



Geospatial Solutions

www.tonkintaylor.com

Geospatial Solutions at Tonkin + Taylor

We help project teams and decision-makers make better, faster, and more confident decisions by turning complex spatial data into clear, actionable insight.

Our team combines strong geospatial expertise with real project experience across infrastructure, environmental, transport, energy, and land development sectors. What sets us apart is our multidisciplinary approach - working alongside engineers, scientists, and specialists to ensure our outputs are grounded in real-world context and directly support better project outcomes.

We work closely with clients and project teams to understand the problem first, then deliver solutions that are practical, reliable, and fit for purpose.

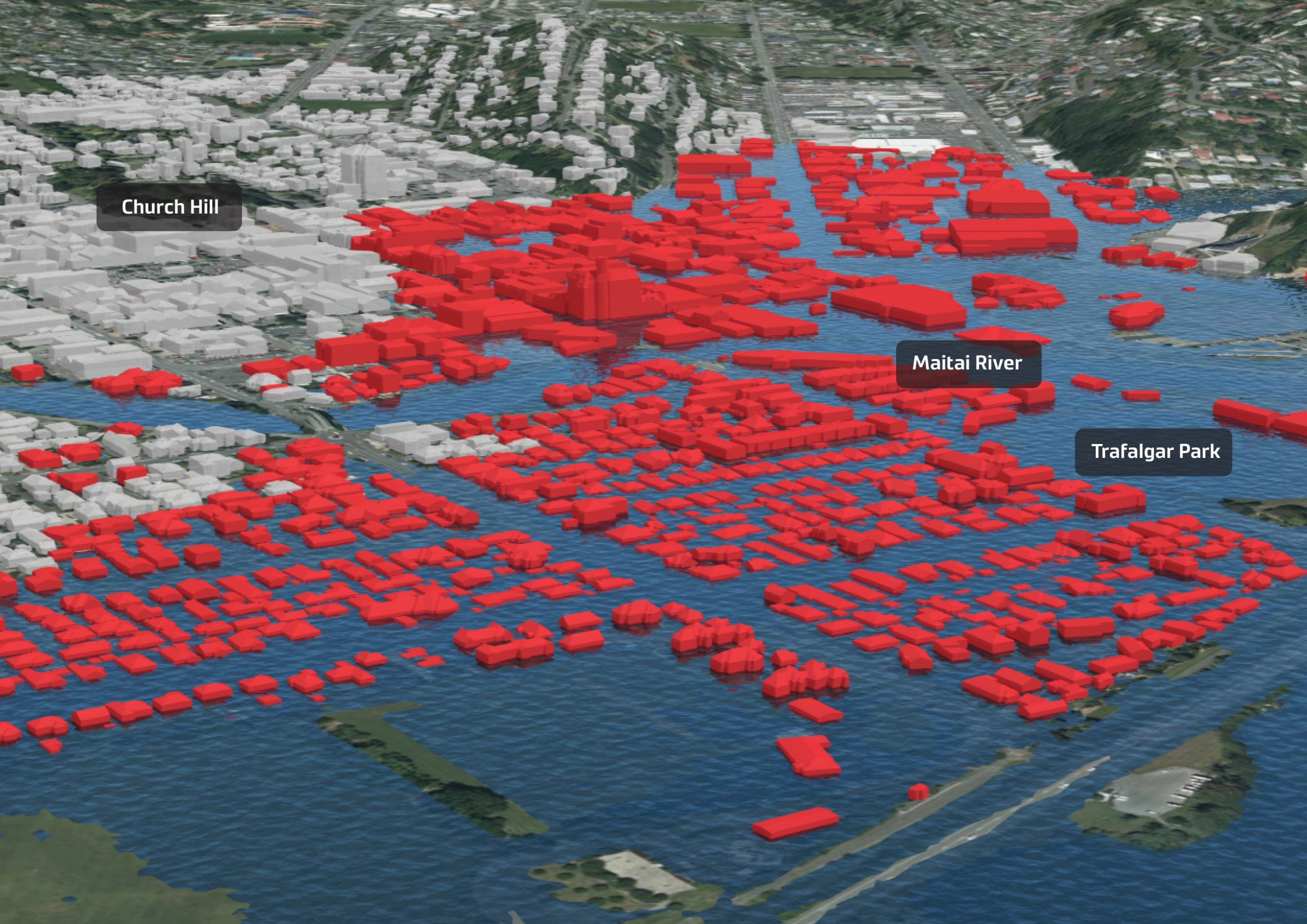
With capability across a wide range of systems and technologies, we are flexible in how we work - integrating data, automating processes, and delivering tools and visualisations that go beyond mapping to support real outcomes.

The examples throughout this showcase are drawn from real projects delivered by our Geospatial Solutions team - demonstrating how geospatial expertise, digital workflows, automation, and multidisciplinary collaboration can be applied to solve complex project challenges and deliver meaningful outcomes.

We thank our clients for allowing selected project imagery and outputs to be shared.

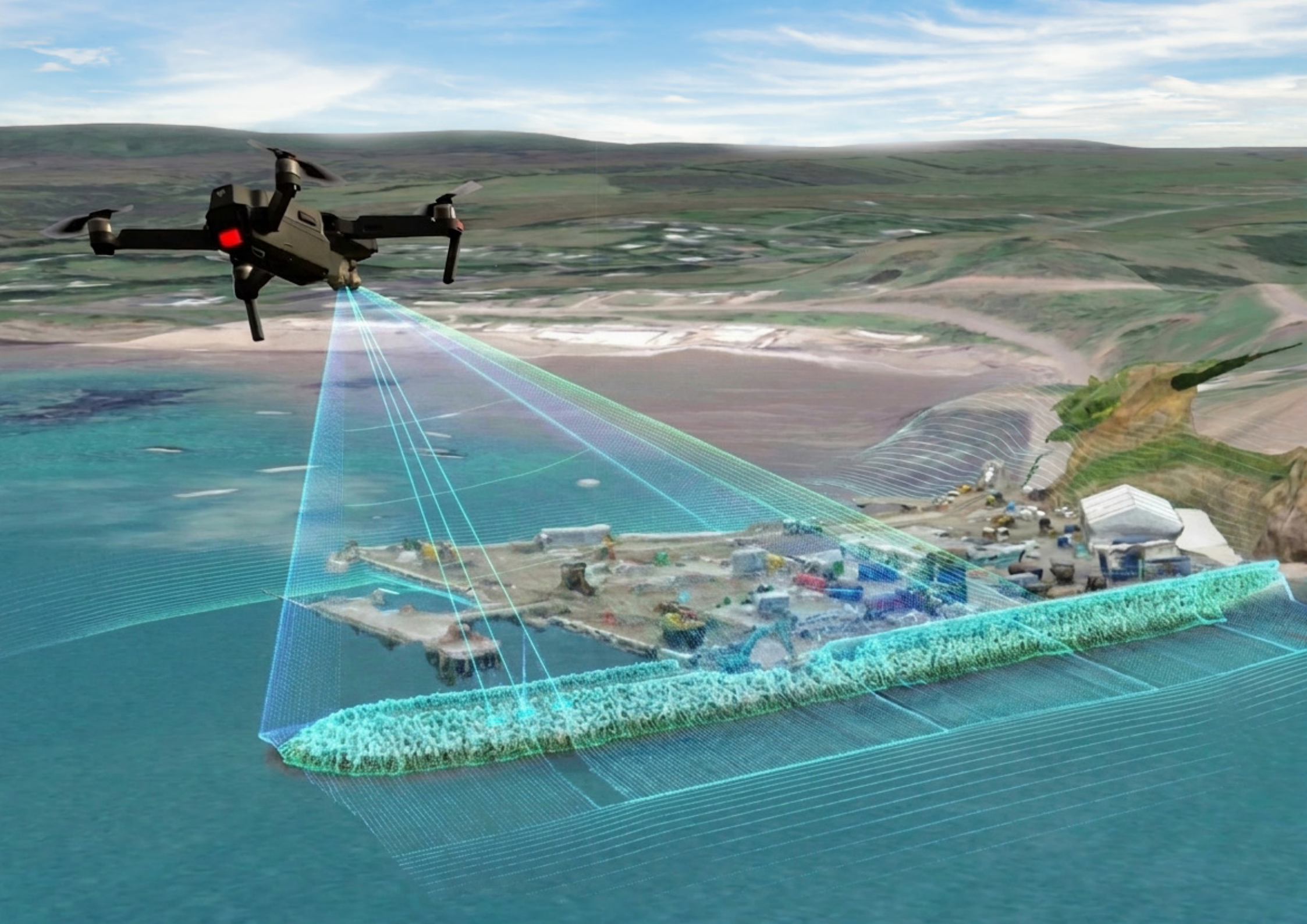
Our focus is simple

Reduce effort, reduce risk, and improve outcomes across the project lifecycle and beyond.



Flood risk brought to life

Award-winning use of 3D flood visualisation to communicate future coastal risk, helping communities and decision-makers clearly understand potential impacts.



