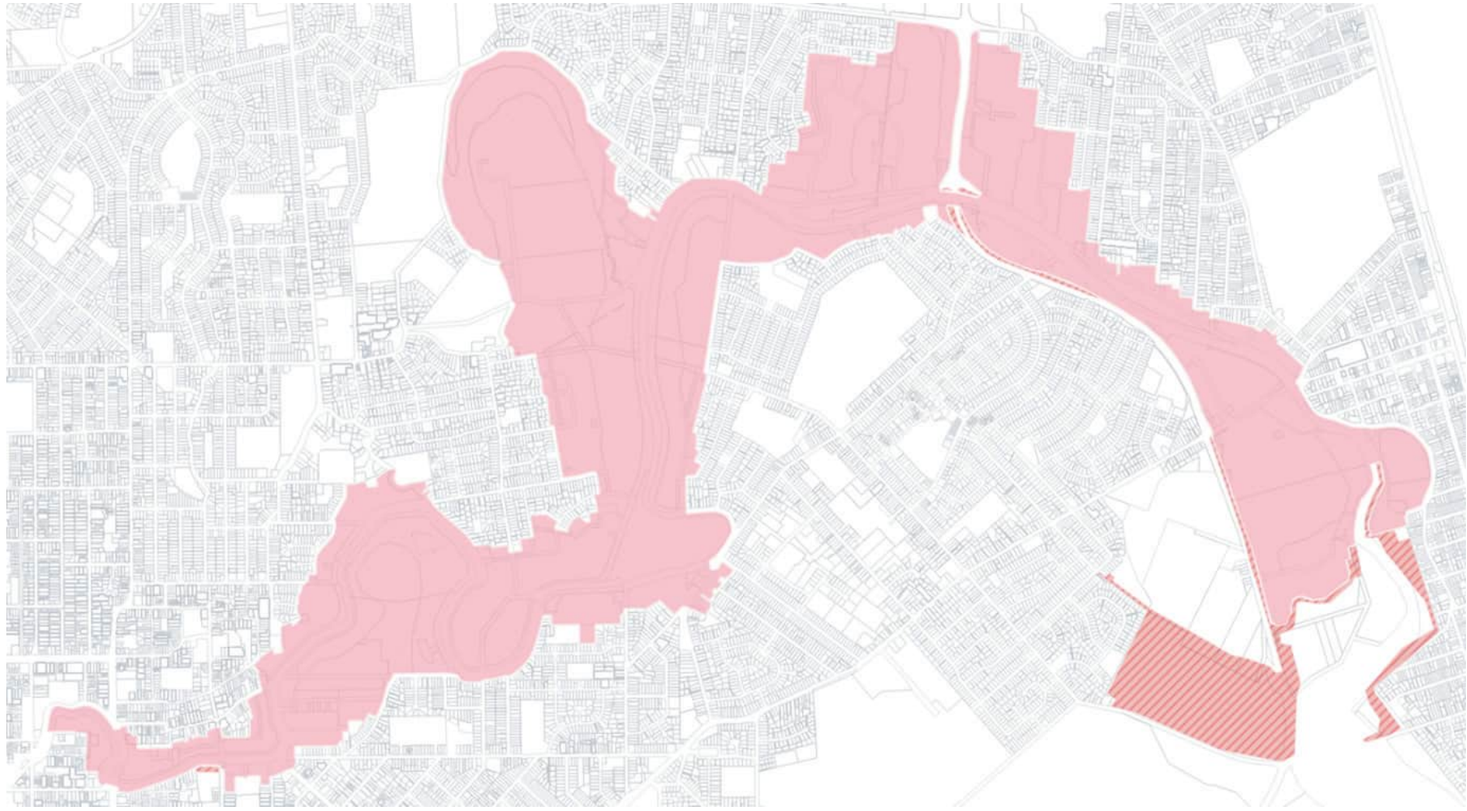
- **Specific consenting hurdles encountered:**
- **Contamination** (interpretation, cost of DSIs, disposal challenges, relatively low levels/high consenting impacts).
- **Water issues** (Groundwater takes/interception, naturalising wetlands, ecotoxicity concerns hard to resolve.
- **High consent cost** relative to physical works (Goodman St example).

THE SOLUTION CORRIDOR-WIDE FAST TRACK CONSENT.

