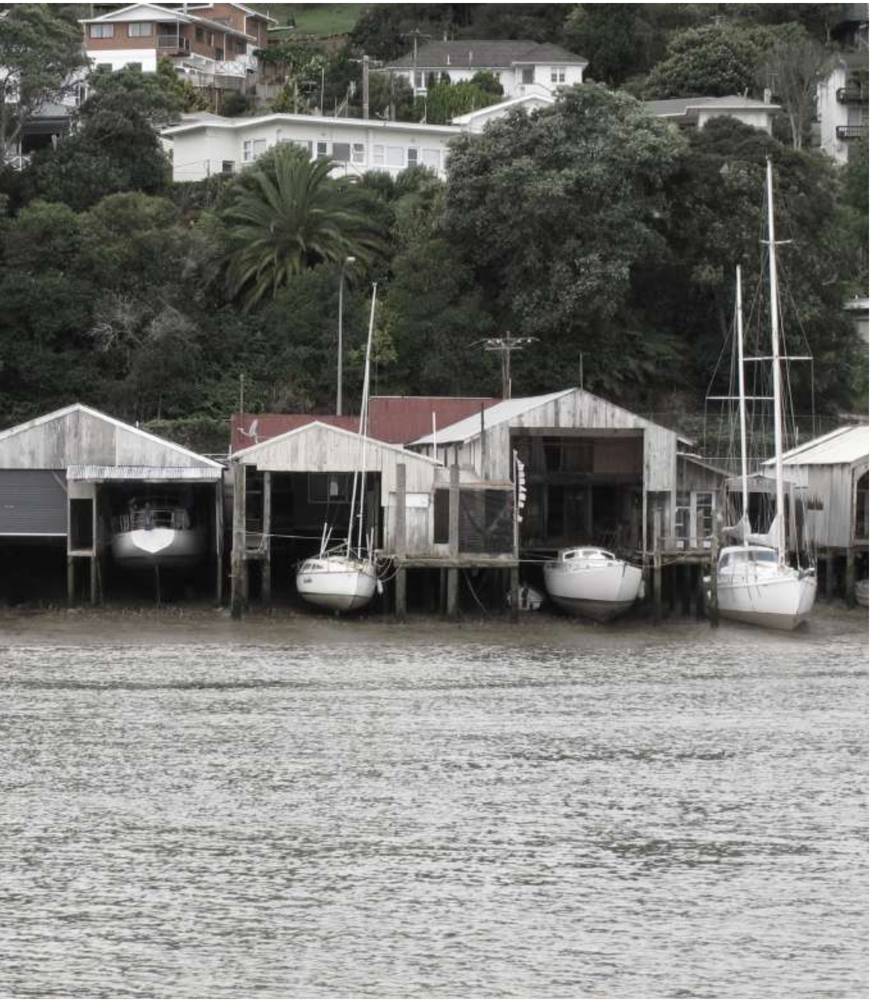
HĪHĪAUA PENINSULA MASTERPLAN | RESEARCH REPORT

FOR MOMENTUM NORTH COMMUNITY GROUP

PREPARED BY
SIANNE SMITH / VIGNESH KRISH / SHARON ECCLESHALL / ALEESHA KUMAR / SHIBING LI



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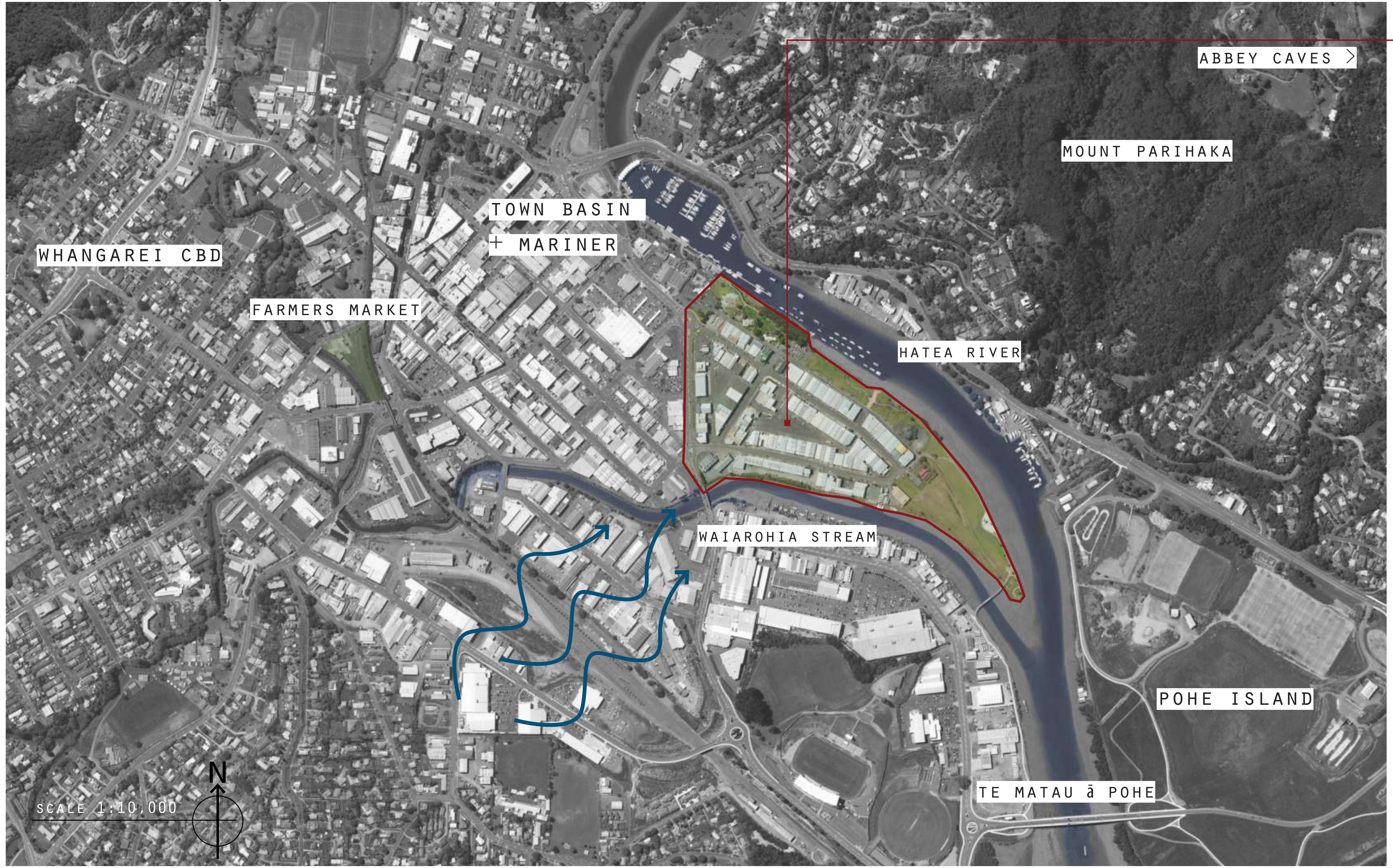


HĪHĪAUA PENINSULA, WHANGAREI [-35.727, 174.327]

- Approximately 16.5 hectares. Enclosed by Reyburn St (W), Hatea River (NE) and Waiarohia Stream (S)
- Temperate, humid climate with an average annual temperature 15.7°C.
- Average rainfall 1400 (coast)-1700mm (inland). Wettest months are June-August (33% of total rainfall expected), driest months are November to January (17% of total rainfall expected).
- Predominant wind from the SW, but one of the least windy areas of Northland.

PUKENUI FOREST

Located W of Hihiaua and visible from many areas on the site.

'Whangarei's lungs': Source of 50-60% of resident's water.

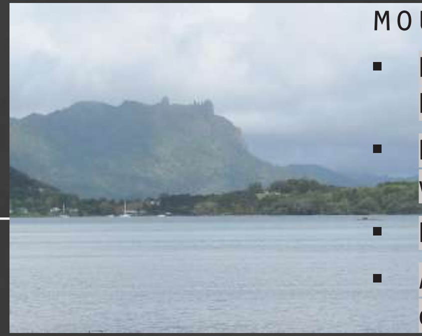
High conservation, historic and cultural value.

MOUNT PARIHAKA

- Located to the NE of Hihīaua. A scenic reserve and volcanic cone, 241m high.
- War memorial and lookout point at the top that can be reached by car or multiple bush trails. Panoramic views of Whangarei and the site from the summit. Key viewshaft from Hihīaua. Long history of maori settlement and war.

WHANGAREI HARBOUR

- Stretches 23km NW from the end of the Hatea River to Whangarei Heads.
- Houses two marine reserves.
- Heavily tidal, with a range of 2m. At low tide a large portion of the harbour becomes exposed mud flats and sand bars.



MOUNT MANAIA

- Located ~30km N / NE of the site, but not visible from Hihīaua Peninsula.
- Dominant landmark of Northland, 420m tall with panoramic views in all directions from the summit.
- Dept. of Conservation reserve, covered in native bush.
- Area home to a rekindling kiwi population thanks to ongoing efforts by Backyard Kiwi.

MARSDEN POINT

- Home to NZ's only oil refinery located at the entrance to Whangarei Harbour, opened 1964.
- Location of a significant deep-water cargo port, the closest to most of NZ's international markets.
- Identified as a 'growth node' with a potential population of 40,000

INTERESTED PARTIES IN HĪHĪAUA PRECINCT DEVELOPMENT

- Stakeholders | Momentum North group - Current residents - Local businesses - Surrounding district - Council - Maori reps

AIMS:

- Turn Hihiaua Precinct into a nucleus of Māori culture by using its significant cultural history as the driver of our proposal
- Create a rhythmic inter-relationship of "Work, Play, Live, Learn and Visit" in the masterplan for Hīhīaua
- Emphasis on wā kāinga (home base + true home) "arising from a village"
- Integrate the essence of Papatūānuku (Earth mother – of which all living things originate from) into the design
- Incorporate traditional Māori motifs of a conceptual nature in design and intent
- Use a "no fences" approach to unite community
- Create developments which are beneficial to the current residents and complementary to their vision
- Merge charter schools, local businesses and residents to generate a community-orientated precinct
- Establish a district that complements Whangarei CBD and thus contributes to the region's economic growth
- Initiate engagement strategies to link Hīhīaua Peninsula to Whangarei's points of interest
- Enhance teachings of Tikanga Maori traditional arts and sharing of cultural traditions

OPPORTUNITIES:

- As Hīhīaua cultural centre will feature traditional Maori art + methods, Hīhīaua Precinct could also enhance the teaching of Tikanga Maori traditional arts and sharing of cultural traditions
- Using the history of Hīhīaua Peninsula to establish the area as the "gateway to Whangarei"
- Initiate engagement strategies to provide Hīhīaua Precinct links to Whangarei points of Interest
- Establish a district that complements Whangarei CBD; thus, contribute to the region's economic growth
- Continue and expand foremost artificial wetlands and introduce reef filtration systems

PROBLEMS:

- Lack of cultural identity and social diversity in Hihiaua Precinct
- Absence of wakas and historic Maori river racing on Hatea River
- Misconceptions of Whangarei being disreputable hindering economic growth
- Access and connectivity to Hihiaua Precinct under developed
- Council intervention into the site might provide hedonistic solutions that do not benefit the interested parties
- Undeveloped sprawl of foremost artificial wetlands/ filtration systems
- Quality of water still substandard, but progressively improving to its previous state
- Ecological corridors and biodiversity not up to full potential
- Provide ecological corridors to expand the biodiversity of the area and increase interspecies inhabitants in the region.

"The key objective of the Te Aranga Principles is to enhance the protection, reinstatement, development and articulation of mana whenua cultural landscapes enabling all of us (mana whenua, mataawaka, tauiwi and manuhiri) to connect to and deepen our 'sense of place'." - Auckland Design Manual, *Guidance for Te Aranga Principles*, http://www.aucklanddesignmanual.co.nz/design-thinking/maori-design/te_aranga_principles#/design-thinking/maori-design/te_aranga_principles/guidance/about/description

1. MANA

Status of Iwi as mana whenua (authority over land and natural resources) is respected - mana whenua interests considered + respected (to empower, enable and connect the community).

*The Resource Management Act 1991 requires the Council take into account the principles of Te Tiriti O Waitangi when exercising it's resource management functions and powers.

2. WHAKAPAPA

Māori names are celebrated – recognises the significance of mana whenua ancestral names – by design process informed by tradition (to increase sense of place and wai kanga)

3. TAIAO

Natural environment is protected, restored / enhanced by resilient design and embracing the natural environment to restablish local biodiversity

4. MAURI TU

Environmental health is protected / maintained by utilising resilient design and green structures

5. MAHI TOI

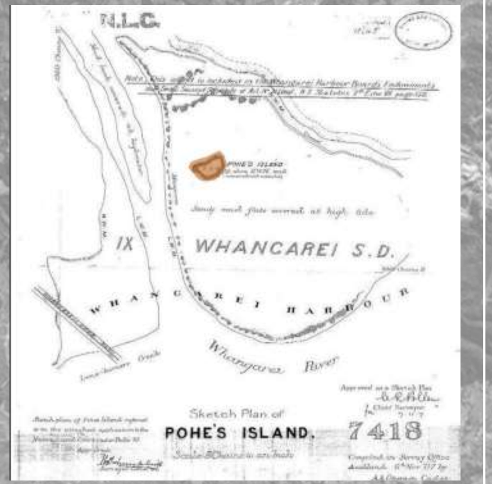
Iwi narratives and creatively rein scribed into design environment by working with mana whenua to ensure professionals and artists are appropriately engaged

6. TOHU

Mana whenua significant sites and cultural landmarks are acknowledged by visual connections

7. AHI KĀ

Iwi have a living and enduring presence and are valued within their rohe - joint developments which enhance relationships within the fabric of the community.



POHE ISLAND

- In 1907 Pohe's Island (orange) was a small island, 2ft above sealevel, surrounded by mangroves + sandy mudflats that would be covered at high tide
- Correct name is Te Matau ā Pohe (the Hook of Pohe)
- Crucial kai moana gathering area
- Believed the ancestors of the present day Pohe whānau made fishing hooks on the island
- From 1964 site used for refuse disposal (as a landfill). This was considered a means to raise the ground level above flood height

HĪHĪAUA PENINSULA

NORTHLAND

- Maui's Fish. Maui used his grandmothers magical jawbone, catching an enormous fish-hauling it to surface. As he went to fetch the village, his greedy brothers hacked the fish up for themselves, hewing off great chunks. This is how the North Island got its terrain.

MOUNT MANAIA

- Manaia is a mythical monster, half bird + fish and also a local maori chief.
- The five rock formations represent five people who are running across the mountain top; Chief Manaia, his wife, two children and Hautatu. All were turned to stone, struck by lightning by the god of weather; Tawhirimatea.

MOUNT PARIHAKA

- Location of a historic pa site
- Named for the fearsome haka performed on the pari (battlements) before a Maori war that ended in many lives being lost.

WHANGAREI HARBOUR

- Whangarei-te-rerenga-parāoa, "the place where whales gather".
- Literal gathering place of whales, where whales gather to feed during summer.
- Paraoa – Maori name for sperm whale, symbolically representative of persons of chiefly status.
- Gathering place of chiefs; often chiefs of Ngpahui met in Whangarei to mobilise their war parties.