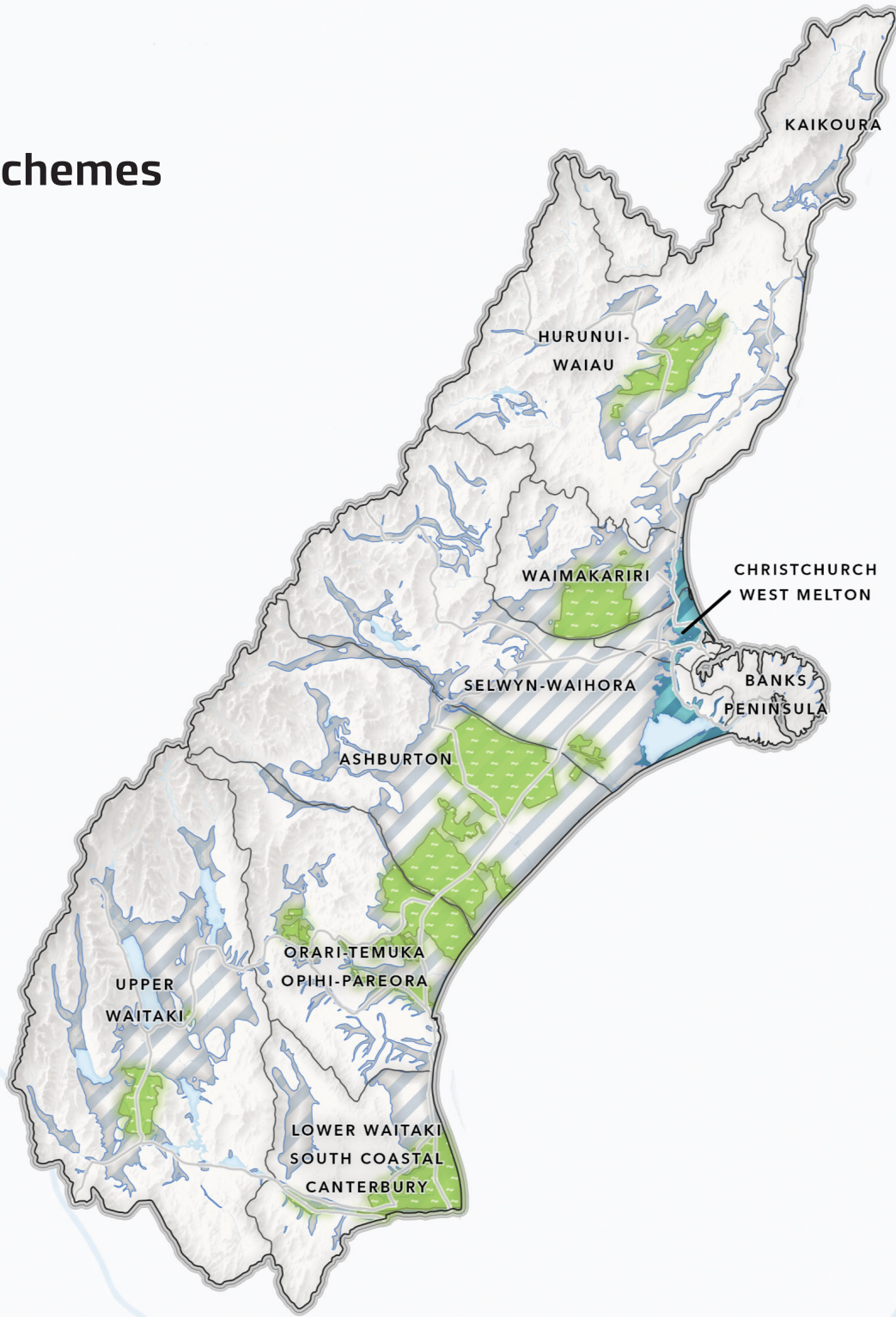
A decade of UAV + photogrammetry expertise

Capturing and processing high-resolution UAV imagery to create detailed 3D point clouds and textured mesh models that support engineering understanding, spatial analysis, and real-world project outcomes.

Canterbury region

Surface water irrigation schemes

-  Coastal confirmed aquifers
-  Unconfirmed or semiconfirmed aquifers
-  Irrigation scheme



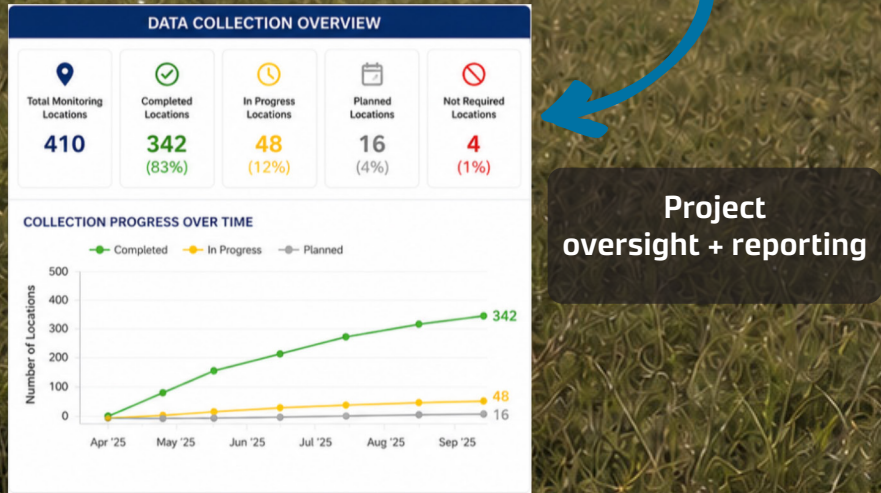
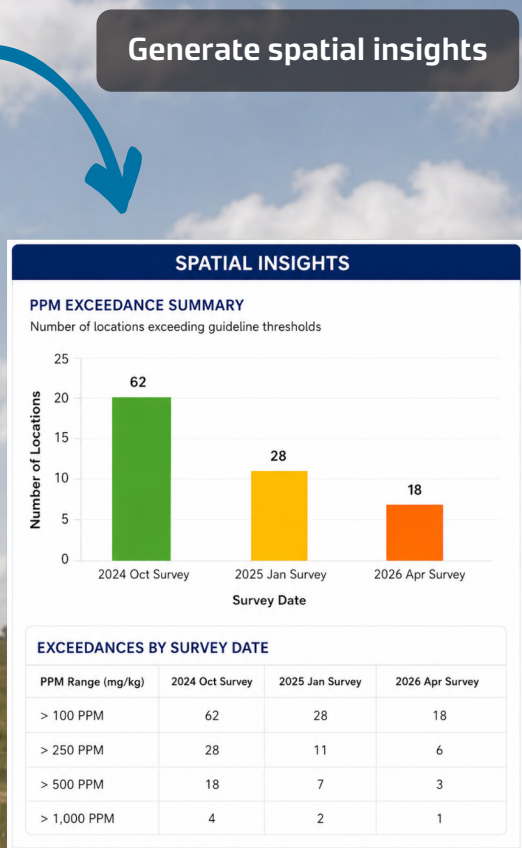
Understanding climate risk

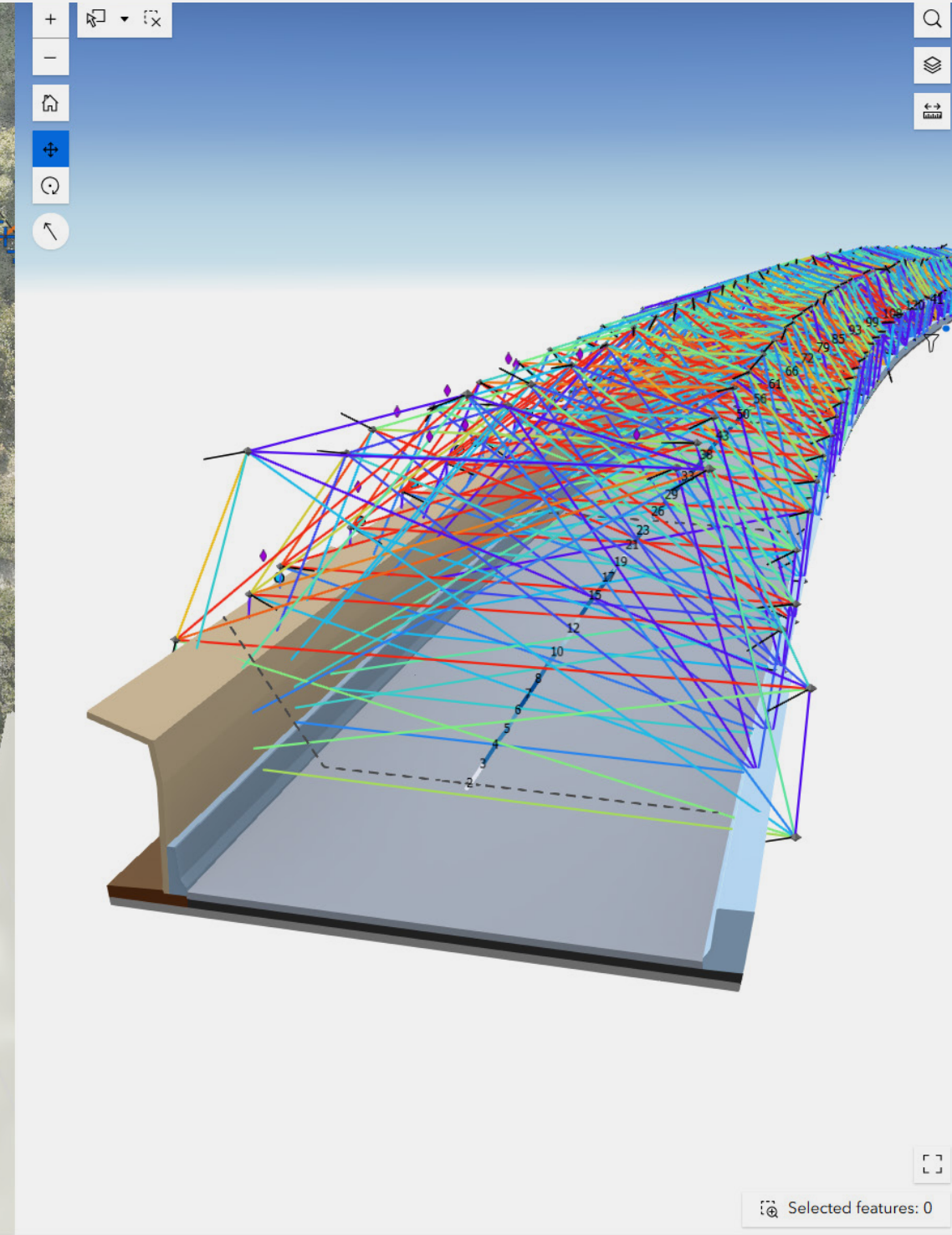
Developing map-based insights that build a clear picture of climate risk across a region - helping decision-makers and communities understand impacts and plan for resilience.