- **Scope of Application:** OARC boundaries + necessary external areas (Bexley fill, stopbank tie-ins)

- **Key Approvals Sought:**
- **Territorial Authority (CCC) Consents:** Land use consents covering earthworks (volume/area), construction noise/vibration, lighting, transport effects, natural hazard considerations (esp. development within flood management areas), compliance with specific OARC zone rules (setbacks, landscape), impacts on biodiversity/trees, potential heritage interactions.
- **Regional Council (ECan) Consents:** Discharges (stormwater - construction & operational, dust, dewatering contaminants), Water Permits (surface & groundwater takes - passive/active, damming/diversion), Land Use Consents (works in/near water beds/margins, wetlands under NPS-FM/NES-F, potentially contaminated land disturbance, CMA activities), Coastal Permits (structures, occupation, disturbance in CMA).
- **Heritage New Zealand Pouhere Taonga Act 2014:** Archaeological Authorities
- **Wildlife Act 1953 (DoC):** Primarily wildlife permits.

- **Benefit:** The fast-track process allows these multiple approvals, normally sought sequentially or in parallel from different agencies with varying timeframes, to be considered holistically.



THE CHALLENGE RED ZONE SOIL FERTILITY

- **Compacted:** Much was under houses/driveways for decades, and was further compacted during the demolition process.
- **Low nutrients:** Many areas of sandy soil, or building sites where the topsoil was stripped for construction. Many soilds very low in organic content.
- **Hydrophobic soils:** The combination of the above leads in places to the odd situation where our former wetland soils are hydrophobic, and irrigation is needed.
- **Weed species:** The soil conditions favour weed species over native plants, and with an infinite surrounding weed seed bank, keeping weeds from outcompeting natives is challenging.
- **Outcome:** It is difficult to establish planting in red zone soils. This affects both initial planting, and their ongoing maintenance and survival. Growth rates are slower than typical planting projects, and failure rates are higher.

THE SOLUTION TAILORED SITE PREPARATION, SPECIFIC TO THE RED ZONE

- **Industrial tilling:** Hectare-scale tilling of the soil to 400mm deep, breaks up rubble and gravels. Works weeds deep into the profile, so initial spraying not required
- **Soil enhancements:** Incorporation of mulch (organic material), biochar (carbon) and humates (improve structure, add microbes) into the profile
- **Drone seeding native herbs:** Solanum (Poroporo) and other native herbaceous species seeded by drone to act as a ‘living mulch’. These are quick growing and in the improved soil conditions should compete with exotic weeds.
- **Result:** Trials underway at Dallington Loop. Initial results looks very promising, and we plan to roll this out more broadly. Costs are less than half of traditional soil improvement approaches, and we believe this will give us a better outcome.

THE CHALLENGE ROAD BASE, WATER AND SOIL CONTAMINATION

- **Road bases:** Most roads in Christchurch built pre-1980 have layers of coal tar in their base. This is a carcinogen, which needs to be disposed of to a managed landfill at great cost. In the red zone, these layers were mixed up in the earthquake.

- **General soils:** Ex-residential soils generally contaminated with lead (paint), oils and hydrocarbons (automotive work), CCA (treated timber), asbestos (building materials), spray residue and other heavy metals. This is hard to find as it happened organically over time.

- **Water:** Water in the streams and waterways is of poor quality, with the Avon receiving an overall score of 'D' in its latest round of reporting, signalling moderate to sever pollution (both organic and inorganic).

While this is not ideal, our living laboratory objective encourages us to take an approach that resolves these for the good of the city more broadly

THE SOLUTION INNOVATIONS AND TRIALS, INCLUDING SCALEABILITY

COAL TAR BIOREMEDIATION

Taking all of our road-base coal tar to landfill will result in thousands of truck movements, and waste a valuable resource. A second phase of trialling is being scoped, investigating the use of maturing compost and bacteria to bioremediate this product off-site for re-use.

Scaleability: Coal tar is dumped to landfill nationally - significant nationwide (global?) application, reducing carbon in construction. Cost savings, and potential income stream.

SOIL PHYTOREMEDIATION

Working with University of Canterbury, we are conducting field trials to phytoremediate the heavy metals in the soils using several native and exotic species. This shows excellent promise. Phytoremediation of asbestos is not possible due to its nature, which limits applicability somewhat.

Scaleability: Contaminated soil is dumped to landfill nationally - again significant nationwide (global?) application, reducing carbon in construction. Cost savings.