MATARIKI

- Used by crews of voyaging wakas to guide across the pacific (Tohunga Kokoranga- expert astronomers).

TARANGA + MAROTIRI ISLANDS

- Sighted in 1769 by Captain James Cook, the European name (Hen + Chicks) is thought to have been inspired by the star cluster know as the Pleiades (Matariki).

SCALE 1:24,000

N

1000AD 1100AD 1200AD 1600s 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940

c.950AD
Kupe is the first to see Whangarei on his way back to Hawaiiki

1000
Migration of Ngapuhi Iwi into Whangarei

1200
Archaeological research suggests first settlers

1700
Whangarei occupied by several subtribes of Ngapuhi

1800
Whaling base + most urbanised area of Northland

1820
Attacked by Waikato during the Musket Wars

1839
First european settler – William Carruth settled into Te Ahipupurangi (town basin) Early settlers and local Maori were friendly (Treaty of Waitangi signed to confirm partnership between Maori and Non- Maori)

1840
Whangarei timber milling site

1842
All settlers farms plundered in revenge for transgressions of Tapu

1846
Ngapuhi fought against the British crown after the dissatisfaction about the treaty and increase of British control in their affairs

1855
Whangarei becomes small town driven by Kauri Gum Trade

1860
42% of Tribal Land lost

1864
Nucleus of present city established

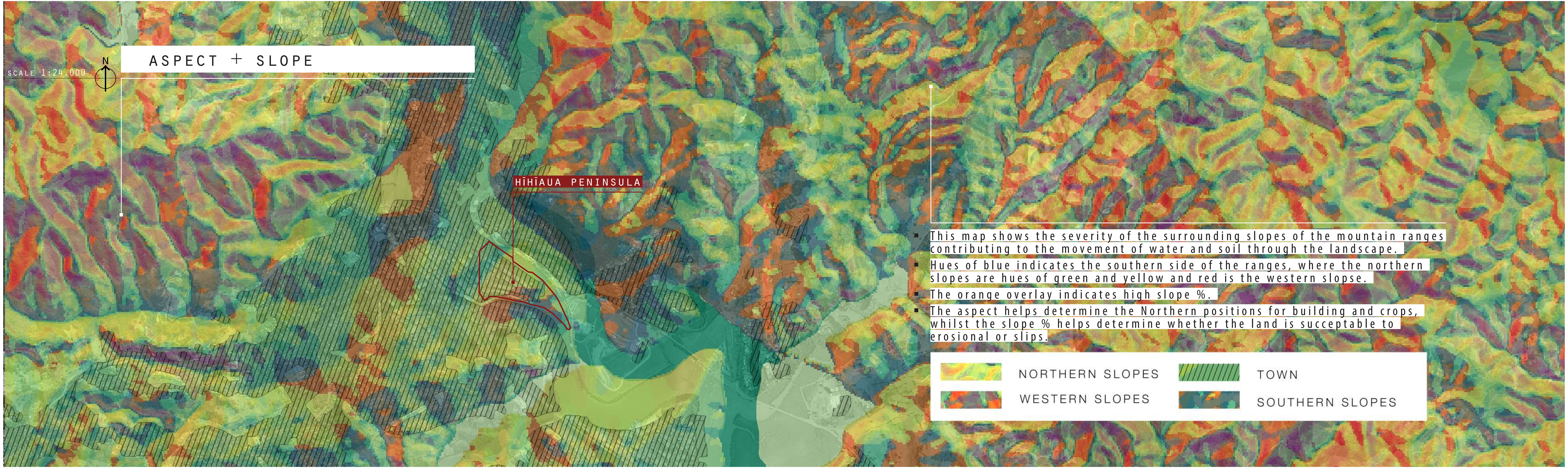
1875
Trading post re-emegered on the southern bank of Hatea River (town basin)

1900
Whangarei becomes bi-cultural settlement mainly from Great Britain

1925
Shipping main transport link until North Auckland railway line reached the town

1929
5% of land in Maori hands

1934
Auckland road suitable for travel from Whangarei


ASPECT + SLOPE
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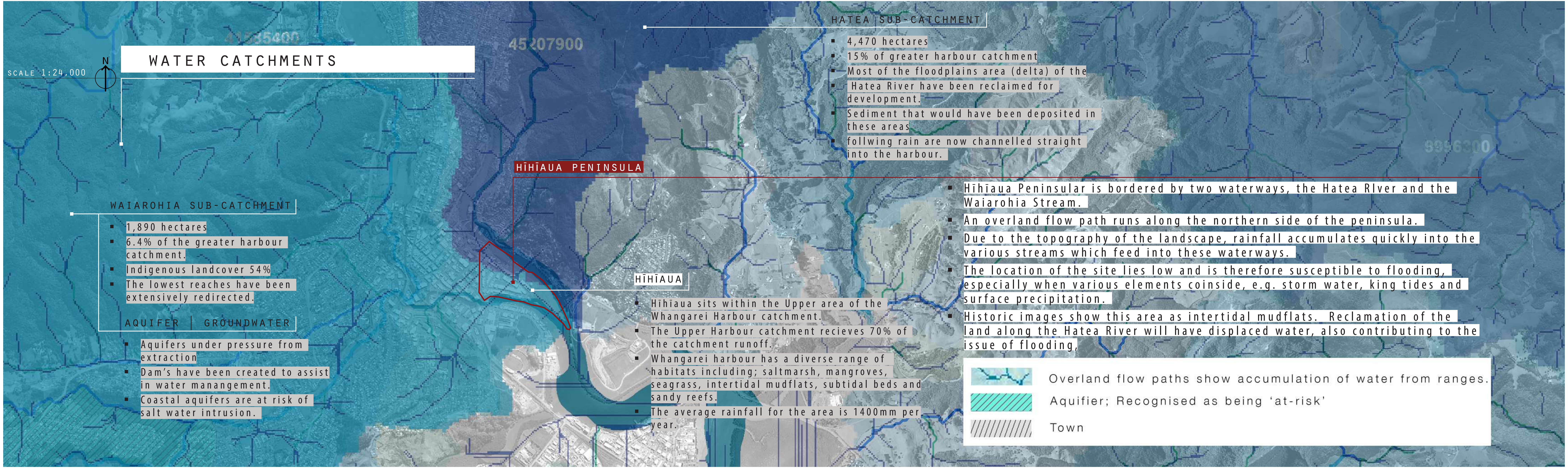
HĪHĪAUA PENINSULA
- This map shows the severity of the surrounding slopes of the mountain ranges contributing to the movement of water and soil through the landscape.
- Hues of blue indicates the southern side of the ranges, where the northern slopes are hues of green and yellow and red is the western slopse.
- The orange overlay indicates high slope %.
- The aspect helps determine the Northern positions for building and crops, whilst the slope % helps determine whether the land is succeptable to erosional or slips.
NORTHERN SLOPES
TOWN
WESTERN SLOPES
SOUTHERN SLOPES

LAND COVER

- This map of land cover for the Whangarei district shows the various types of land cover which help create habitat diversity, promoting a high level of biodiversity.
- Grasslands (which includes open space and pasture) and the town footprint are the predominant land cover.
- These land cover types are the leading causes of erosion, sediment movement and habitat fragmentation which threaten the biodiversity of the area.
- The Whangarei Growth Strategy states that 25% of land use consents were granted within the North Island brown kiwi habitat (1996-2009).

SOURCE: http://www.epa.govt.nz/resource-management/NSP000033/NSP000033_NSP000033_BoD_Volume_2_10_Whangarei_District_Growth_Strategy_Implementation_Plan.pdf



WATER CATCHMENTS

HATEA SUB-CATCHMENT

- 4,470 hectares
- 15% of greater harbour catchment
- Most of the floodplains area (delta) of the Hatea River have been reclaimed for development.
- Sediment that would have been deposited in these areas
- follwing rain are now channelled straight into the harbour.

HĪHĪAUA PENINSULA

- Hihīaua Peninsular is bordered by two waterways, the Hatea RIver and the Waiarohia Stream.
- An overland flow path runs along the northern side of the peninsula.
- Due to the topography of the landscape, rainfall accumulates quickly into the various streams which feed into these waterways.
- The location of the site lies low and is therefore susceptible to flooding, especially when various elements coinside, e.g. storm water, king tides and surface precipitation.
- Historic images show this area as intertidal mudflats. Reclamation of the land along the Hatea River will have displaced water, also contributing to the issue of flooding.

WAIAROHIA SUB-CATCHMENT

- 1,890 hectares
- 6.4% of the greater harbour catchment.
- Indigenous landcover 54%
- The lowest reaches have been extensively redirected.

AQUIFER | GROUNDWATER

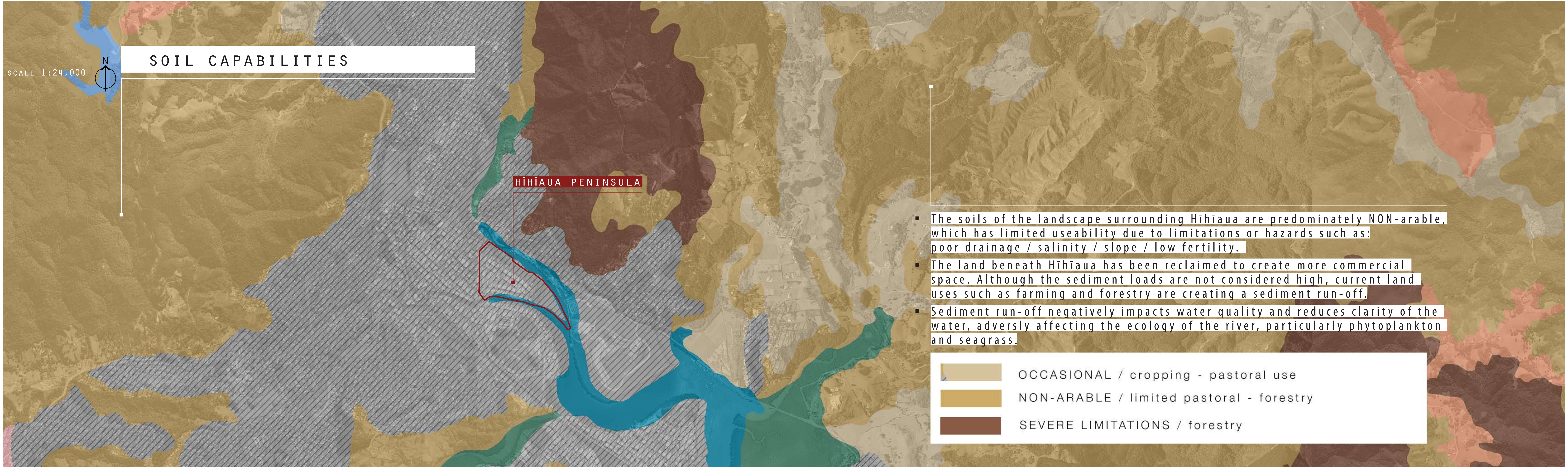
- Aquifers under pressure from extraction
- Dam's have been created to assist in water manangement.
- Coastal aquifers are at risk of salt water intrusion.

HĪHĪAUA

- Hihiaua sits within the Upper area of the Whangarei Harbour catchment.
- The Upper Harbour catchment recieves 70% of the catchment runoff.
- Whangarei harbour has a diverse range of habitats including; saltmarsh, mangroves, seagrass, intertidal mudflats, subtidal beds and sandy reefs.
- The average rainfall for the area is 1400mm per year.

Overland flow paths show accumulation of water from ranges.
Aquifier; Recognised as being 'at-risk'
Town

SOIL CAPABILITIES

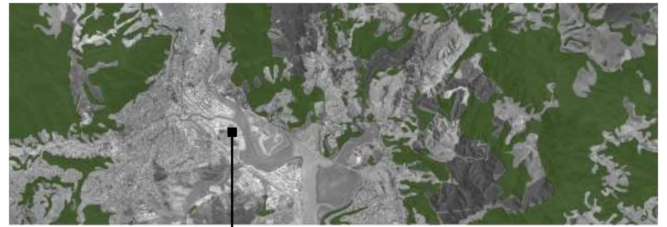


- The soils of the landscape surrounding Hīhīaua are predominately NON-arable, which has limited useability due to limitations or hazards such as: poor drainage / salinity / slope / low fertility.
- The land beneath Hīhīaua has been reclaimed to create more commercial space. Although the sediment loads are not considered high, current land uses such as farming and forestry are creating a sediment run-off.
- Sediment run-off negatively impacts water quality and reduces clarity of the water, adversly affecting the ecology of the river, particularly phytoplankton and seagrass.

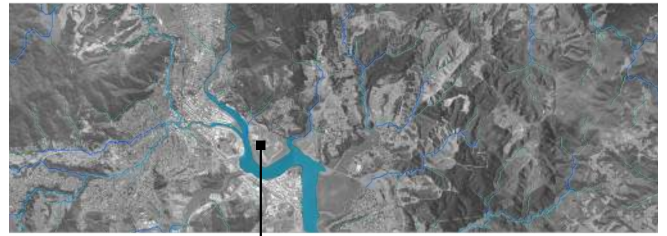
PATCH ANALYSIS

- Meurk and Hall suggest a formula which analyses the vegetation cover of landscapes and provides a framework to create landscapes that support biodiversity.
- The formula measures patch size and vegetation type as well as the distances between them, then provides a landscape model pattern which best supports biodiveristy and habitat connectivity.
- Applied to the context of our site we can measure the importance for vegetation on Hīhīaua peninsular and how the site fits into the landscape pattern.