From the field to insights

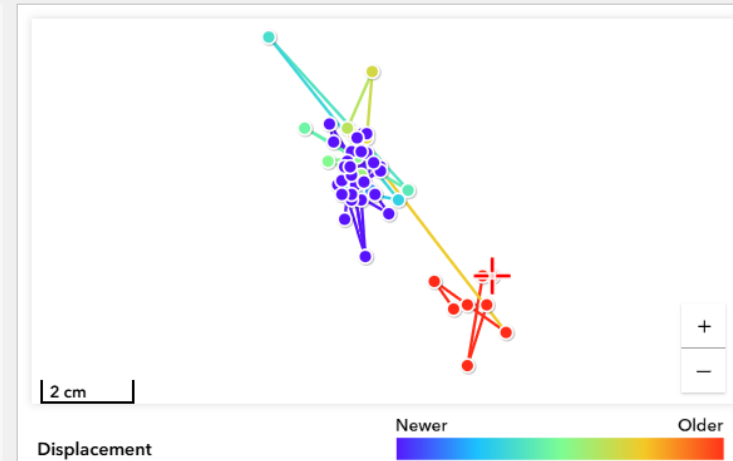
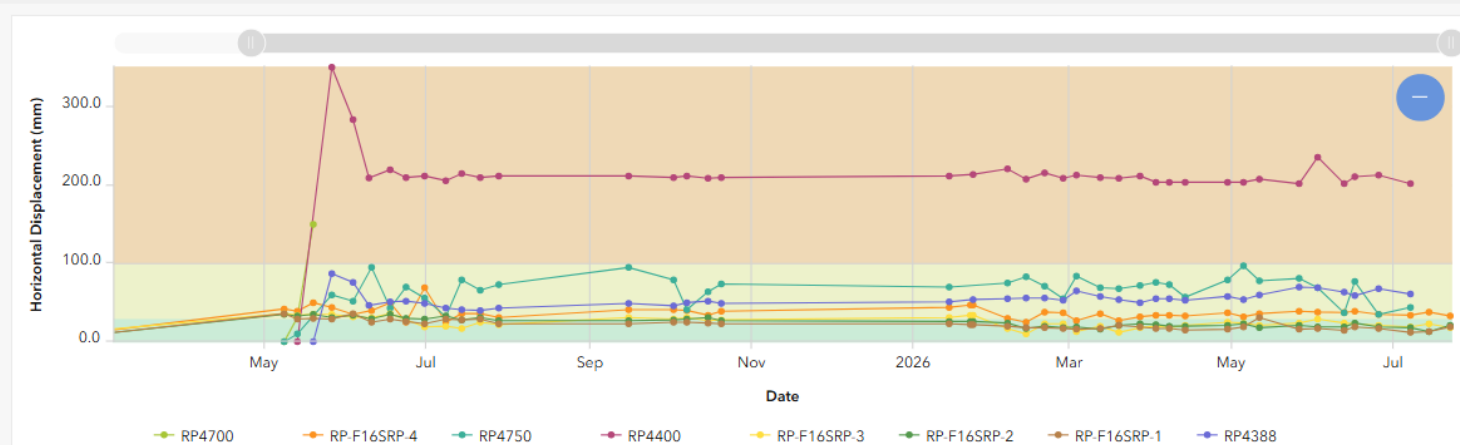
Deploy digital field data capture solutions that bring map-based and form-based workflows together into a single connected system - improving consistency, reducing manual effort, and enabling faster access to reliable project information.





Understanding tunnel behaviour

2D and 3D visualisation of tunnel monitoring data - bringing convergence, cracking, and seepage into a single view to support informed construction decisions.



Monitoring risk in real time

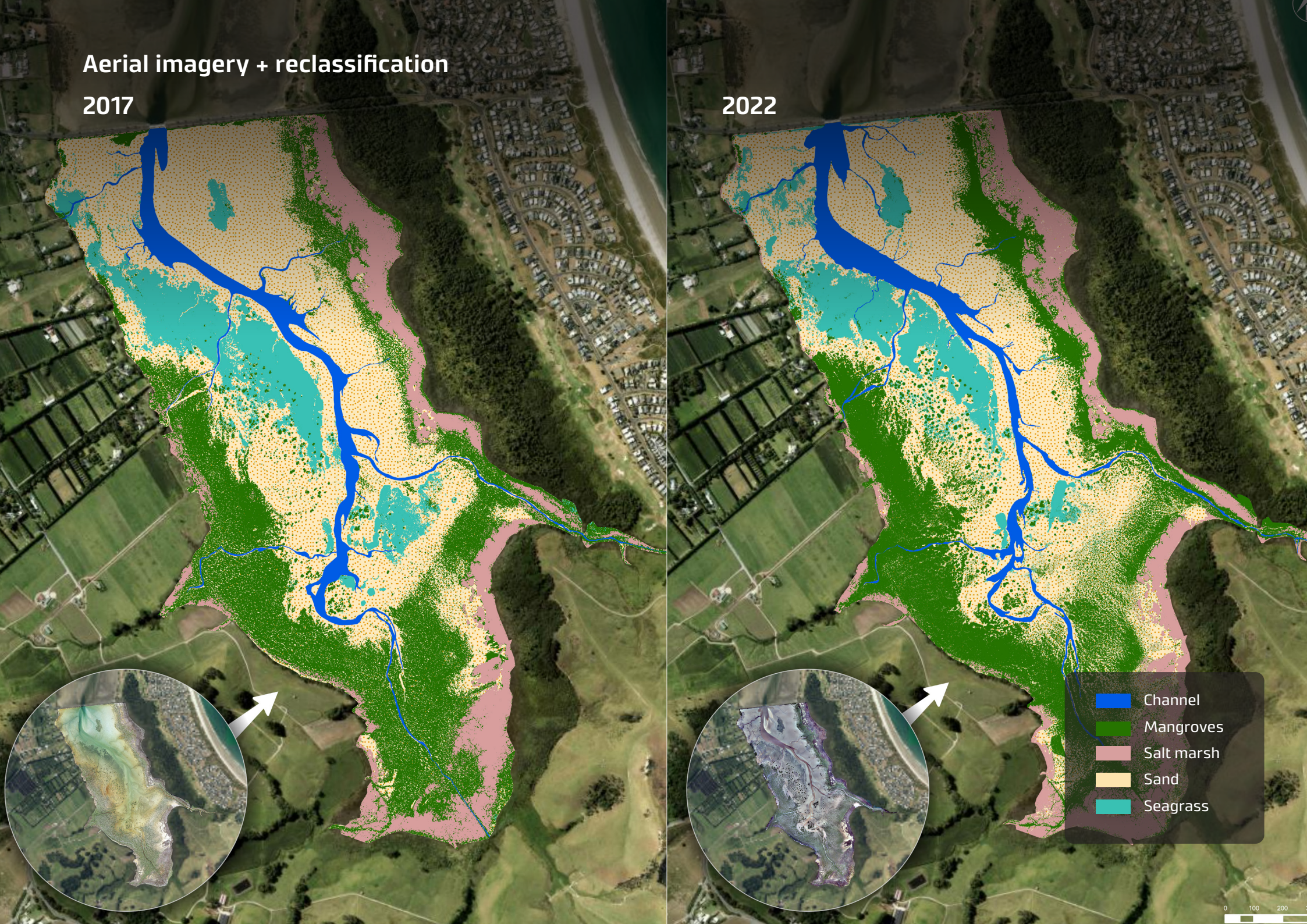
Dynamic visualisation of ground monitoring data - providing clear insight into geotechnical risk and construction compliance, with automated updates and user-driven analysis.

Aerial imagery + reclassification
2017

2022

Mapping marine change

Classifying aerial imagery to map marine habitats - enabling quantification of spatial and temporal change and supporting informed environmental decisions.



Channel
Mangroves
Salt marsh
Sand
Seagrass

Newtown to city is a 3km-long transport corridor that connects the southern suburbs of Wellington to the central city.

There are several significant destinations along this route including Courtenay Place, Pukeahu National War Memorial, Basin Reserve, Wellington College, Wellington East Girls' College, Newtown shopping centre and the Wellington Regional Hospital.

There are bus lanes present between Newtown and the city, along sections of Cambridge Terrace / Kent Terrace, Adelaide Road and Riddiford Street with varying hours of operation.