WATER QUALITY

While not a magic bullet, we are investigating ‘quick win’ trials using floating biochar filters to reduce contaminant loads in our waterways.

Scaleability: Reasonably limited as it will not deal with all contamination, but given its low cost it may still provide good bang for buck. It may also allow us to reduce the size of our stormwater management areas, which would be a cost saving.

THE FINANCES

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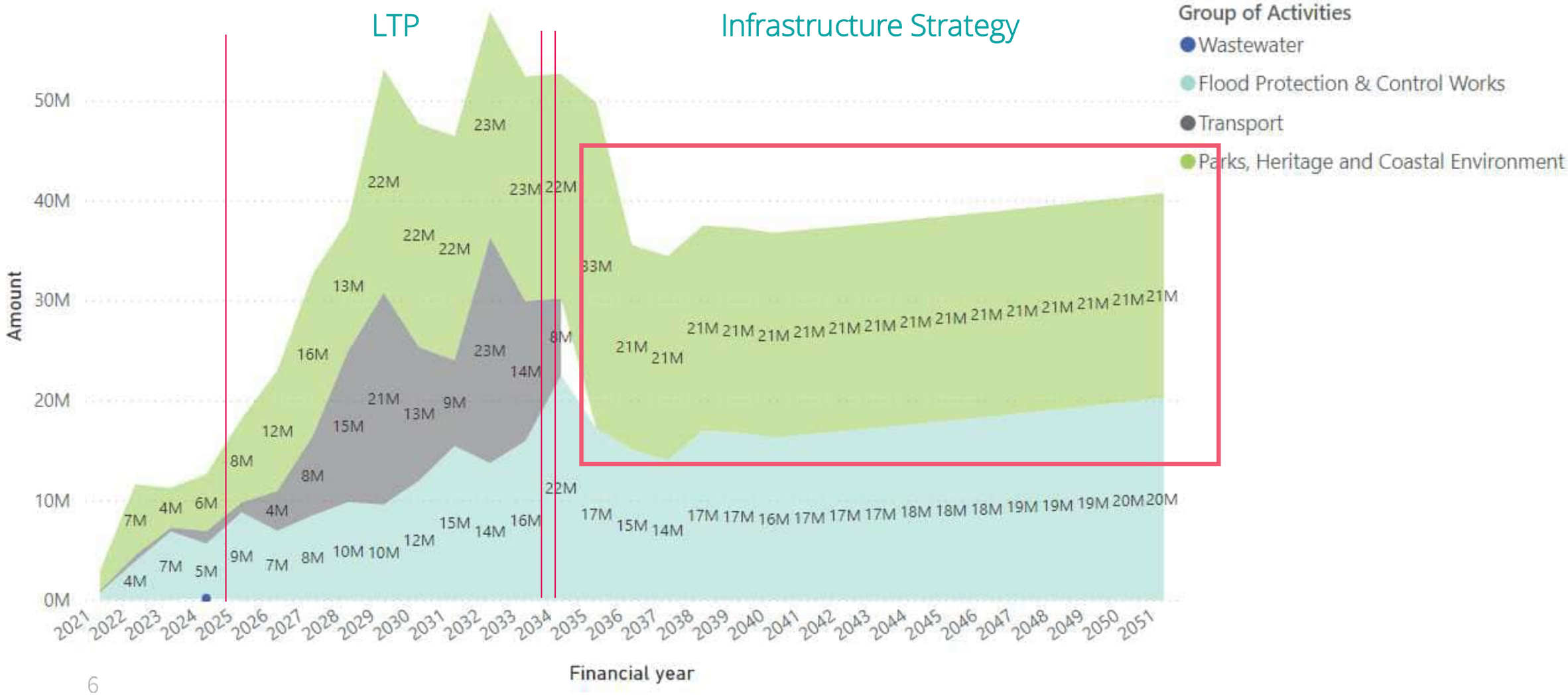
FUNDING LONG TERM PLAN AND INFRASTRUCTURE STRATEGY