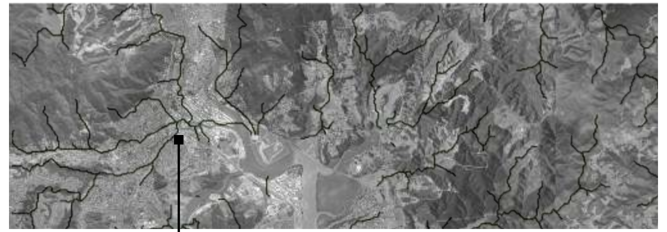
SOURCE: Meurk C.D. and Hall, G.M.J., 2006. Options for enhancing forest biodiversity across New Zealand's managed landscapes based on ecosystem modelling and spatial design. New Zealand Journal of Ecology 30(1)



NATIVE VEGETATION

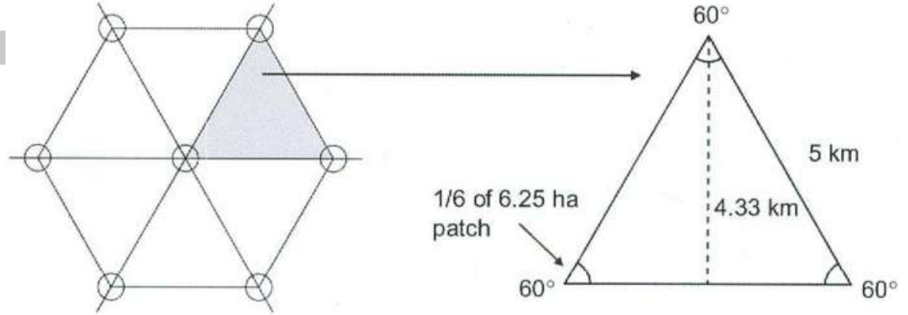


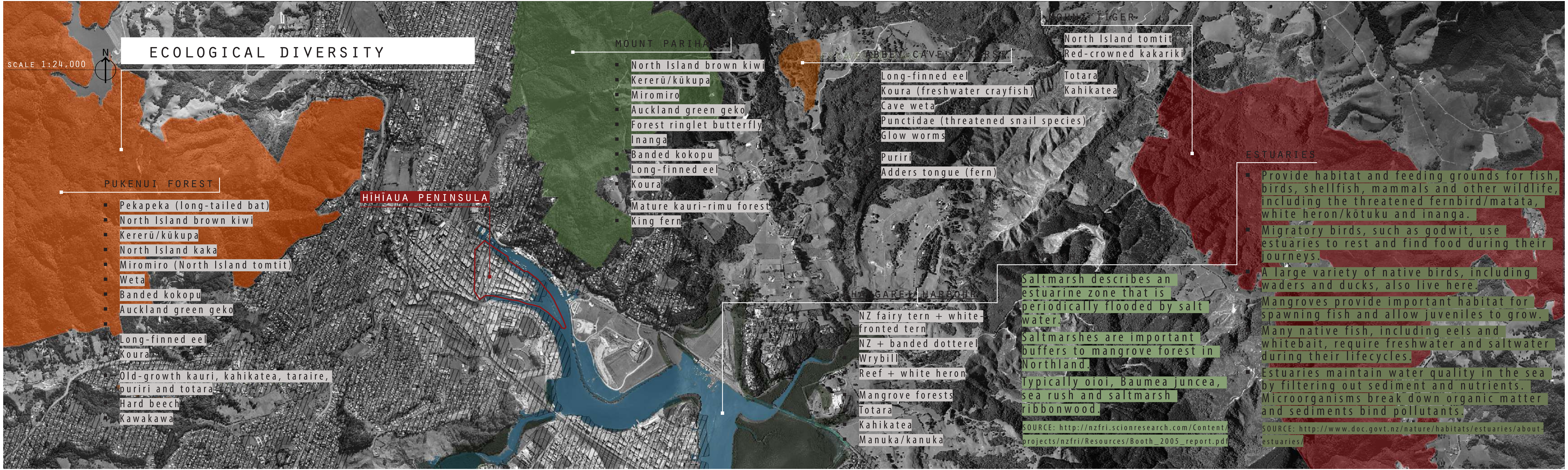
RIVERS + STREAMS



20M RIPARIAN BUFFER

- Overlaying these elements shows how implementing a 20 meter buffer on streams can assist in connecting these fragmented patches.
- The vegetation buffers serve not only to fascilitate migration of species and habitats, but also function as filters for surface run-off, helping to keep streams and rivers clean.
- Using the riparian buffer zone of streams for green corridors is also a good use of land which is not suitable for other uses (e.g. cropping or development).
- The Hīhīaua peninsular was historically intertidal mudflats; a natural filter and surge barrier of Whangarei Harbour.




ECOLOGICAL DIVERSITY
SCALE 1:24,000
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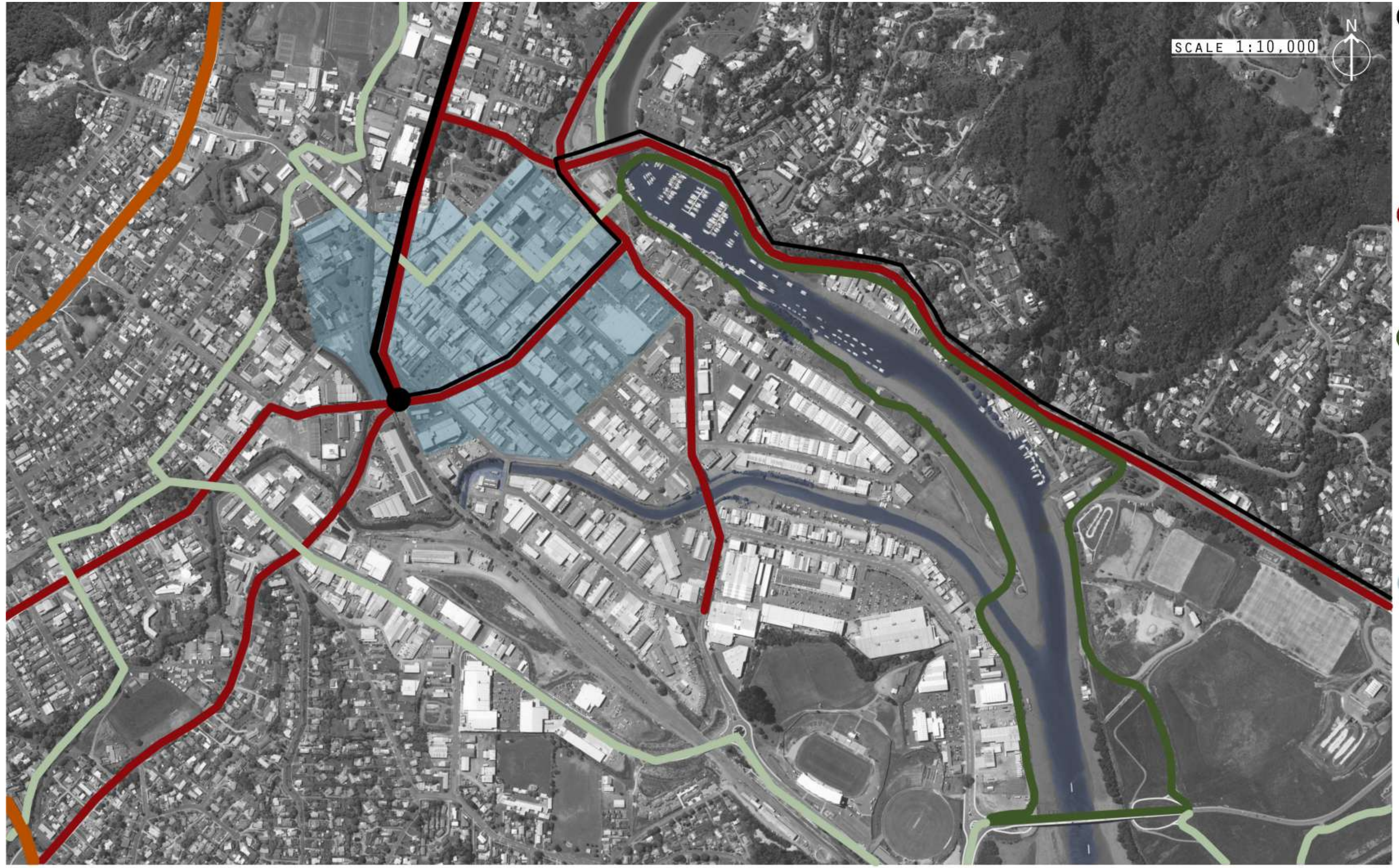
PUKENUI FOREST
Pekapeka (long-tailed bat)
North Island brown kiwi
Kererū/kūkupa
North Island kaka
Miromiro (North Island tomtit)
Weta
Banded kokopu
Auckland green geko
Long-finned eel
Koura
Old-growth kauri, kahikatea, taraire, puriri and totara
Hard beech
Kawakawa
HĪHĪAUA PENINSULA
MOUNT PARIHA
North Island brown kiwi
Kererū/kūkupa
Miromiro
Auckland green geko
Forest ringlet butterfly
Inanga
Banded kokopu
Long-finned eel
Koura
Mature kauri-rimu forest
King fern
ABBEY CAVE + KARST
Long-finned eel
Koura (freshwater crayfish)
Cave weta
Punctidae (threatened snail species)
Glow worms
Puriri
Adders tongue (fern)
MOUNT TIGER
North Island tomtit
Red-crowned kakariki
Totara
Kahikatea
WHANGAREI HARBOUR
NZ fairy tern + white-fronted tern
NZ + banded dotterel
Wrybill
Reef + white heron
Mangrove forests
Totara
Kahikatea
Manuka/kanuka
Saltmarsh describes an estuarine zone that is periodically flooded by salt water.
Saltmarshes are important buffers to mangrove forest in Northland.
Typically oioi, Baumea juncea, sea rush and saltmarsh ribbonwood.
SOURCE: http://nzfri.scionresearch.com/Content/projects/nzfri/Resources/Booth_2005_report.pdf
ESTUARIES
Provide habitat and feeding grounds for fish, birds, shellfish, mammals and other wildlife, including the threatened fernbird/matata, white heron/kōtuku and inanga.
Migratory birds, such as godwit, use estuaries to rest and find food during their journeys.
A large variety of native birds, including waders and ducks, also live here.
Mangroves provide important habitat for spawning fish and allow juveniles to grow.
Many native fish, including eels and whitebait, require freshwater and saltwater during their lifecycles.
Estuaries maintain water quality in the sea by filtering out sediment and nutrients.
Microorganisms break down organic matter and sediments bind pollutants.
SOURCE: http://www.doc.govt.nz/nature/habitats/estuaries/about-estuaries/



- There are 6 main bus routes that connect the CBD with the rest of Whangarei. The bus lines start and stop at Rose St. There is currently no bus service in the Precinct. We propose the use of water transportation to enhance the connectivity of the Precinct with central Whanagrei, as well as regain the connection to the use of water itself.

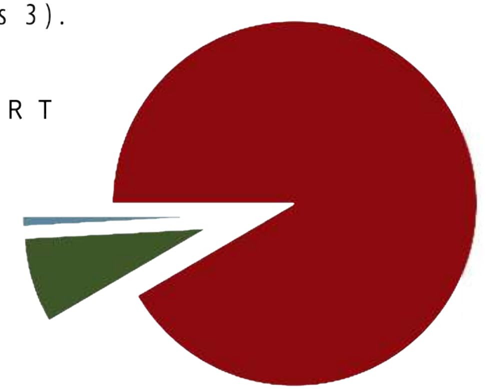
- Arterial roads mainly converge at the south end of CBD. They tend to have higher traffic and are atleast 2 lanes wide. State Highway 1 is the main North-South route passing through Whangarei.

- Hatea Loop is among 3 other existing shared use walkways and cycleways. As Whanagrei moves forward, the Plan Change proposes a greater number of shared use ways with better connectivity. Cycling is not catered to specifically within the Precinct. Our proposal looks to provide a track within the site to endorse cycling and promote shared use of roads. By using kerb-less streets we would like to discourage the use of cars within the Precinct.

- The site according to the district plan is a Business 2 zone, just East of the CBD which is the densest of the business districts (Business 3).