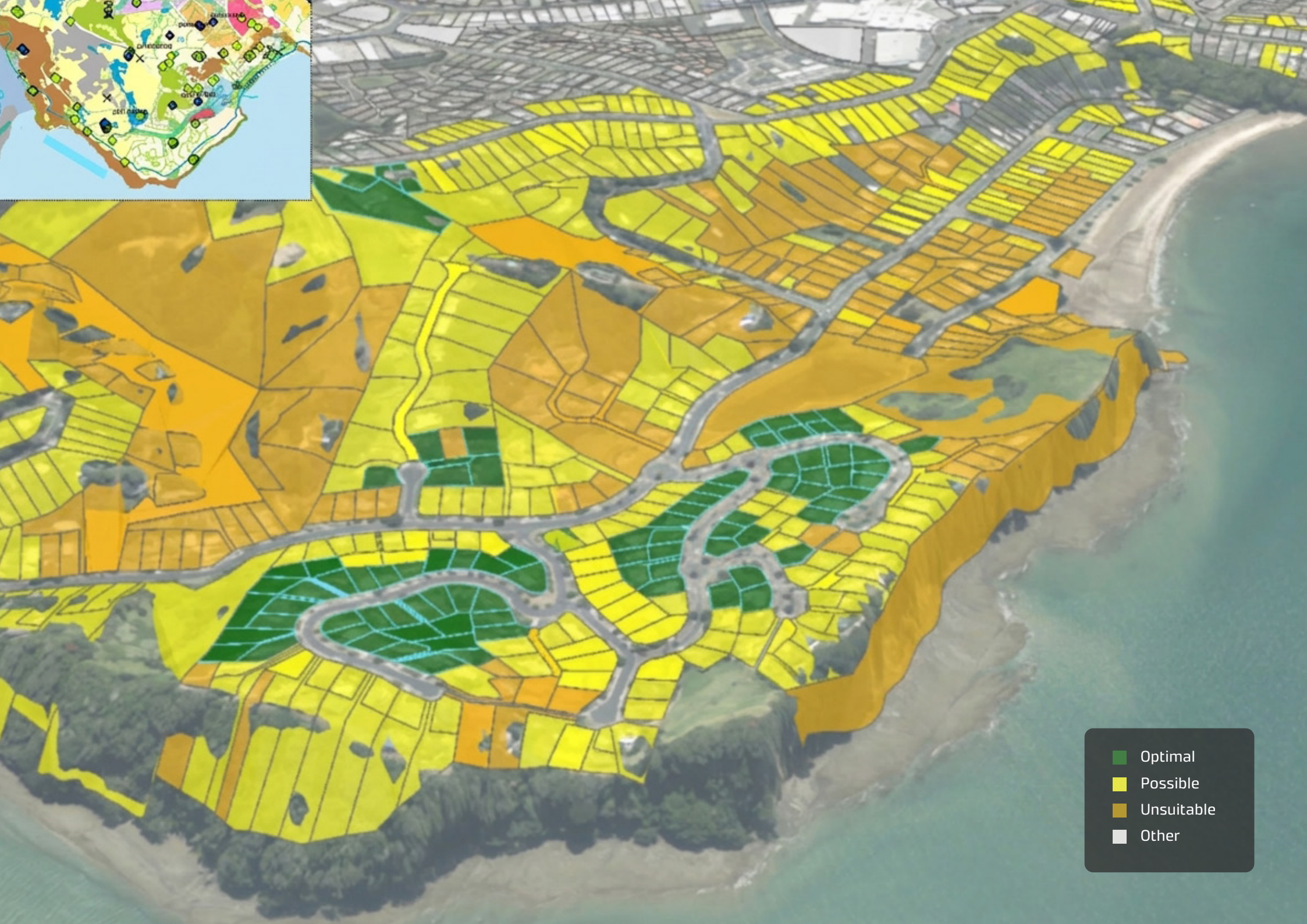
The infographic is divided into two main sections. The top section, with a grey background, shows car usage: 96% for the left group and 49% for the right group. The bottom section, with a teal background, shows bus usage: 4% for the left group and 51% for the right group. Car icons are positioned above the bus icons in each column.

Mode of Transport	Group 1 (Left)	Group 2 (Right)
Car	96%	49%
Bus	4%	51%

People in vehicles

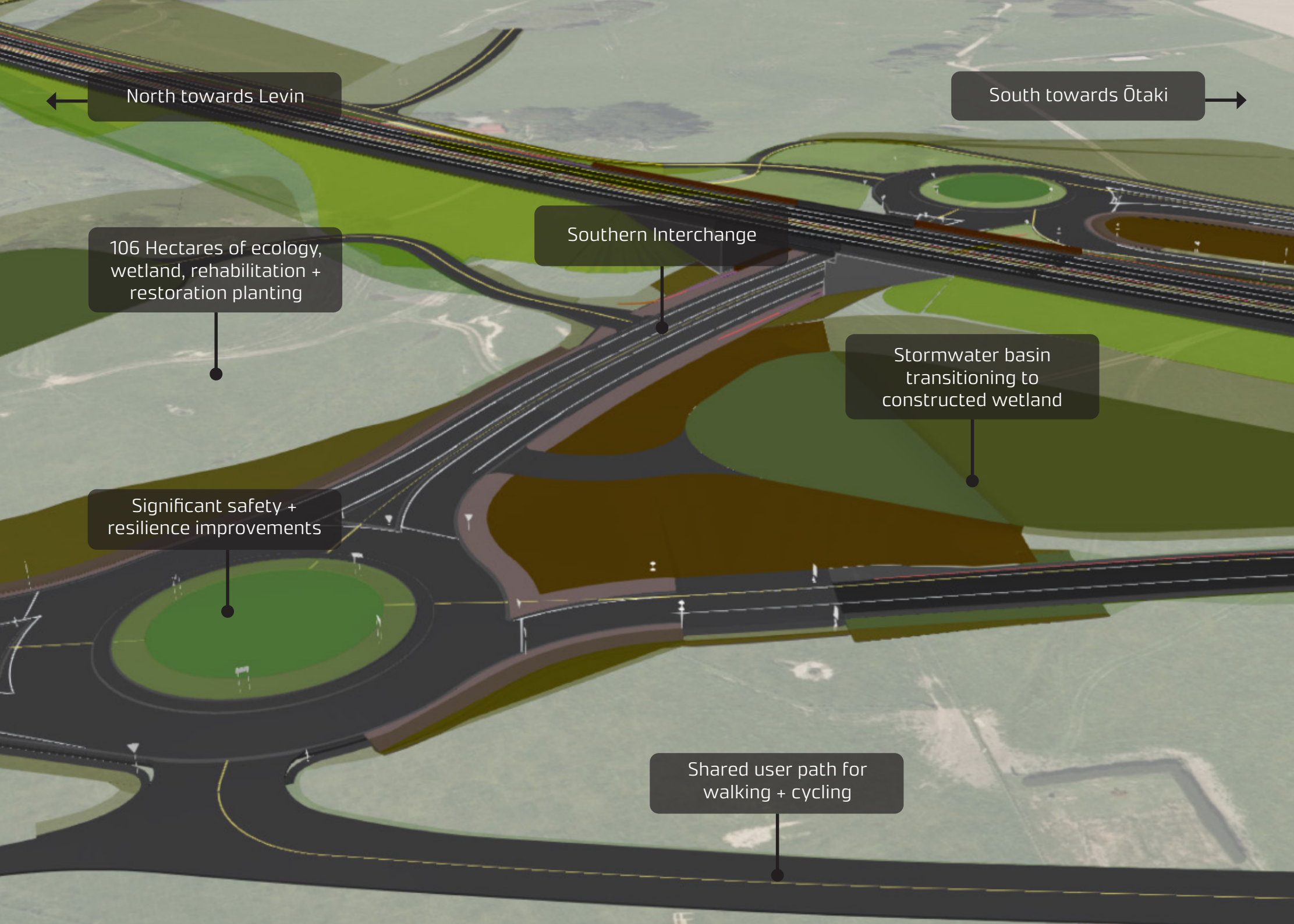


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Informed investment decisions

Identify optimal sites for development with custom spatial analysis - supporting faster, more informed decisions while reducing time and cost.