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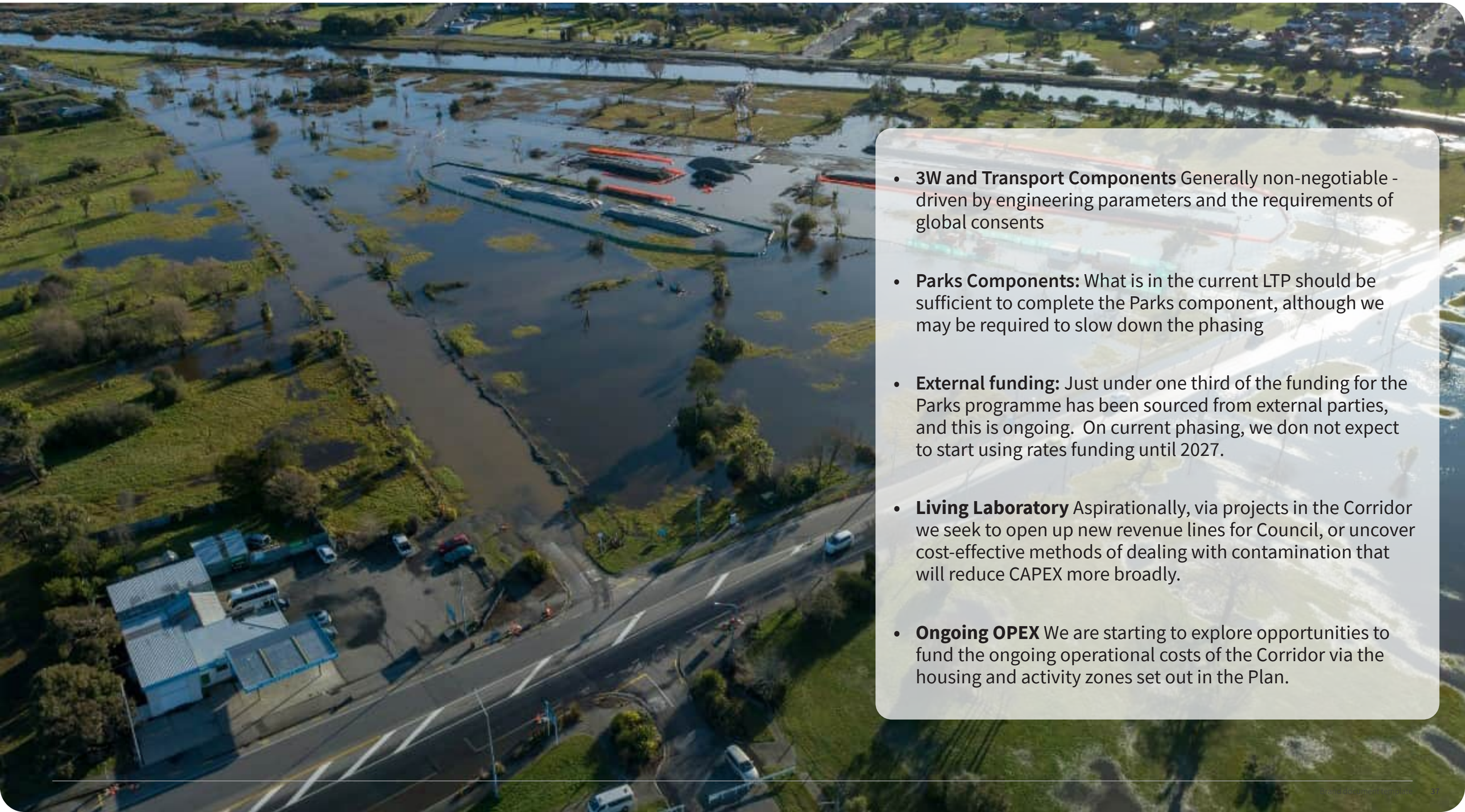
Most of this funding will be spent back in the local economy.

BUDGET CONSIDERATIONS DETAILED POINTS



- **3W and Transport Components** Generally non-negotiable - driven by engineering parameters and the requirements of global consents

- **Parks Components:** What is in the current LTP should be sufficient to complete the Parks component, although we may be required to slow down the phasing

- **External funding:** Just under one third of the funding for the Parks programme has been sourced from external parties, and this is ongoing. On current phasing, we don not expect to start using rates funding until 2027.

- **Living Laboratory** Aspirationally, via projects in the Corridor we seek to open up new revenue lines for Council, or uncover cost-effective methods of dealing with contamination that will reduce CAPEX more broadly.

- **Ongoing OPEX** We are starting to explore opportunities to fund the ongoing operational costs of the Corridor via the housing and activity zones set out in the Plan.