MODE OF TRANSPORT

- DRIVE - 64%
- WALK/CYCLE - 5%
- PUBLIC TRANSPORT - 0.6%



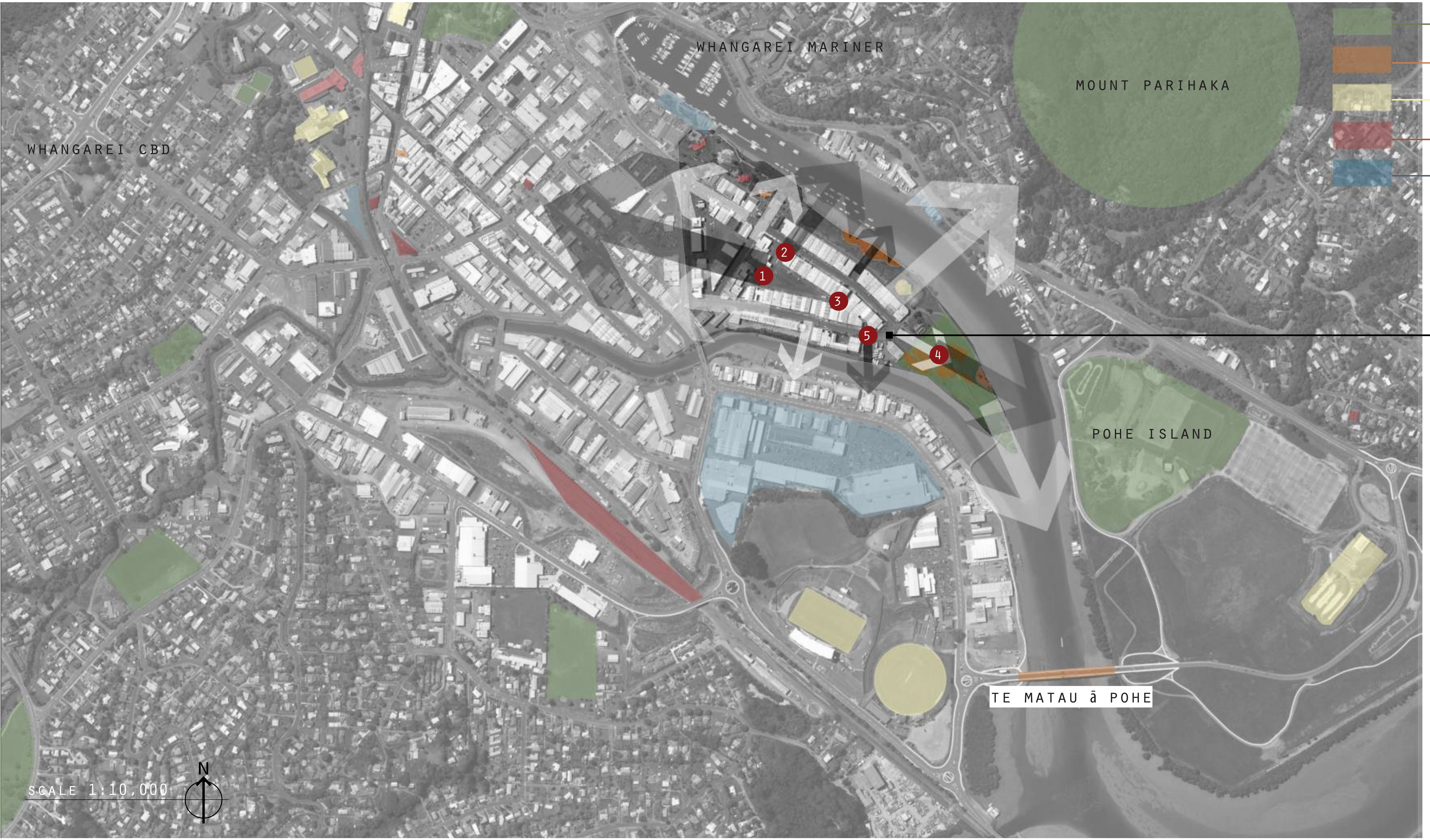
POPULATION DISTRIBUTION IN WHANGAREI

- RURAL-RESIDENTIAL-8%
- COASTAL-14%
- RURAL-21%
- URBAN-57%

ACCESS TO MOTOR VEHICLES

- NO ACCESS-7%
- 3+ VECHICLES-12%
- 2 VECHICLES-35%
- 1 VEHICE-36%

HĪHĪAUA | CULTURAL FEATURES + VIEWSHAFTS



PARKS

ARTISTIC SIGNIFICANCE

COMMUNITY SIGNIFICANCE

HERITAGE BUILDINGS

POINTS OF INTEREST

1

2

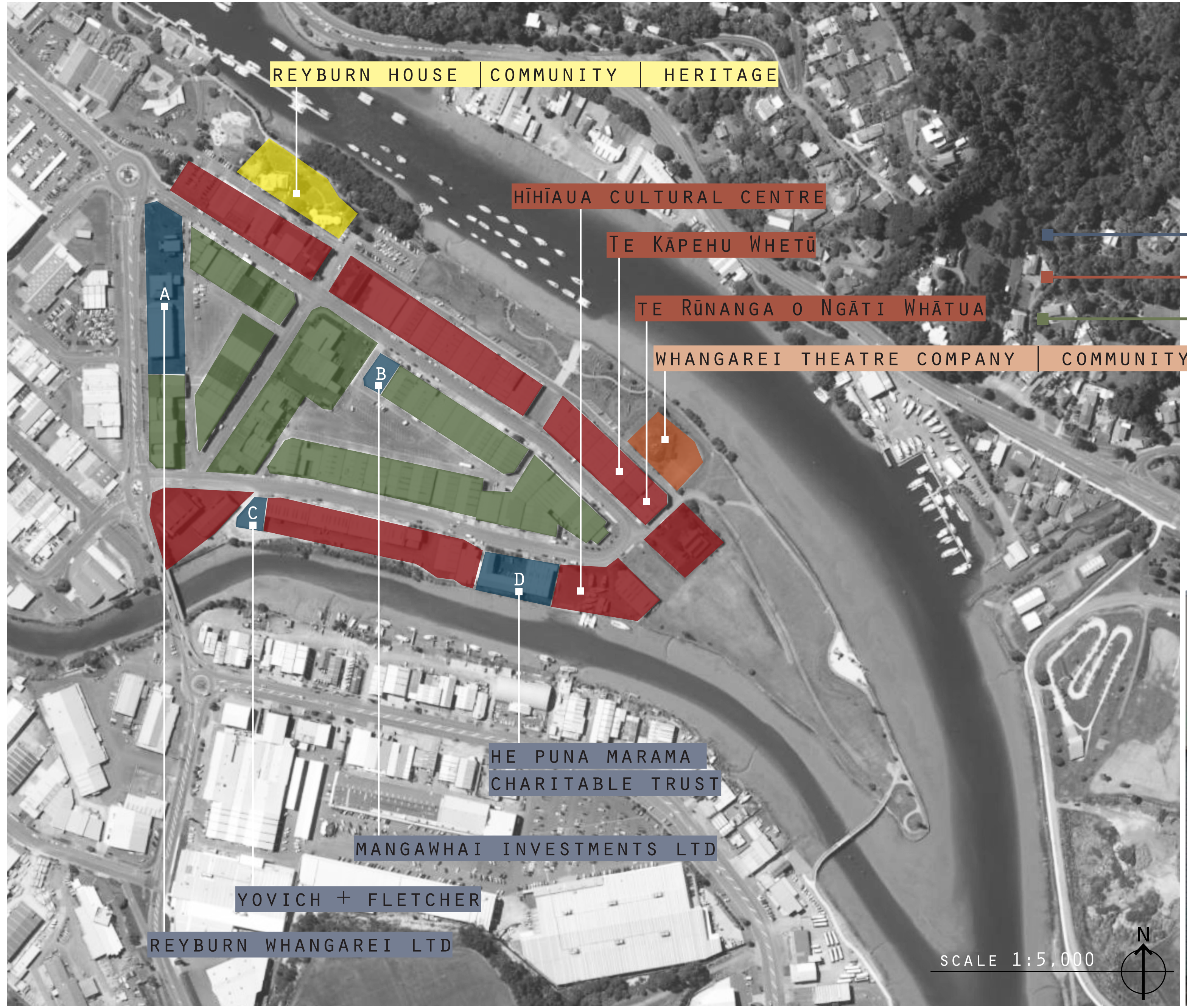
3

4

5

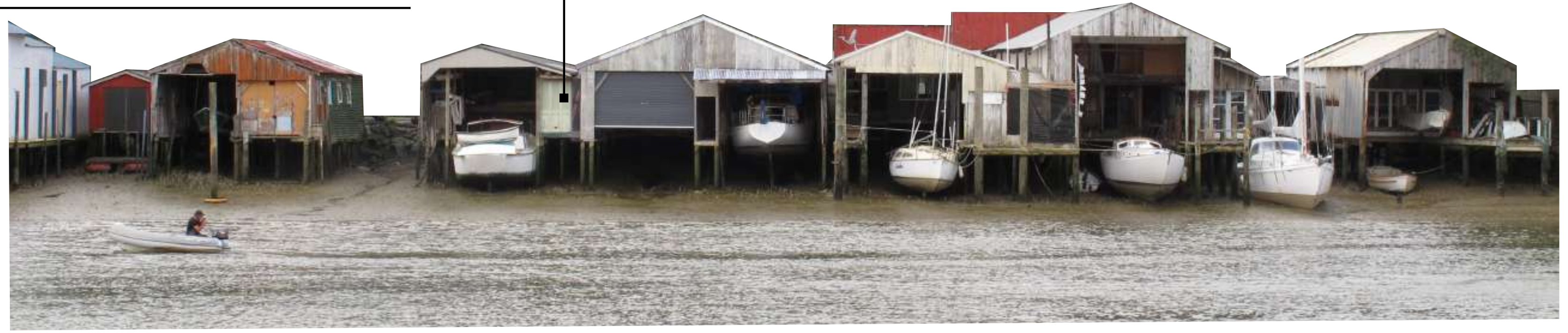
VIEWSHAFTS

HĪHĪAUA | CADASTRAL MAP + EXISTING BUILDINGS



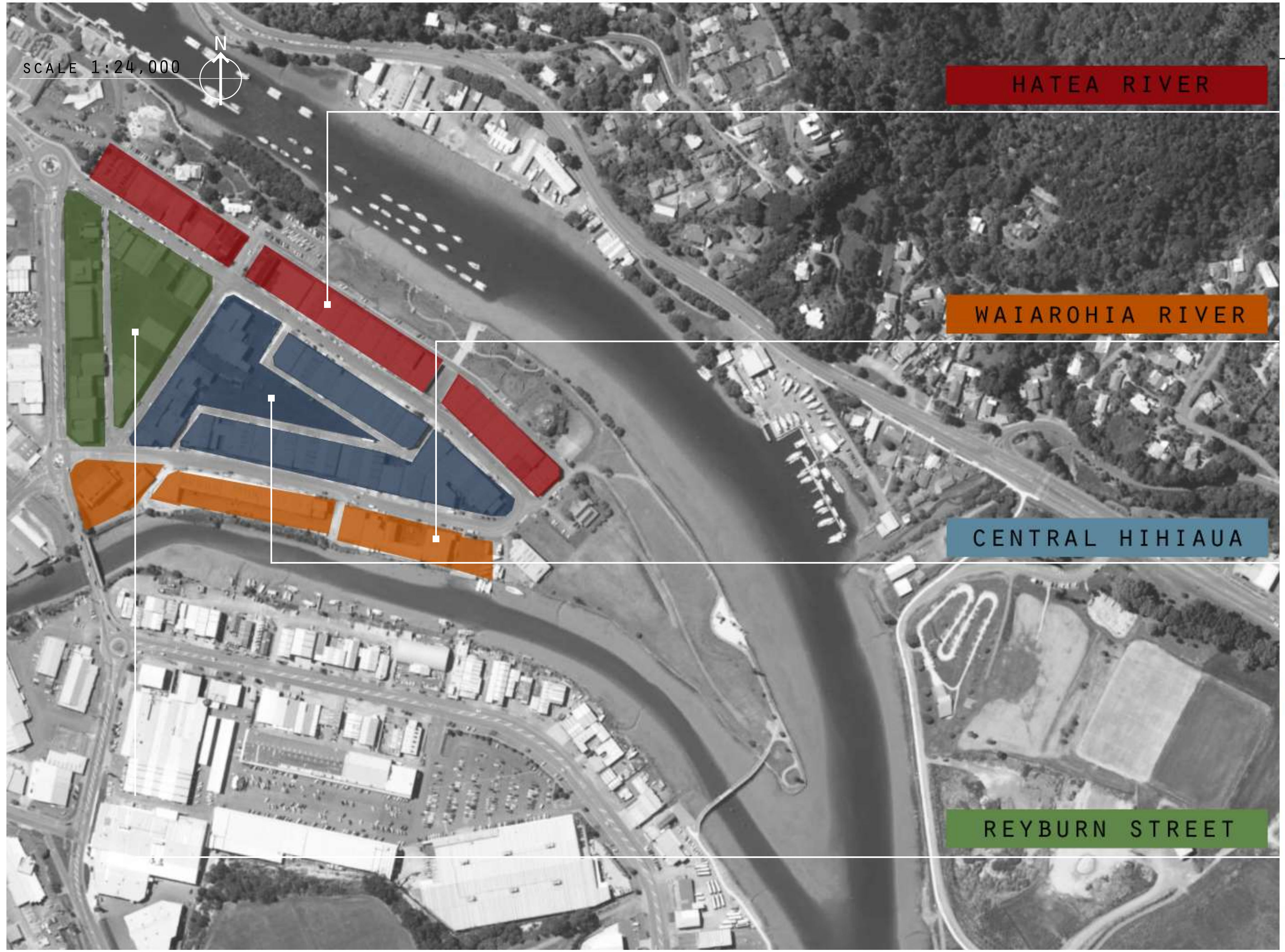
- Low building height important to connect and relate to context.

- Relevant typology from surrounding context: boat sheds at hatea river.



- Current light industrial typology: set backs for private/public divide.
- Existing residential typology at reyburn house lane : apartments/townhouses over commercialprivate/public divide

- Existing industrial typology: current axis/orientation to peninsula (currently obstructed) with central courtyard possibility
- Pro of single/mezzanine storey typology for reuse: floor height can be raised to respond to flooding issue.



	DETACHED	DUPLEX	TERRACE	APARTMENTS
HATEA RIVER	115	140	230	432
WAIAROHIA RIVER	103	125	204	390
CENTRAL HIHIAUA	240	288	480	1800
REYBURN STREET	144	173	288	1080

10 DWELLINGS
100 DWELLINGS

2006 2.6 → 2013 2.5

AVERAGE HOUSEHOLD SIZE

- The Hihīaua Precinct has been identified as a potential area of inner city living and mixed-use development
- The council proposes medium to high-level density via a range of housing typologies: medium rise apartments, low-rise apartment, terraced housing or town house development
- Existing commercial activities will remain with the introduction of complementary mixed-use activities to contribute to the vitality of the Precinct
- The proposal divides the Precinct into 4 Sub-Precincts: Hatea River, Waiarohia River, Reyburn Street and Central Hihiaua

- The capacity analysis assumes a 'brownfield' site where comprehensive opportunities are available and with no constraints. This analysis illustrates the minimum and maximum potential of residential development plausible within the Hihīaua Precinct
- The information to the left summarizes the greatest possible dph (dwellings per hectare) within the various Sub-Precincts in different building typologies
- The council's proposal is a medium / high-density residential development (15–30+ dph).
- Sub-Precincts will have varied residential development due to their location and function within the larger precinct.
- According to 2006 census, average household size in Whangarei was 2.6 people. The Plan predicts a drop to 2.4.
- Census 2013 had the average household size for Whangarei at 2.5 (0.1 difference over 7 years).

MIN. POPULATION: 602 RESIDENTS

MAX. POPULATION: 3,702 RESIDENTS

MIN. DENSITY 251 DWELLINGS

MAX. DENSITY 2,468 DWELLINGS

HĪHĪAUA | PROPOSED PRECINCT PLAN

OPTION 1:

NO ACTION

- Existing provisions would be kept in their current form, which would avoid preparing a plan change.
- Currently the Town Basin encourages residential development, and the Business 2 environment allows development under respective provisions. However these provisions do not allow for comprehensive high-density residential development, which renders this option ineffective.
- The cons of this option outweigh the pros. While there would be no cost in preparing and administering a plan change, doing nothing does not achieve community and council outcomes signaled in Whangarei's 20/20 plan, nor does it satisfy other stakeholders' expectations for the future development of the Hīhīaua Precinct.

OPTION 2:

REZONE HATEA RIVER SUB-PRECINCT TO MIXED-USE DEVELOPMENT, BY WAY OF PLAN CHANGE

- Town Basin environment (Hatea River sub-precinct) is utilised as mixed-use development while the remainder of the Hīhīaua Precinct remains under the Business 2 category, with commercial and light industrial activities continuing as usual.
- The Hatea River sub-precinct, which already has a number of residential dwellings, is considered the most attractive location and therefore will attract the greatest development interest.
- The location of the sub-precinct allows easy use of natural and physical resources, which characterise the Hatea River waterfront.
- It is predicted rezoning the single sub-precinct will enable comprehensive residential development opportunities, however this option does not fully recognize the potential of the entire Precinct (Hīhīaua).
- Unlike Option 1, this option aligns with Whangarei's 20/20 plan and somewhat provides development prospects for not only the Hīhīaua Precinct, but also Whangrei City as a whole.
- Disadvantages of this option include:

  Potential land use conflict and reverse sensitivity issues with permitted activities, which will lead to inability of integration and coordination holistically.

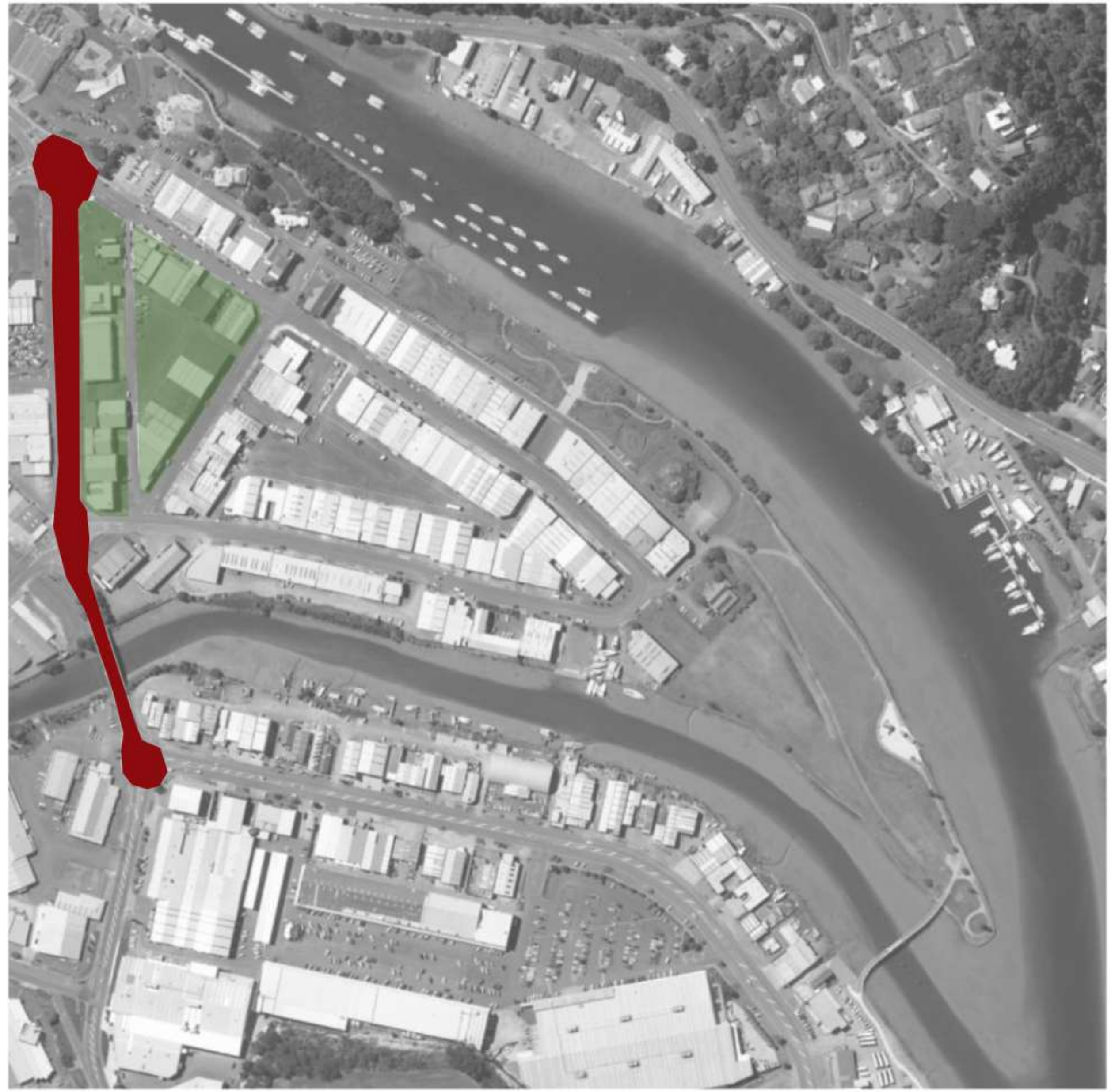
  Introduction of difference in land use within the Hatea sub-precinct would hinder and limit existing dwellings' development.