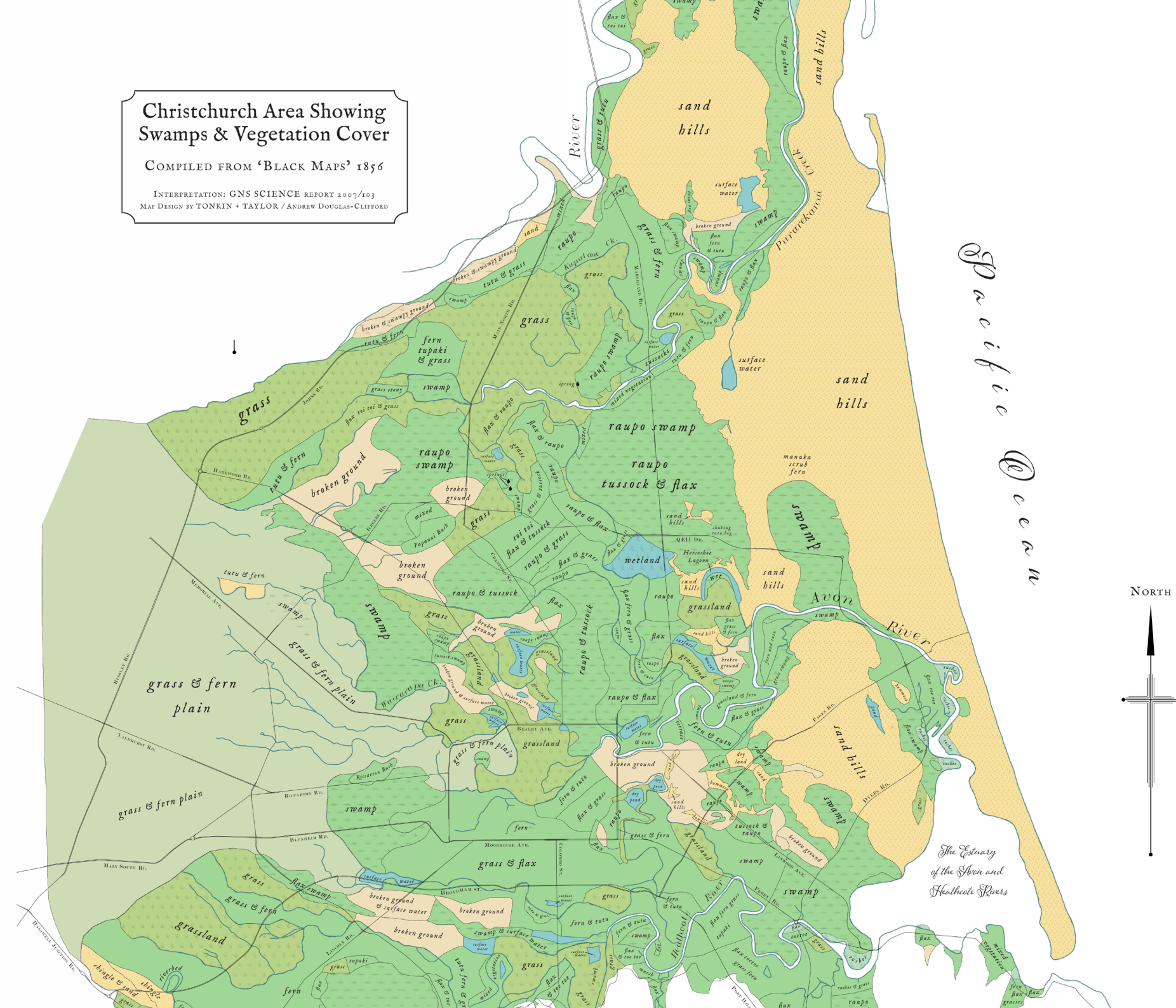


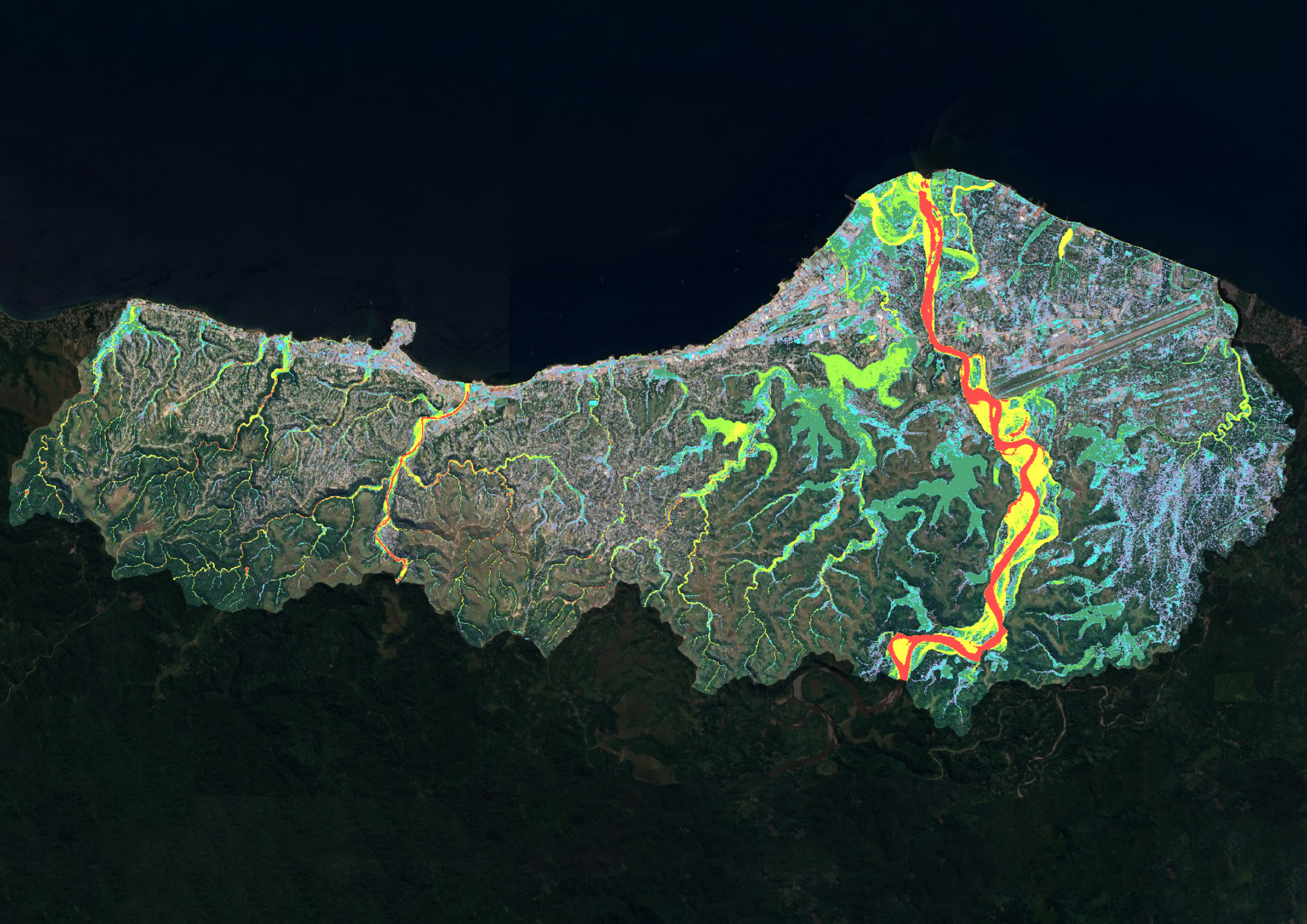
One source of project truth

Centralised geospatial platform transforming and visualising project data - enabling multidisciplinary teams to access, understand, and act on information throughout design and construction.

Transforming a 150-year-old geology map into a modern digital resource - providing accessible insights that inform development decisions and risk awareness.

Transforming a 150-year-old geology map into a modern digital resource - providing accessible insights that inform development decisions and risk awareness.





Strengthening resilience

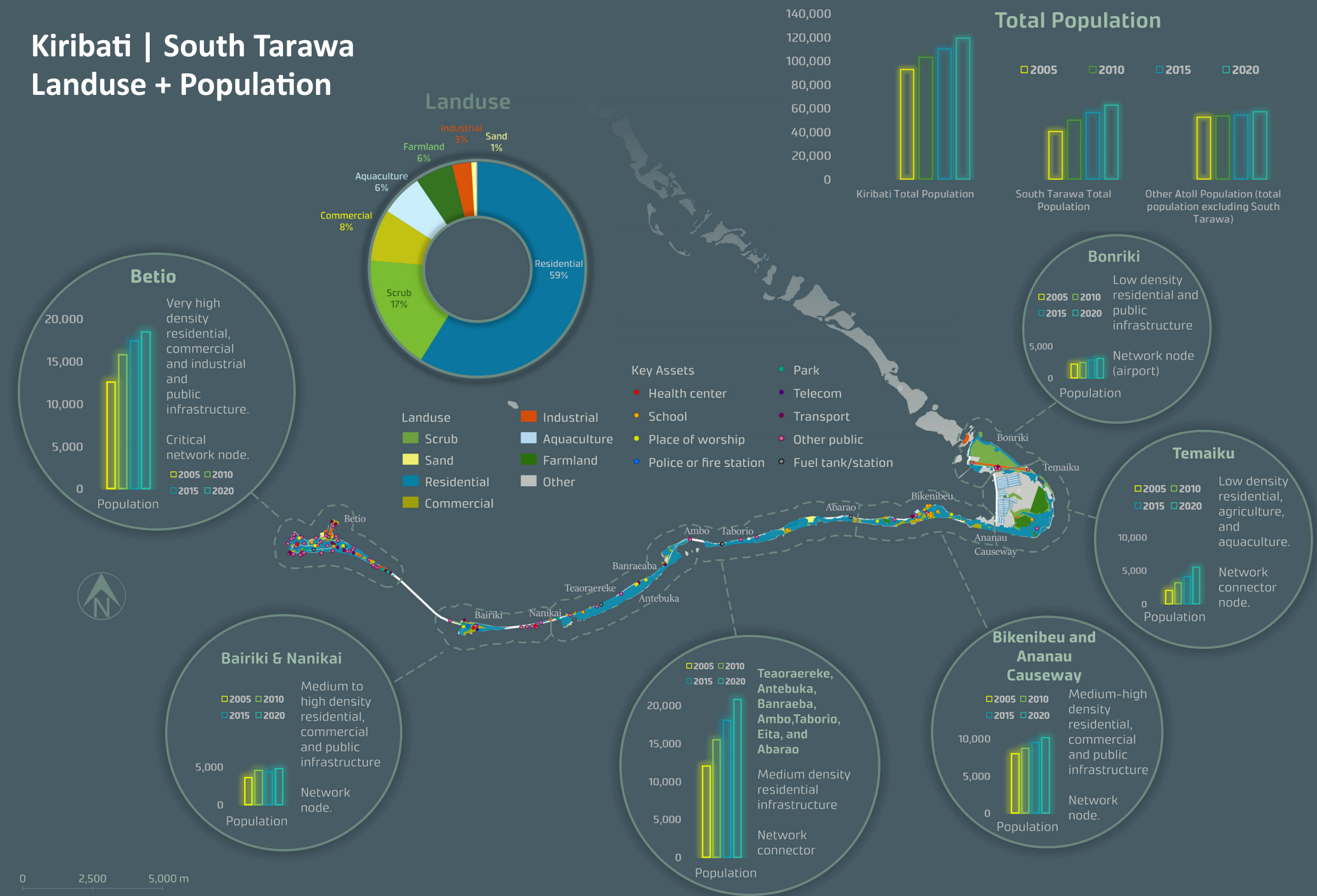
Strategic flood modelling for Greater Honiara - informing land-use planning, emergency response, and investment decisions to strengthen the city's resilience to flooding.