LOOKING AHEAD

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TIMELINE AND NEXT STEPS

Scheme design updated

Q2/3 2025

Application submitted under Fast-track legislation.

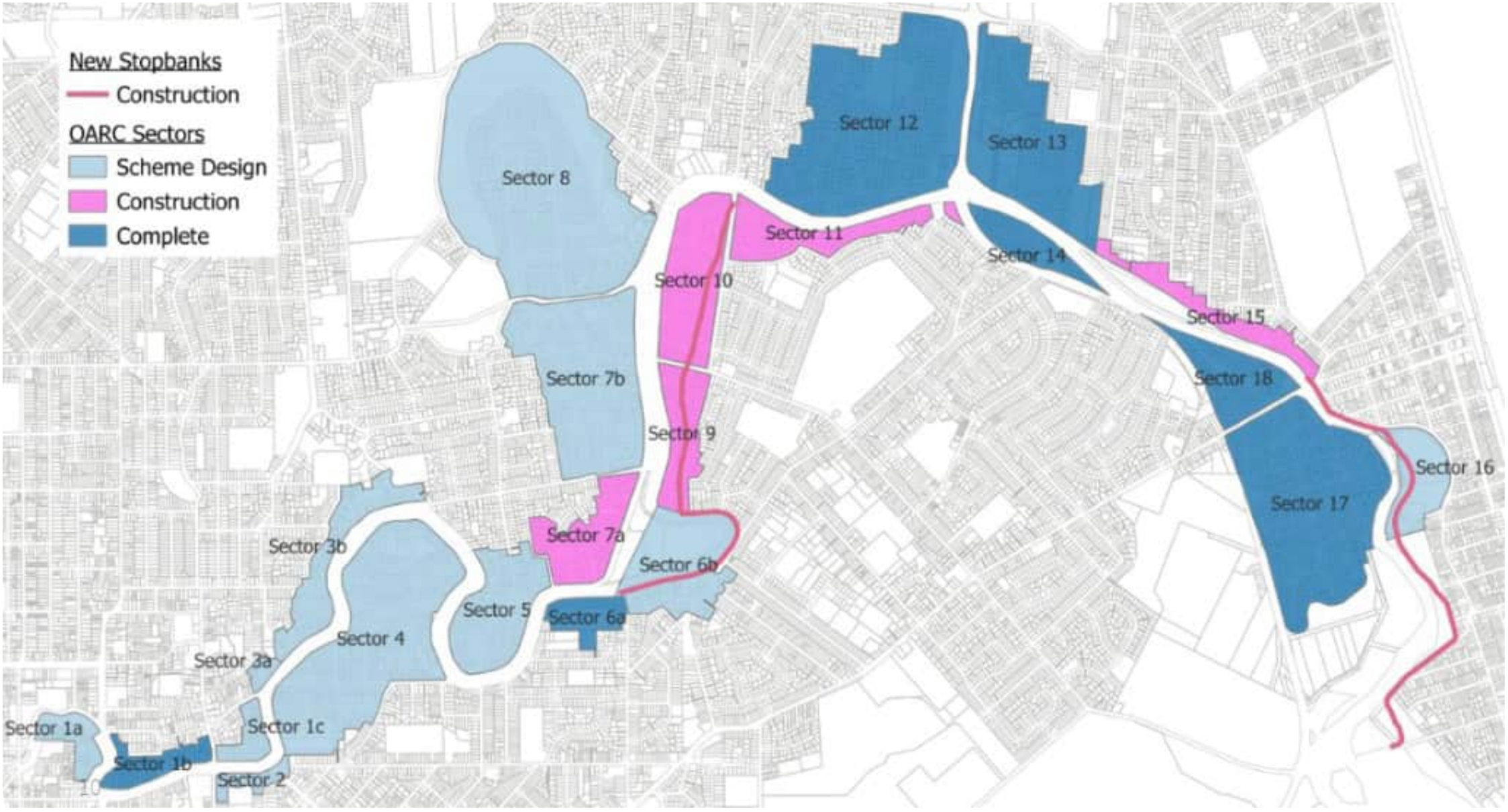
Q1 2026

Anticipated fast-track decision

Q2/3 2026

Significant accelerated progression of priority projects following decision

DELIVERY 5 YEAR TIMEFRAME



DELIVERY PROGRAMME AND PROGRESS

QUESTIONS?