OPTION 3:

REZONE THE HĪHĪAUA PRECINCT TO MIXED-USE, BY WAY OF PLAN CHANGE.

- Rezoning the entire Hīhīaua Precinct provides the largest yield as it facilitates coordinated development and encourages high quality urban design.
- Benefits of this option include a large 'brownfield' area for urban redevelopment that provides landowners with an opportunity to intensify and develop their land. Also provides high levels of certainty for landowners, sub-dividers and the community about the outcome and vision of the precinct.
- Provisions will ensure population growth can be accommodated with higher densities close to Whanagarei CBD, amenities and employment opportunities.
- Disadvantages of this option include:

  High cost and risks implications associated with advancing a plan change to re-zone land and less flexibility in design and layout of individual properties.
- This option seems the most effective and efficient to achieve the objectives of all stakeholders involved as it essentially provides a 'clean slate' for development.
- This option integrates the idea of creating a 'village' where living, working, playing and learning can all be in close vicinity to each other, which is an important aspect for community group stakeholders (Momentum North) and also adheres to the Whangarei 20/20 plan.
- This option has the least legal restriction and allows opportunities for a flourishing district of Whangarei.

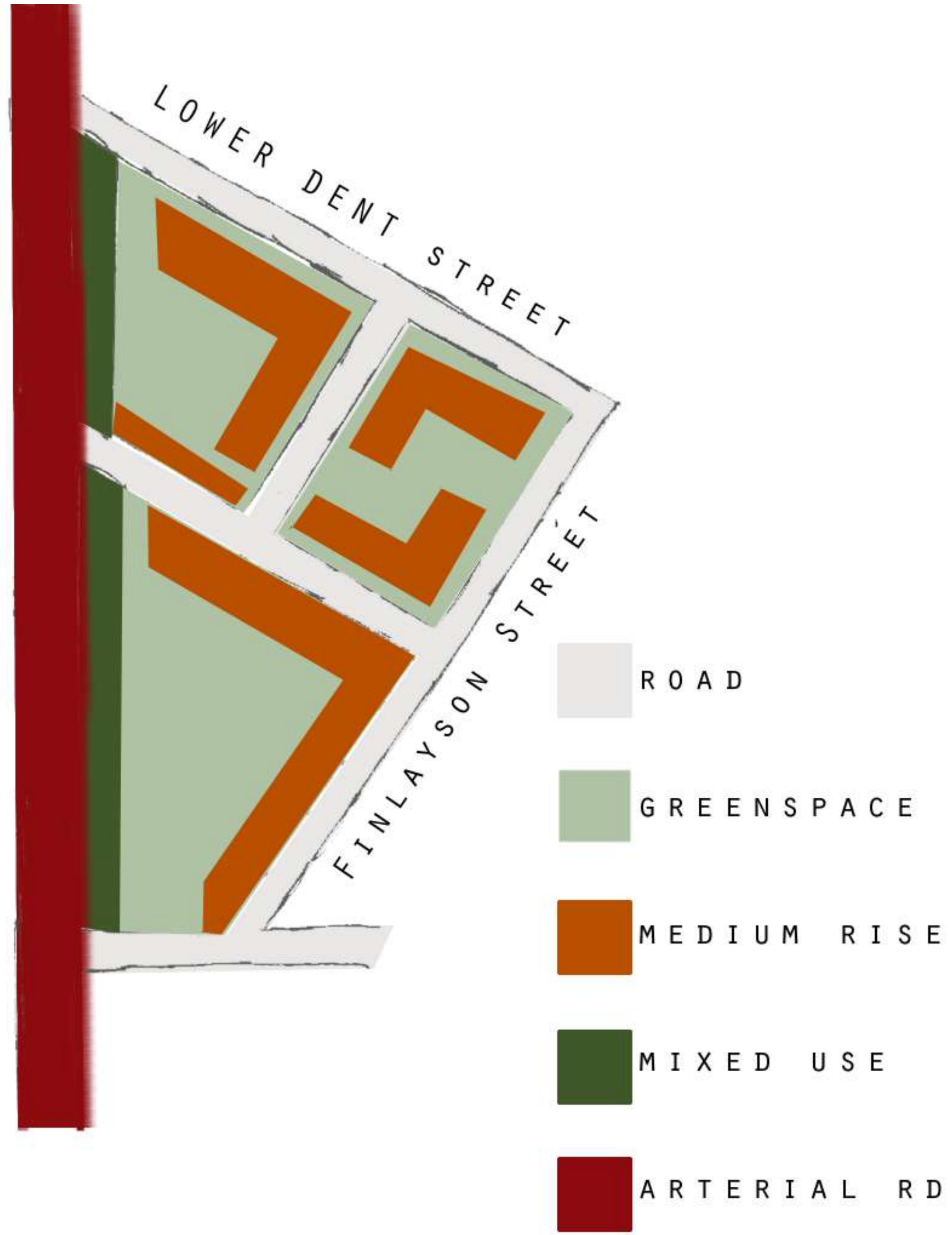


Reyburn Street Sub-Precinct is largely owned by Northland Regional Council. This Sub-Precinct has a range of uses as there are cafes, a printing store, wholesaling activities, a gymnasium and sail manufacturing activity.Existing commercial activities are serviced with internal parking spaces. Businesses situated on Reyburn Street, are served by 2 service lanes.

The proposed Plan for the Hihiaua Precinct shows Reyburn Street to be an Arterial Road which demands active commercial frontage, therefore it is propsed the row of buildings parallel to Reyburn Street will be medium rise commercial and mixed use buildings.

The image to the right shows an altered and artistic representation what the Reyburn Precinct could look like. As per all Precincts, the main objective will be to use exisitng structures first and foremost. The image shows an adaptation of the Copenhagen 'flood retaliation scheme, where in an event of a flood, the roads and boulevards will flood up and there will be elevated walkways and evacuation spaces for the public.

THIS IMAGE WAS TAKEN FROM ONE OF THE INTERSECTIONS OF FINLAYSON STREET.



Currently the Central Hihiaua Sub-Precinct offeres a range of activities including light retail and industrial.

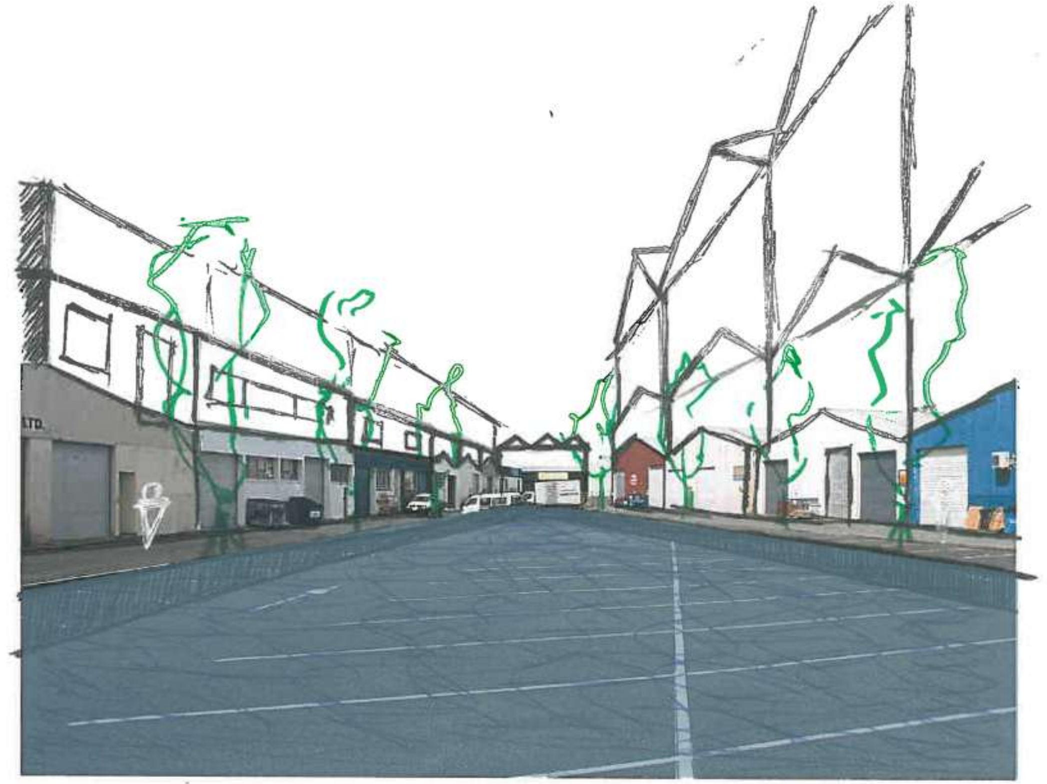
The Plan suggests this space over time will transition into a high amenities. It is shown in the plan that 2-4 storey buildings will occupy the Central area of the Hihiaua Precinct.

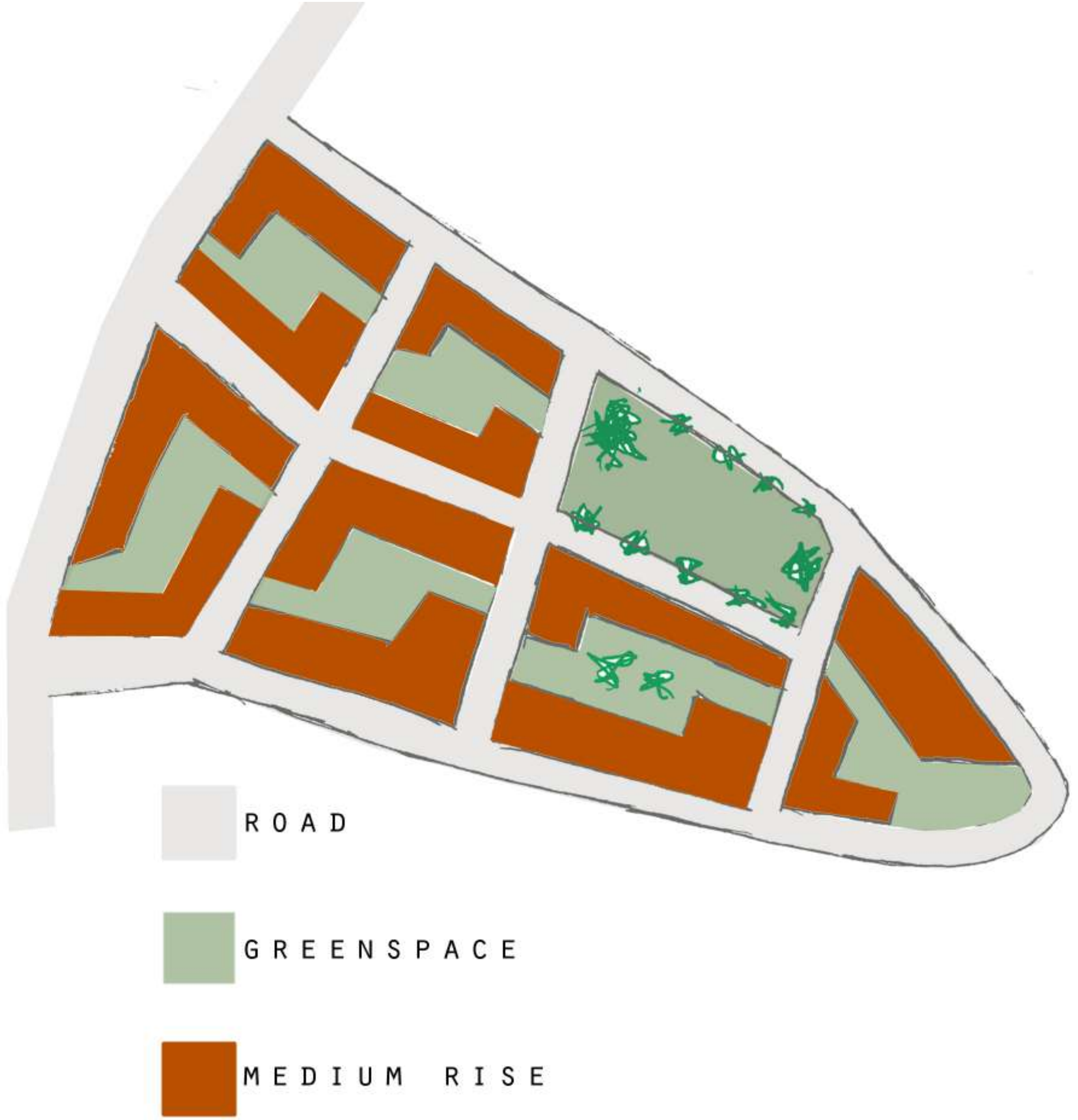
Maximum of 6 stories are feasibile and permitted due to poor soil condition uncompressed soil types. The Proposed land will allow a range of dwelling types, attracting a mixed residential demographic. This along with a mixture of building typologies will work well among the diverse population. Commerical usage on ground floor is encouraged as it will create street frontage.