Understanding slope risk

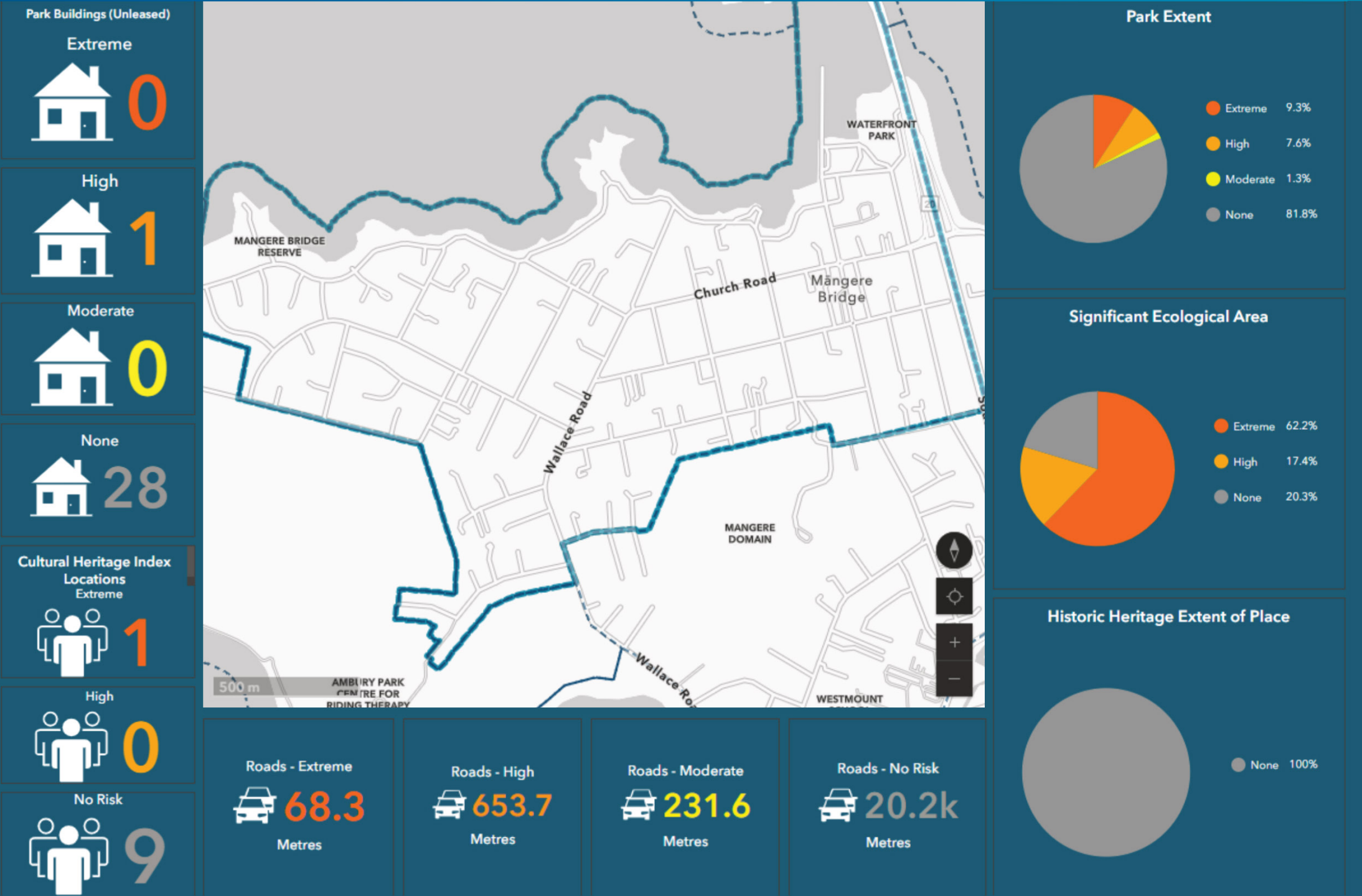
Automated slope setback analysis identifies and quantifies stability hazards- helping teams target investigations and make informed decisions based on site-specific conditions.

Kiribati | South Tarawa
Landuse + Population



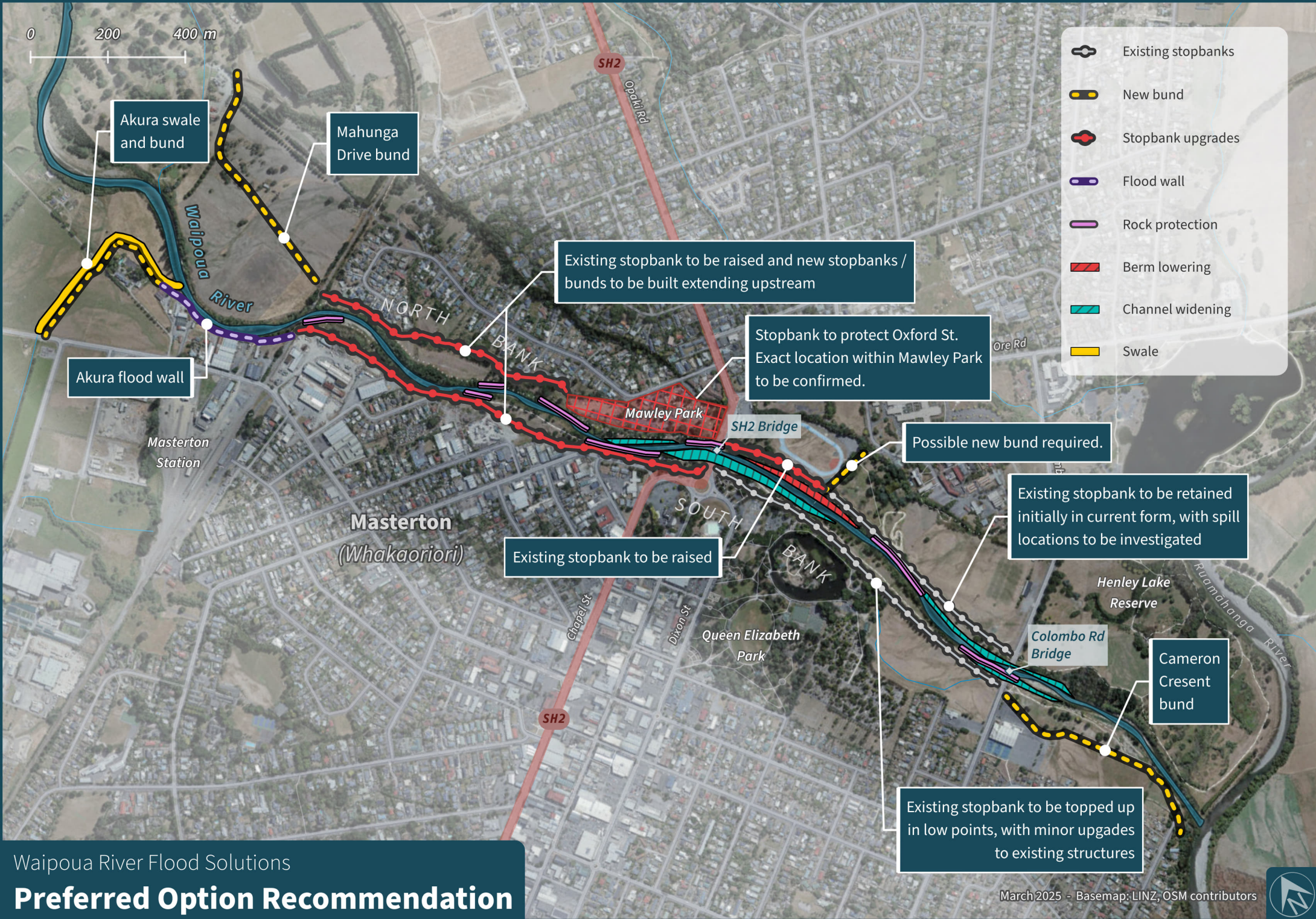
Climate risk
made clear

Visual infographics communicating climate risks and adaptation options - supporting informed planning and meaningful community engagement across Pacific atoll nations.



Prioritising coastal risk

Geospatial risk modelling integrating asset and hazard data - enabling prioritisation of at-risk areas and supporting informed shoreline adaptation planning.



Clear choices for communities

Map-based visualisation of stop-bank upgrade options - supporting transparent consultation and informed decision-making during public engagement.

Ruatoria

Buildings Suitable for Solar Generation

Mean Annual Potential (MWh/yr)

- 5.1 - 20
- 21 - 40
- 41 - 80
- 81 - 120
- 130 - 920
- Unsuitable

Assumes a 21.6% efficiency and performance ratio of 83%, and a total roof productive area greater than 30 sqm



Data: LINZ, Eagle, OSM

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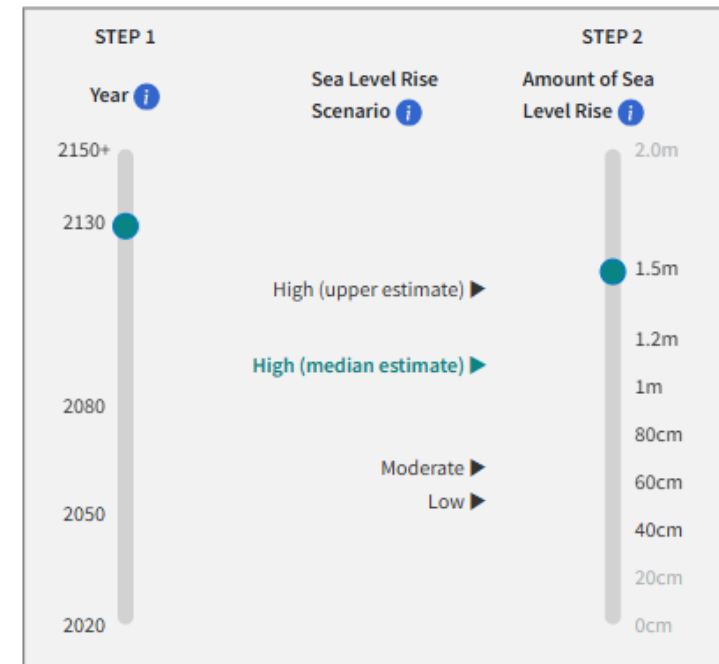
Rooftop solar mapped

LiDAR-based analysis of roof area and aspect - revealing solar potential across communities and supporting informed energy decisions.

This amount of sea level rise could be reached **between 2135 and 2150+**, depending on future greenhouse gas emissions and how the environment responds.

To start viewing the map, select a location from the options below.

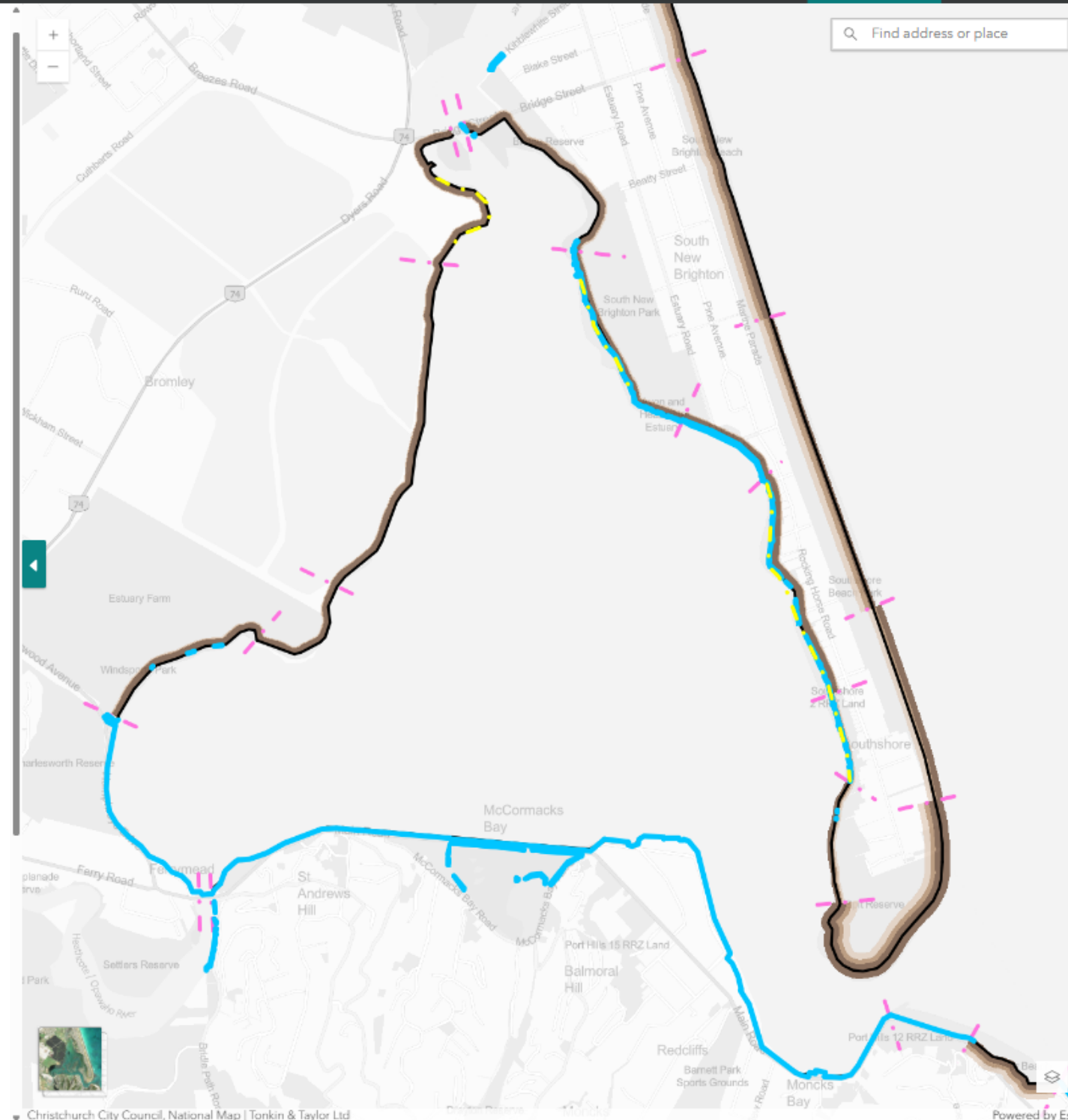
Christchurch Coast  [Show map of areas](#)



Use the sliders to choose the timeframe and sea level rise, which will change the hazards shown on the map.

- Step 1: Use the 'Year' slider to select how far into the future you want to go. This will adjust the arrows to show the range of sea level rise scenarios in that year.
- Step 2: Use the 'Amount of Sea Level Rise' slider to see how the hazards shown on the map change depending on how much sea level rise occurs.

The map to the right shows the chances of land being affected by erosion in future. Whether or not erosion occurs at a particular location is influenced by the four key factors described below.



Coastal risk, made accessible

Interactive web platform presenting coastal hazard information - helping communities and decision-makers understand how risks may change with sea level rise.

Te Ara o Te Ata

WAKA KOTAHI

Mt Messenger Bypass

Data Displayed in this Dashboard is Dated 25th May 2026.

Vegetation Clearance Avoided

Areas within original design not required to be felled

Remaining Vegetation Clearance

Areas within original design that are yet to be felled

Vegetation Clearance Within Original Design

Vegetation Clearance Occurrence

Vegetation Clearance Exceeding Original Design

Vegetation Clearance Occurrence

Original Design refers to the 2017 Original Design Footprint and the Auxiliary Works Area (AWA). **Vegetation Clearance Occurrence:** The spatial delineation of these layers have been digitized from drone captured aerial imagery.

Select a Zone

☐ Zone 1

☐ Zone 10

☐ Zone 2

☐ Zone 3

☐ Zone 4

☐ Zone 5

☐ Zone 6

☐ Zone 7

☐ Zone 8

☐ Zone 9

Reset

Select all

Zone 4

Zone 5

Mokau Rd

Mokau Rd

Mokau Rd

Eagle Technology, Land Information New Zealand, GEBCO, Community maps contributors | Eagle Technology, LINZ, StatsNZ, NI... Powered by Esri

Actual Vegetation Clearance / Original Design

15.8

-----out of-----

46.2

A fraction displaying the area of clearance that has occurred to the area proposed in the original design + AWA (Hectares)

Projected Vegetation Clearance / Original Design

40.1

-----out of-----

46.2

A fraction displaying the area of clearance that is PROJECTED to occur to the area proposed in the original design + AWA (Hectares)

Actual Vegetation Clearance within Original Design + AWA (Ha)

13.5

Area value in hectares, for the vegetation clearance that has occurred spatially within original design + AWA

Projected Vegetation Clearance within Original Design + AWA (Ha)

37.8

Area value in hectares, for the PROJECTED vegetation clearance within the original design + AWA

Vegetation Clearance Exceeding the Original Design + AWA (Ha)

2.3

Area value in hectares, for the vegetation clearance that has occurred spatially outside of the original design + AWA

Remaining Vegetation Clearance (Ha)

24.3

Area value in hectares, for the remaining vegetation clearance based off the original design + AWA