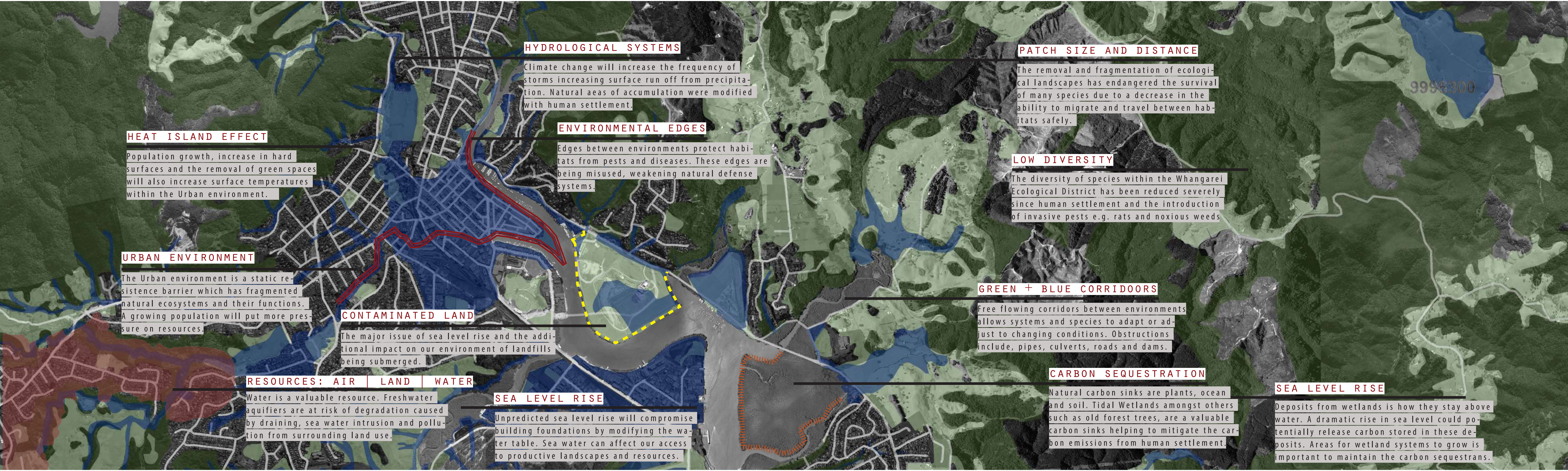
Exisiting streets within the Precinct was historically configured for commercial activites prioritizing large vehicles. Upon development, street widths can be resduced to creat more space as well as discourage the use of a car.

The image of the left roughly illustrates the idea of retaining exisitng structures above them.Again, just like Reyburn Street, the image shows the large existing carpark asre being flooded.

THIS IMAGE WAS TAKEN LOOKING TOWARD THE COVERGING END OF THE CARPARK (NOSE).






HYDROLOGICAL SYSTEMS
Climate change will increase the frequency of storms increasing surface run off from precipitation. Natural aeas of accumulation were modified with human settlement.
HEAT ISLAND EFFECT
Population growth, increase in hard surfaces and the removal of green spaces will also increase surface temperatures within the Urban environment.
ENVIRONMENTAL EDGES
Edges between environments protect habitats from pests and diseases. These edges are being misused, weakening natural defense systems.
URBAN ENVIRONMENT
The Urban environment is a static resistence barrier which has fragmented natural ecosystems and their functions. A growing population will put more pressure on resources.
CONTAMINATED LAND
The major issue of sea level rise and the additional impact on our environment of landfills being submerged.
RESOURCES: AIR | LAND | WATER
Water is a valuable resource. Freshwater aquifiers are at risk of degradation caused by draining, sea water intrusion and pollution from surrounding land use.
SEA LEVEL RISE
Unpredicted sea level rise will compromise building foundations by modifying the water table. Sea water can affect our access to productive landscapes and resources.
PATCH SIZE AND DISTANCE
The removal and fragmentation of ecological landscapes has endangered the survival of many species due to a decrease in the ability to migrate and travel between habitats safely.
LOW DIVERSITY
The diversity of species within the Whangarei Ecological District has been reduced severely since human settlement and the introduction of invasive pests e.g. rats and noxious weeds
GREEN + BLUE CORRIDOORS
Free flowing corridors between environments allows systems and species to adapt or adjust to changing conditions. Obstructions include, pipes, culverts, roads and dams.
CARBON SEQUESTRATION
Natural carbon sinks are plants, ocean and soil. Tidal Wetlands amongst others such as old forest trees, are a valuable carbon sinks helping to mitigate the carbon emissions from human settlement.
SEA LEVEL RISE
Deposits from wetlands is how they stay above water. A dramatic rise in sea level could potentially release carbon stored in these deposits. Areas for wetland systems to grow is important to maintain the carbon sequestrans.

LAND SUSCEPTIBLE TO FLOODING

- Rivers move, and over time due to changes in velocity and capacity, erosion and sediment accumulation, water displacement causes the river path to shift.
- Hihiaua site was part of the intertidal flood plain of the Hatea RIver. The reclaimation of the flood plains land and the topography of the land as a valley does not give much option for flood water dispersal to other areas. The Upper harbour of the Hatea River
- Resilient strategies in place now are removing barriers and surrendering to the battle of water, canals, inflatable weirs and wetlands are now becoming common solutions to flooding problems.

CONTAMINATED LAND - POHE ISLAND

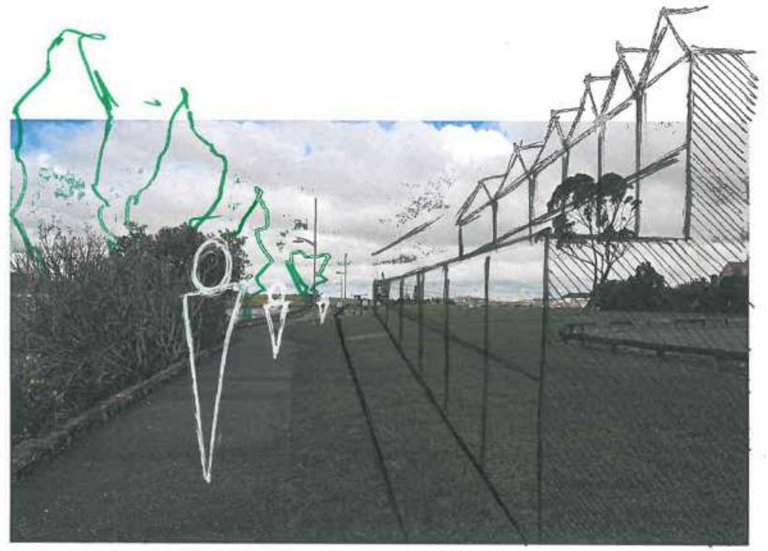
- Landfills were predominatly placed in areas regarded as unusable for development or food production. New Zealand a major problem with most old capped landfills as most of our town landfills were in wetlands or along stream & river banks.
- Landfill contaminants are spread through groundwater. The placement of Pohe Island.
- Sealevel rise could submerge landfills and increase the spread of contamination.
- Once an aquifer is contaminated it may be unusable for decades
- Salt water can enter aquifers if the fresh water level falls too far
- Landfills release Gases & Leachate. The Post Closure Plan for Pohe Island notes that methane gas concentrates in the landfill have the potential to ignite.
- The Leachate seepage from Pohe Island is pumped under the Hatea River to a Wastewater Treatment Plant, however it is noted that it still has a slow seepage, but does not appear to be causing an environmental damage.
- Further research is required to clarify whether the effects of the landfill could potential increase with climate change.

Figure 3 – Groundwater contamination from a waste disposal site

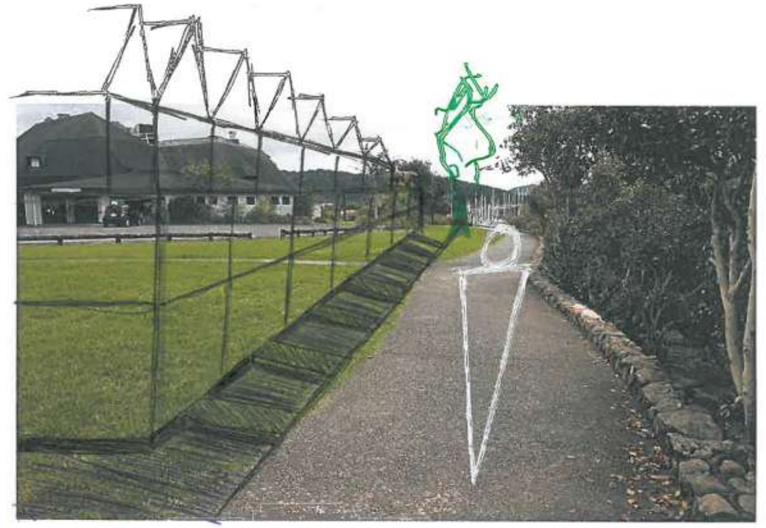
Source: Environment Canada, 2009, Groundwater, http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=300688DC-1

Hatea River Sub-Precinct currently has a variety of activities. There are 9 residential dwellings all mostly located on the second floor above commercial activities. This particular Sub-Precinct has a unique character fronting onto open space and the Hatea River. The area has high amenity, access to the city and Town Basin and little traffic. The loop walkway enhances connectivity and allows occupiers to experience the cultural and arts activities located on the riverfront from the Town Basin to the tip of the peninsula.
The plan envisions this Sub-Precinct to be the most attractive area for residential living and will likely be the first to develop/transform. 2 storey mixed use buildings are proposed on the waterfront, and 3-4 storey buildings behind, with amenity space in between. 'Boat house and Loft' aesthetic feel reflecting existing use of vicinity will be encouraged including adaptive re-use of the industrial buildings.

Currently the Waiarohaia Stream Sub-Precinct has a range of commercial, industrial and professional service buildings and no residential dwellings.
It is expected over time this space will transition into mixed use and residential activities. Predominant commercial activities are to take place to on the corner of Reyburn Street and Herekino Street to provide a noise buffer from the Arterial Road. There is opportunity to provide private access to the stream via piers for boat anchorage. Adjacent stream location provides possibility for an esplanade or easement through a Blue/Green network. The network is planned to become an icon of character for Whangarei City, a safe and attractive feature for pedestrians and cyclists to use. 2-3 storey buildings are envisioned to occupy this Sub-Precinct to complement the surrounding buildings.



BOTH IMAGES ILLUSTRATE VERY ROUGHLY THE INTERFACE OF RESPECTIVE WATERFRONTS



ROAD

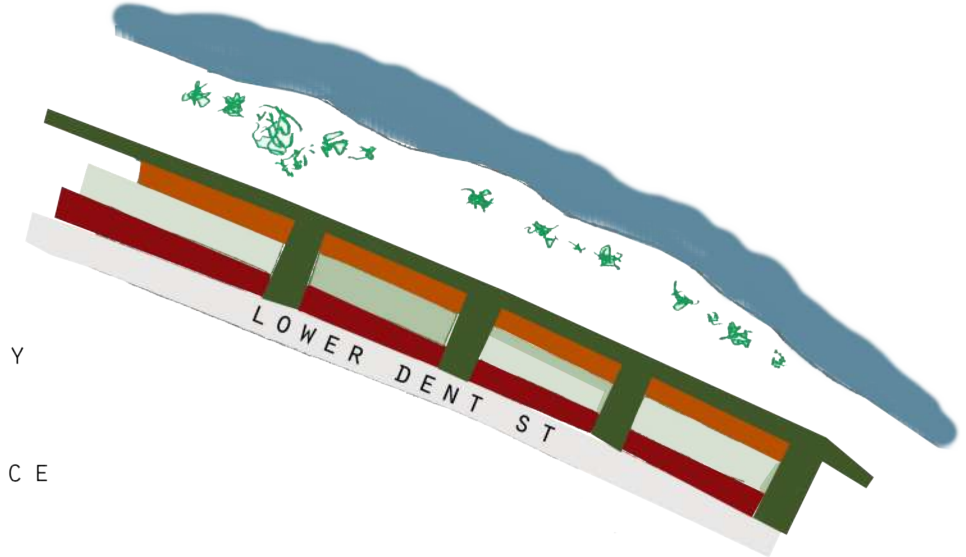
3-4 STOREY MIXED USE

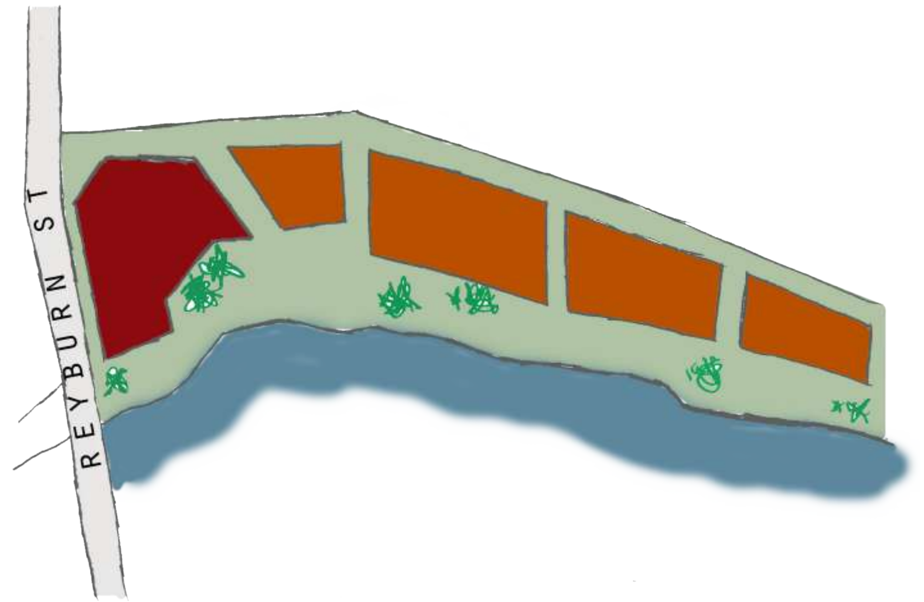
GREEN SPACE

ACCESS

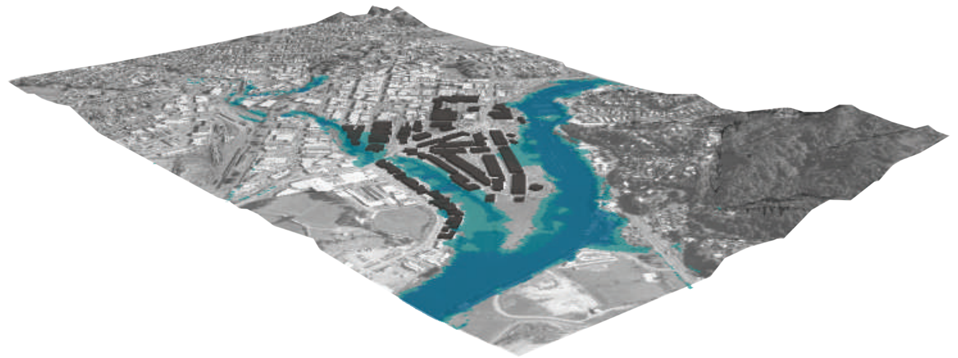
RIVER

2 STOREY MIXED USE

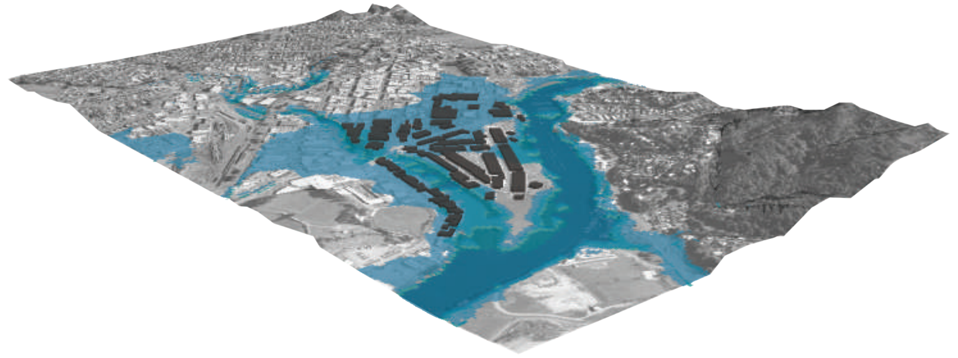




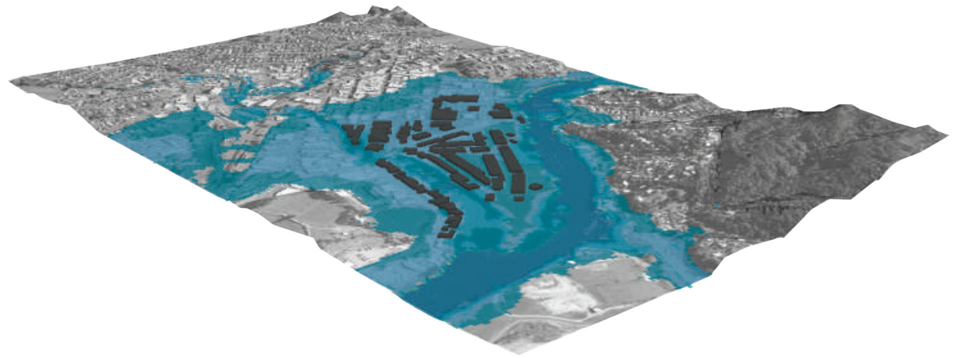
HĪHĪAUA | COASTAL HAZARD



PRESENT



+ 1 M RISE



+ 2 M RISE

Whangarei city is situated on low lying reclamed land subject to the fluctuations of sea level rise and storm surges. Based on the reports issued by The ministry of the environment, it is suggested to plan for a 0.8m mean sea leel rise up to 2090-2099. Beyond that an allowance is to be made for 10mm per year. These maps show the effect of a 1-2m sea level rise on Whangarei Town city, CBD and Hihiaua peninsular. The effect of climate change is increased significantly with greenhouse gases. Although we can not stop rising seas we might at least be able to slow it down. Capturing and recycling stormwater reduces the pressure we are putting on fresh water resources which are under threat if sea levels rise. The below Rational method calculation estimates how much water could be intercepted and collected during a 15 minute rainfall.