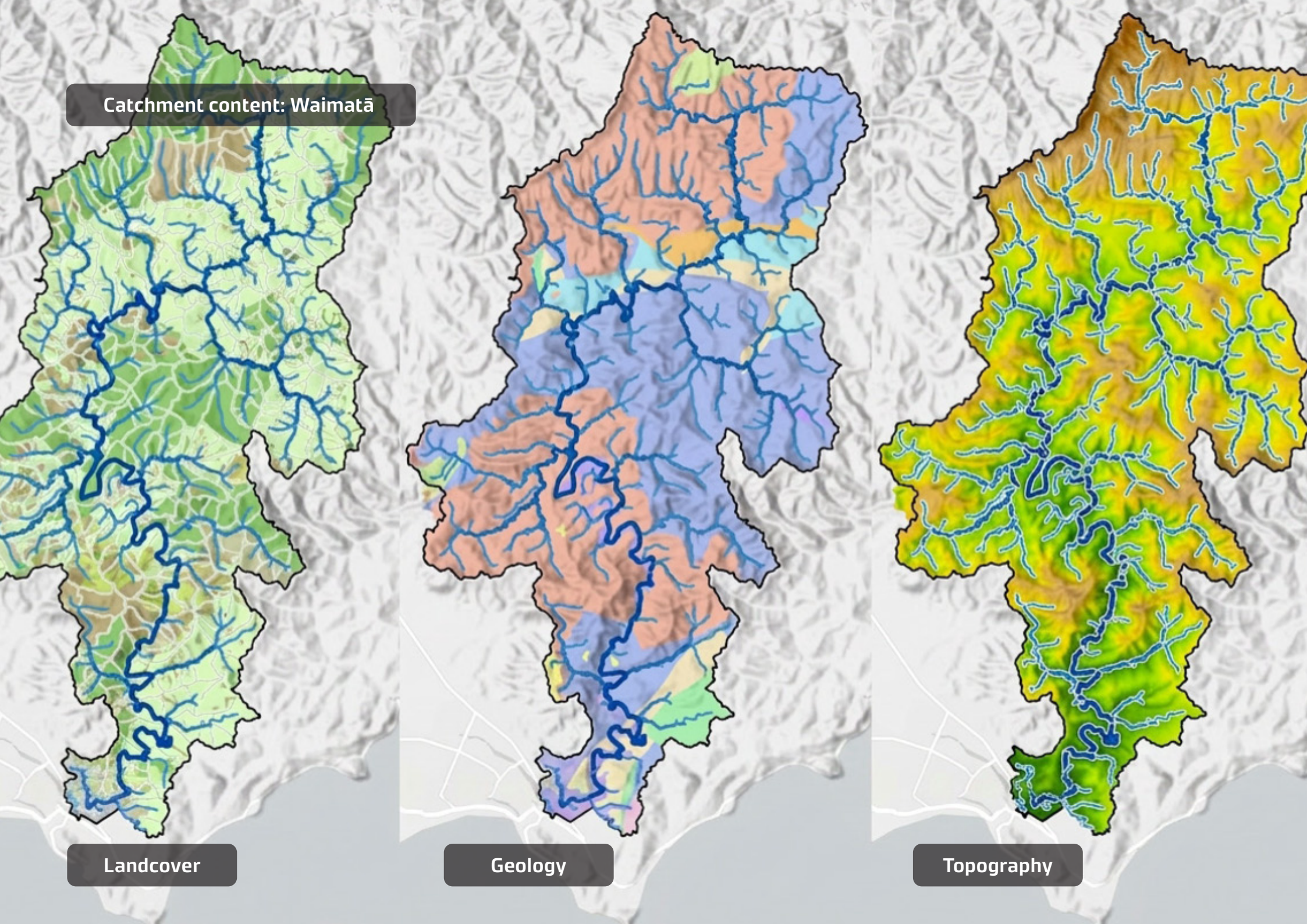
The numbers below summarize the amount of vegetation clearance that has occurred over the project site. These numbers will display by Zone when the zone filter is applied.

Compliance, tracked in real time

Map-based visualisation of stop-bank upgrade options - supporting transparent consultation and informed decision-making during public engagement.

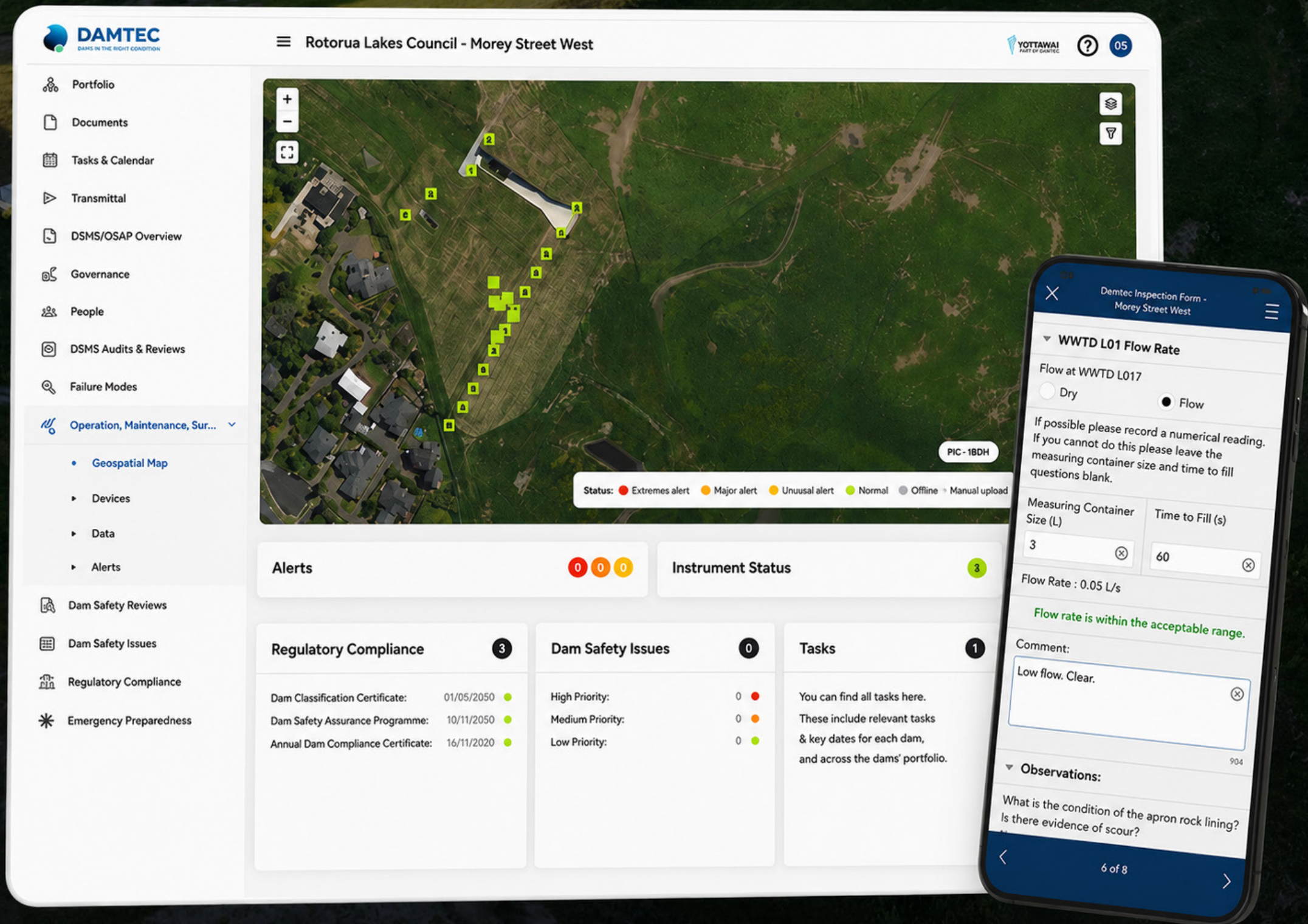
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Modelling nature - based solutions impact

Predicting impacts of catchment-scale interventions with geospatial machine-learning models to identify where nature-based solutions are most effective in reducing erosion and woody debris risks.



Digital tools supporting safer, smarter asset management

Geostationary field capture and visualisation workflows developed as part of the Damtec platform help streamline inspections and improve access to critical dam safety information.



Experience the future before it's built

Combining engineering design, geospatial expertise, and custom development to create an immersive driving simulator that helps communities and stakeholders better understand the project, its benefits, and the future experience it will deliver.

How we support projects

We provide end-to-end geospatial services, supporting projects from early planning through to delivery, operation, and ongoing use. Our approach combines data, technology, and domain knowledge to deliver practical, fit-for-purpose solutions.

This includes:

Field Data Collection - Capture the right data, first time

Structured field data capture workflows that improve data quality, reduce rework, and create a reliable foundation for decision-making.

Spatial Data Analysis

Turn complex data into clear decisions. We uncover patterns, risks, and opportunities - so teams can act faster with confidence.

Imagery + LiDAR - See what others can't

High-resolution spatial data reveals terrain, change, and constraints - enabling better planning and design.

Interactive Maps - Put insights in everyone's hands

Live, interactive maps that allow teams and stakeholders to explore, understand, and act on project data.

Maps + Data Communication - Make complexity easy to understand

Clear, visual outputs that align teams, support engagement, and drive better decisions.

GeoBIM + 3D Scenes - Visualise the project before it's built

Integrated GIS and BIM models provide spatial context for planning, coordination, and risk reduction.

Data + Systems Support - Make your data work harder

Integrated systems and automated workflows that improve efficiency, consistency, and reliability.

Contact us

To find out more about how we can help you, **contact us at:**

geospatialsolutions@tonkintaylor.co.nz

Or visit our website
by scanning the QR code below:





Together we create + sustain a better world

www.tonkintaylor.com