SOURCE: http://www.pce.parliament.nz/media/1390/preparing-nz-for-rising-seas-web-small.pdf

Rational method of calculating Peak flow rate to determine the size of wetland retention pond:

$Q = C * I * A$

Q = peak flow (m3/s)
C = runoff coefficent
I = average rainfall coefficient (mm/hr)
A = drainage area (ha)

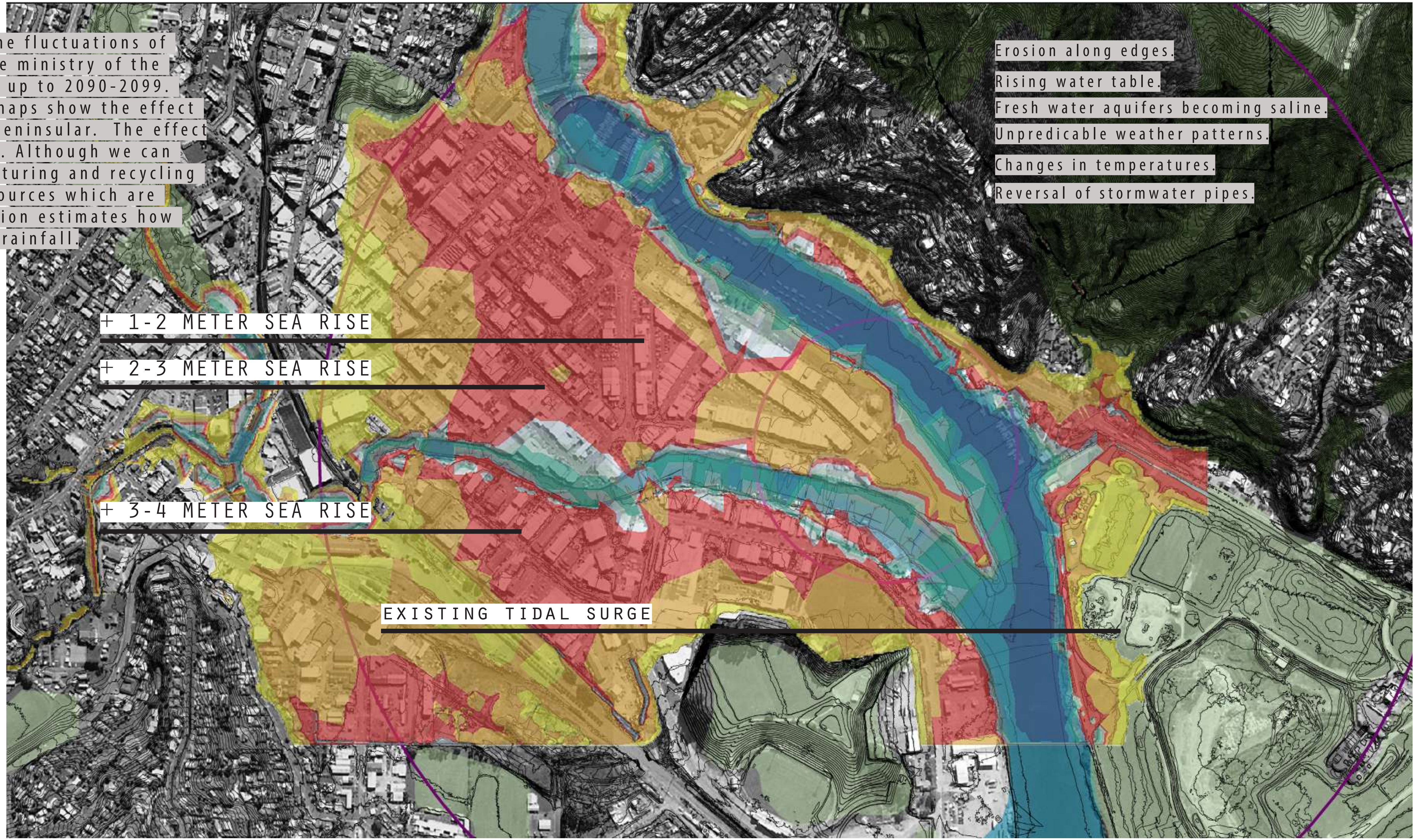
"The rational method is only applicable to small catchments because of its inability to account for the effects of catchment storage in attenuating the flood hydrograph." *(standardisation of design flows for coastal catchments in NZ)* For the calculation we have used light industrial 0.5 - 0.8 for the drainage are.

HIHIAUA RETENTION POND SIZE

C = 0.8 (highly impermeable)
I = 0.15mm per hour
A = 16.5 hectares

Q = 1.98 m3/sec [peak flow rate]

Over 15 minutes this equates to 1'782'000 litres



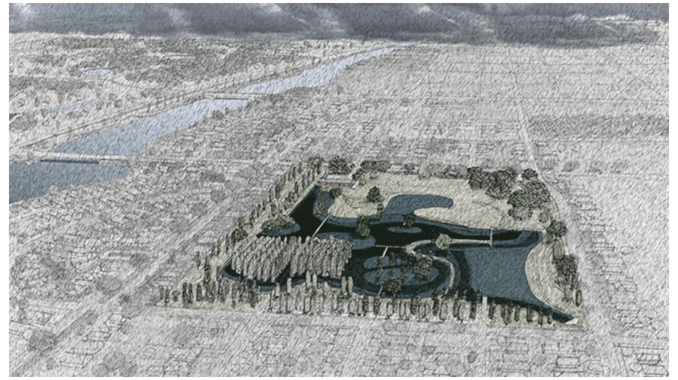
HĪHĪAUA | RESILIENCE

"Resiliency describes the capacity to respond to stress and change of climatic conditions. It adopts lessons from nature to protect, restore and enhance the ecosystem services of the natural environment. "

"Resilient design for flooding is a proactive and precautionary approach to increase water resource sustainability while reducing climate change risks."

DONALD WATSON & MICHELE ADAMS, *DESIGN FOR FLOODING: ARCHITECTURE, LANDSCAPE, AND URBAN DESIGN FOR RESILIENCE TO CLIMATE CHANGE*, HOBOKEN, N.J.: JOHN WILEY & SONS, 2011).

TYPICAL LANDSCAPE



IN TIMES OF FLOOD

NEW ORLEANS CASE STUDY

- 100 Resilient Cities initiative
- Multiple different flood protection features
- Welcomes in the flood rather than barricading against it by diverting water into the landscape
- Design looked to historical conditions of site

RECOMMENDED STRATEGIES FOR RESILIENT DESIGN

1. Stabilise and protect shoreline against storm surge by reflection, reduction or diffusion
2. Avoid or prevent increased flood impacts (such as erosion) to adjacent properties, waterways and water-edge structures
3. Use natural features to absorb, filter, and diffuse severe storm and rising sea level impacts
4. Construct and maintain floodplain landscape features that are replaceable and maintainable in post-storm recovery.
5. Provide areas for diffusion and absorption of flooding that divert water away from people and infrastructure
6. Secure emergency routes for egress and access for first responders
7. Secure utility, water, and sewerage connections that can be disabled pre-storm
8. Establish a community emergency communication system and management procedures for storm preparation, evacuation, and emergency response.

PROPOSED RESILIENT DESIGN INITIATIVES FOR HĪHĪAUA PRECINCT

The models proposed below will be based on future climatic conditions, providing benefits to the community and the conservation of land/species.

Strengthening ecosystems' resilience helps to create greener cities, with less pollutants, more ecological corridors and improved landscape permeability.

- Elevate service facilities along a re-designed water way system
- Adapt and reuse demolition waste creatively, such as using recycled aggregate to raise ground levels in low lying regions
- Design an area of refugee for residents in different districts
- Include regulated setbacks at water edge, with large natural buffer areas and walkways built to withstand flooding
- Treat the land to hold as much rain as possible so it can infiltrate soil rather than run off
- Incorporate green structures such as green roofs, permeable pavements, rain water harvesting systems, artificial wetlands, green canopies, curbless streets + swales
- Treat the edge using soft engineering as a form of costal management to reduce erosion, improve the stabilisation of shorelines and enhance the habitat for fish / wildlife in the precinct

Tactical Urbanism — inspire deepen understanding
encourage community
widen public engagement

TACTICAL URBANISM

Short-term low cost interventions to catalyse long term change

tactile urbanism allows designs to never freeze in time, and provide continued inspiration

- Low-cost, temporary interventions that improve local neighbourhoodS
- Delivery of 'lighter, quicker, cheaper' physical interventions.
- Physical, often short term, place-based interventions that strategically align with the wider vision for the city, such as safe, liveable streets and pedestrian friendly public spaces.

TACTICAL URBANISM HAS FIVE CHARACTERISTICS:

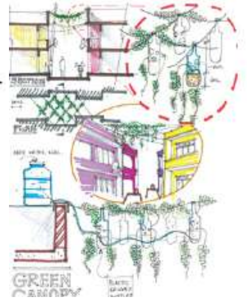
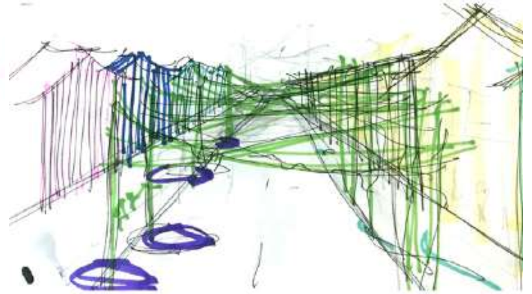
- A deliberate, phased approach to instigating change.
- An offering of local ideas for local planning challenges.
- Short-term commitment and realistic expectations.
- Low-risks, with possibly a high reward.
- The development of social capital between citizens, and the building of organizational capacity between public/private institutions, non-profit/ NGOs, and their constituents.

SOURCE: Auckland deign manual. (2017). Retrieved from http://www.aucklanddesignmanual.co.nz/design-thinking/activateAKL/activationguidance/guidance/Tactical_Urbanism

Murals



Green Canopies

Hihiaua Approach – Playful + educational

Implementing tactical urbanism at Hīhīaua would allow the community to form their own environment as they would like to see it while also encouraging a sense of place and connection to Hīhīaua.

- Small, quick, low-cost interventions and methods of delivery could be used to transform the area quickly. Temporary, trial interventions could lead to long-term or permanent solutions depending on success and suitability.
- We propose using colour, murals, carving and sculptural installations, planting, flexible/adaptable architecture (such as pop-up, temporary structures), and re-use of buildings and materials where possible.
- Tactical urbanism can also give power to the community to achieve long-term, greater goals, e.g. through crowdsourcing, public/private partnerships and small-scale, temporary interventions to test viability of proposals and gauge an indication of what the community actually wants.

Tactical urbanism is an approach that gives power over shaping the surrounding environment to the community. There are no limits or set parameters to what can be created and achieved by the community.

Planters Temporary gardens


Surface Treatment : Colour


pop-up Structures


Street furniture

ADAPTIVE RE-USE

Adaptive re-use: "reusing an old site or building for a purpose other than which it was built or designed for".

Salvaging materials from existing structures which are to be removed and reinventing them for new structures and features.

Re-using existing buildings on site where possible will have the following benefits:

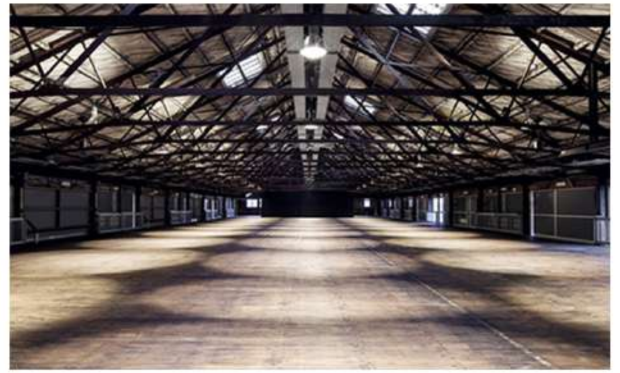
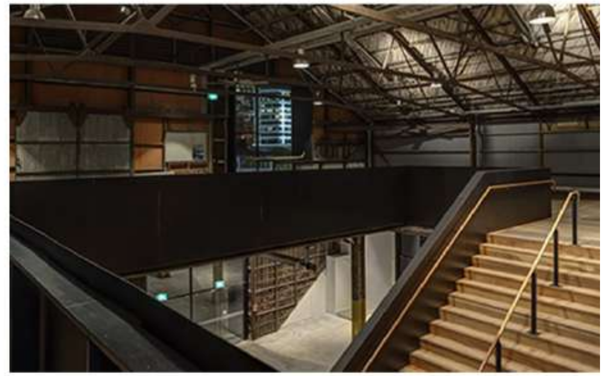
- Reduce waste material that would be generated from demolishing all buildings on site
- Cheaper cost for developers
- Keep building heights low or similar to current will keep existing viewshafts and ensure new development suits context
- Keep identity and character of the area
- Enable progressive, staged development of the area where new builds can occur over time

Adaptive Reuse — economic (reduces energy consumption)
— Protects Authenticity + Identity
(all we can hope for?)
provides framework + embodied memory
spatial layering?

Shed 10

Building repurposed with light / comestic interventions
c. 1910




Victoria Park Market

Original structure maintained & building repurposed
c.. 1905-1918




HĪHĪAUA — Wāhi Tapu } A sensitive response which respects essence of the precinct

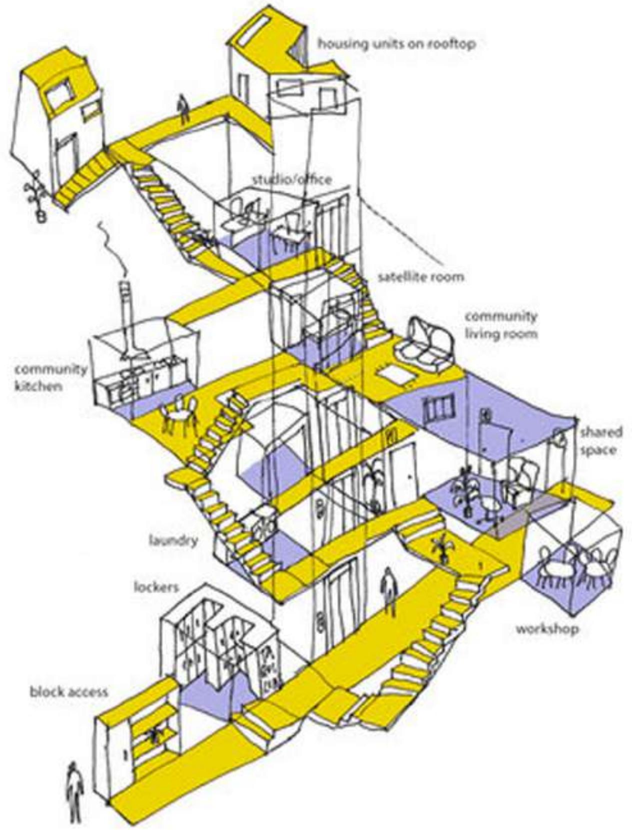
Cosmetic + Sensitive interventions

THE VILLAGE

Momentum North have indicated that the concept of 'the village' is important to them. We interpret this to mean that the design of the area should foster a community, a place not just to go home to at night but where people can "live, work, play, visit and learn". The design should encourage a strong sense of place, corresponding also to the Te Aranga principles.

Relevant design techniques that could be incorporated at Hīhīaua to encourage the village concept:

- Designate a site/sites for a co-housing proposal. as the concept encourages mutual co-habitation and shared public space (while still keeping individual ownership and privacy when desired) - see further details to right.
- Shared public space and utilities for the residents of Hīhīaua, such as shared outdoor dining/ entertaining/BBQ/hangi fascilities/pizza oven etc. would encourage interaction, provide a more lively and enjoyable environment and improve the real estate potential for residents of the area.
- Design shared areas that can be used by the community to enable 'live culture' - where the general public are able to interact with modern Maori cultural practices.
- Mixed-use zoning and building design with commercial, residential and retail all in one area to encourage lively community at all times of the day with more personable interactio can be easily incorporated, no divide between residential and commercial zones.
- Use spatial layers, with intimacy and visceral connection. Progression through the site could be used to generate interesting spaces and encourage the public to move through and interact with the 'village'.
- Implement the community's 'no fences' policy and utilise other non-barrier means of providing separation where necessary, such as using water, landscape or spatial layout.



WWW.MANDYEVEBARNETT.COM/2016/02/03/ALTERNATIVE-LIVING-COHOUSING/

WWW.MANDYEVEBARNETT.COM/2016/02/03/ALTERNATIVE-LIVING-COHOUSING/

CO-HOUSING TYPOLOGY

- Co-housing is an intentional community of private homes clustered around a shared space.
- Each attached or single family home has traditional amenities, including a private kitchen.
- Shared spaces include common rooms, which house a large gathering area, kitchen, dining area and recreational space for all occupants.
- Most outdoor spaces are shared as well as tools and household equipment.
- Each separate household has their own separate incomes and private lives, but neighbours communally manage activities and shared spaces.
- Cohousing directly correlates with Momentum North's ideology of wanting to create a 'village' environment that fosters a communal form of living.
- By promoting a cohousing niche within the Hihiaua Precinct, the community could formulate a set of values that will enhance cultural awareness.

CONNECTION

WATER CONNECTION

- Access to water important. Bring back the original flow path of Waiarohia Stream. Could propose public transport via the water to connect to the town basin + CBD.
- Adaptable architecture, such as the floating pontoon walkways that already exist on site for moored dingys adapt with the rise and fall of the tide.
- Dual function walkways could be moveable to be used as viewing platforms for water sports (e.g. waka kopapa).
- Consider strategic placement of viewing platforms to enable public interaction with waka races.
- Important to consider how sea level rise will affect fresh water ecology.

WHANGAREI CONNECTION

- Viewshafts and axis through the site important to connect the cultural centre with the village and the rest of Whangarei.
- Keep buildings low to keep viewshafts unobstructed and connect to the landscape.
- Current building heights continue the skyline of Mt Parihaka and Pukenui forrest - consider accentuating this with green roofs and building height limitations.

PEDESTRIAN CONNECTION

- Propose pedestrian connections to the CBD, other parts of Whangarei and key site features via walk + cycle paths (separate these if possible to cater for future growth).
- Public transport connection to the city - could be by water or alternative (boat, tram etc - make tourist attraction in itself to encourage visitors to both the CBD and Hihiaua).
- Consider and incorporate council's future plans for Emerald Necklace connection to Farmer's Market via Waiarohia Stream.

HĪHĪAUA | OUTCOMES

It is inevitable that Hihiaua and Whangarei is going to flood the question is how do we design for it.

EMBRACE THE FLOOD

The design strategy for Hihiaua is to embrace the flood waters and to begin the restoration of floodplains and lost habitats. The objective is to work with water, rather than against it. To gift water back its flexibility and provide spaces where it can accumulate and inflitrate we can begin to predict and decide where water will travel helping us build resilient commnities and decrease the incidence of unexpected floods.

Hihiaua was once mangroves and mudflats, and is now predominately covered in impermeable land cover which does not allow water to penetrate and use the soil to absorb the influx of water. Our proposed design is to increase the amount of permeable land cover which will increase the ability for land to absorb water to assist with flood mitigation.

OYSTER SHELL CAGES FOR EROSION CONTROL

PETREUX RIVER BANKS BY BASE

EROSION + FILTRATION CONTROL | a natural defense

- Many coastal areas are installing artifical reefs using gabion baskets filled with used oyster shells.
- The aim is to restore the oyster population whilst creating a reef to which filters water, provides habitats to other marine life and to prevent sediment and land erosion.
- An opportunity exists here for community project collaborating with local oyster farms & distributors.

DEPAVE | increase permeability

- Depaving is a bottom up community driven initative to remove concrete, pavement and asphalt and to replace it with impervious land cover and vegetation.
- Five cities across Canada are running pilot projects to "depave paradise" to increase permeability to help mitigate floods by allowing land to absorb the influx of water.

RECREATING HABITATS | restore diversity
RIVER ISLANDS | surge barriers

HOBBLE CREEK DELTA | RICHARD BART

- Hatea River and Whangarei Harbour contain vital ecosystems for vegetation, birds and marine life. A rise in sea level will change the location of these ecosystems, requiring flora and fauna to migrate to different areas or adapt to the change in conditions.

HIDDEN CATCHMENTS | water retention

- When it rains, stormwater is diverted and held onsite to reduce the load on the stormwater drains.
- Water is slowly released through wetlands and swales back to the adjacent River.

ELEVATION | avoiding hazards

- Changes in topography [raised land forms/ bunds], roof gardens and high pathways provide escape above flash floods for people, fauna and flora.
- Elevated pathway provides escape during hazards, whilst providing views across the city during fine days.
- Structures designed for elevation provide security for the future.

RENATURATION OF THE RIVER AIRE, GENEVA

STORE | water retention

- Brooklyn park bridge park is designed to collect, filter and stores gallons of fresh water under piers to recycle one of our most important resources.
- The water is treated and can be used for irrigation and other grey water functions.

AMPLE HILLS, BROOKLYN BRIDGE PARK

PLAYGROUND | water interaction

- The Hatea River and adjacent Waiarohia Stream have been graded with poor water quality and therefore they are not available for recreation or engagement with water.
- Harvesting rainwater onsite and channelling it through rills and accumulating it in areas could be utilised as a temporary playground for the community while the river is under restoration.

CHICAGO RIVERWALK EXPANSION BY SASAKI

BIRDSEYE IMPRESSION

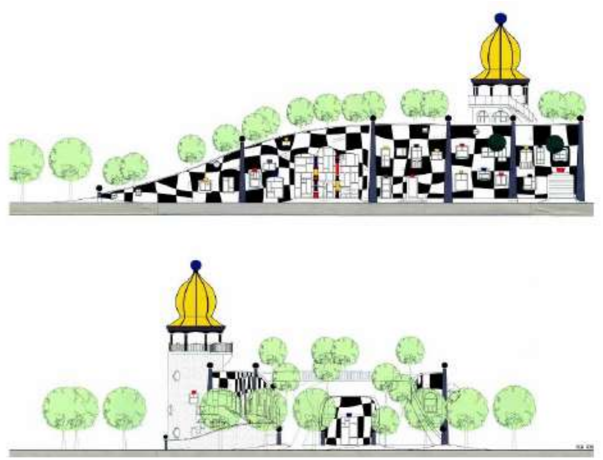
- From the surrounding mountains, as well as from aircraft flying in and out of Onerahi airport, the site stands out. We propose utilising this aspect in our design to add an interesting aspect to the overall masterplan, as well as to tie it into the Hundertvasser projects
- Roberto Marx and xx's work are examples of how the landscape could be manipulated
- Use planting and topography to create imagery in the landscape, e.g. by 'painting' the landscape in colours of the plants.
- Control flooding by directing water to certain area through the landscape to create different imagery again - in times of flood only certain areas fill with water, and a new landscape impression is generated
- The view of the site at night could also be interesting to explore, by being selective about placement of residential buildings, lit windows at night could be indicative of key celestial map historically used for navigation

JUPITER ARTLAND

MATARIKI CONSTELLATION

JAMES ROSE

DP ARCHITECTS



FRIEDENSREICH HUNDERTWASSER

ROBERTO MARX

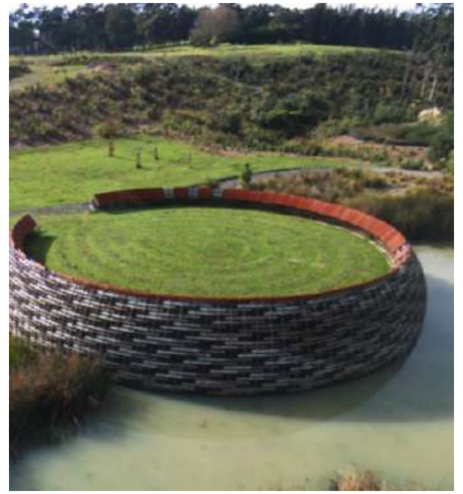
- Hundertwasser was an Austrian born New Zealand artist and architect who stood out as an opponent of the 'straight line ' and any form of standardization, a concept that he expressed in the field of building design.
- Roberto Marx was a Brazilian landscape architect. He was interested in the sensation of mobility and movement through a landscape. He also made clever use of enormous scale, lighting and reflection particularly in his use of water.
- Both Marx's and Hundertwasser's works have different experiences when the observer is directly within the space and when the observer is experiencing the space from afar (above).

NAVIGATOR PATHS

LIGHT PATH, AUCKLAND

HIGH LINE, NEW YORK

KOPUPAKA RESERVE, WEST AUCKLAND



GABION ECO-STORE TANKS

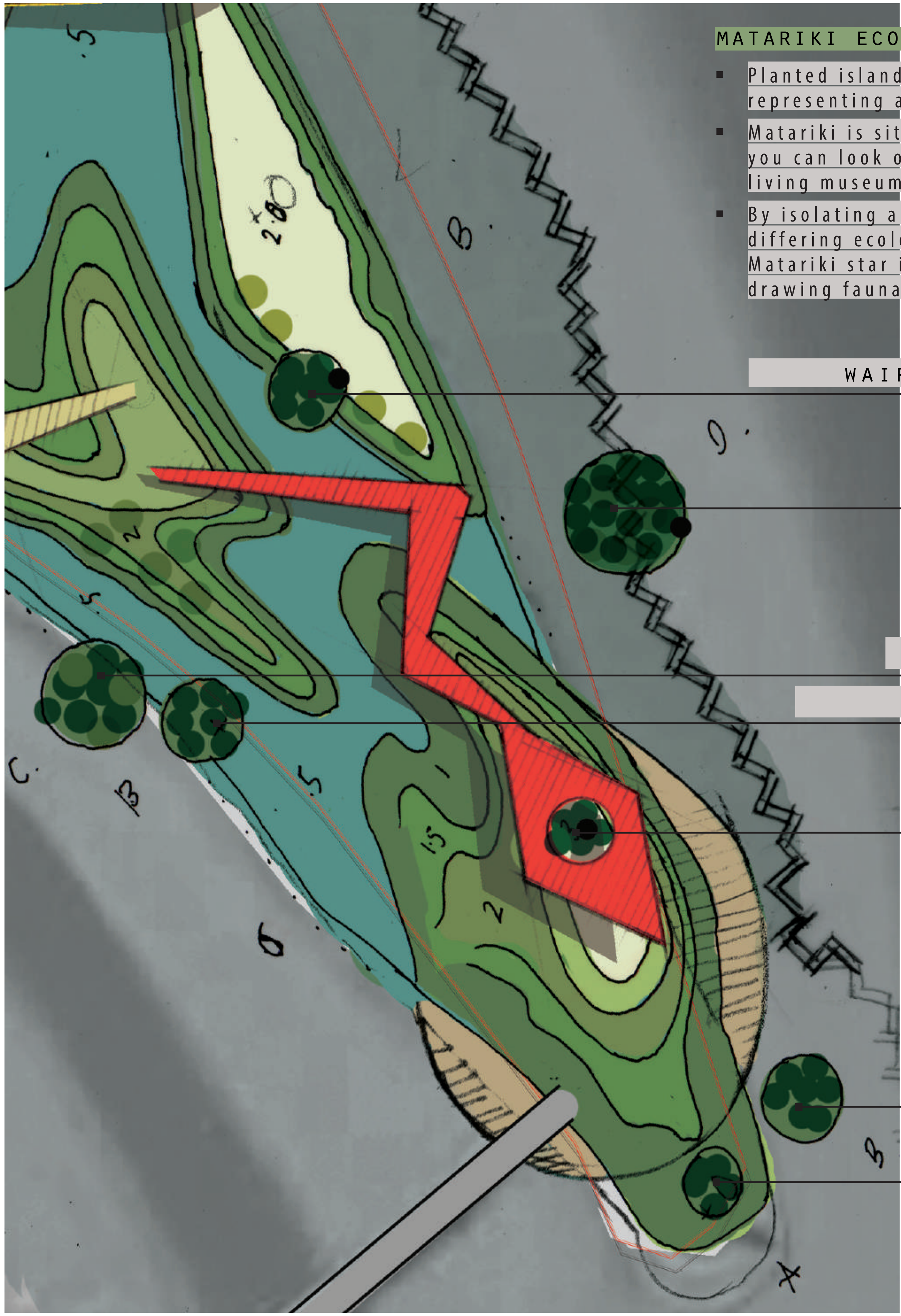
HIHIAUA PENINSULA | MASTERPLAN

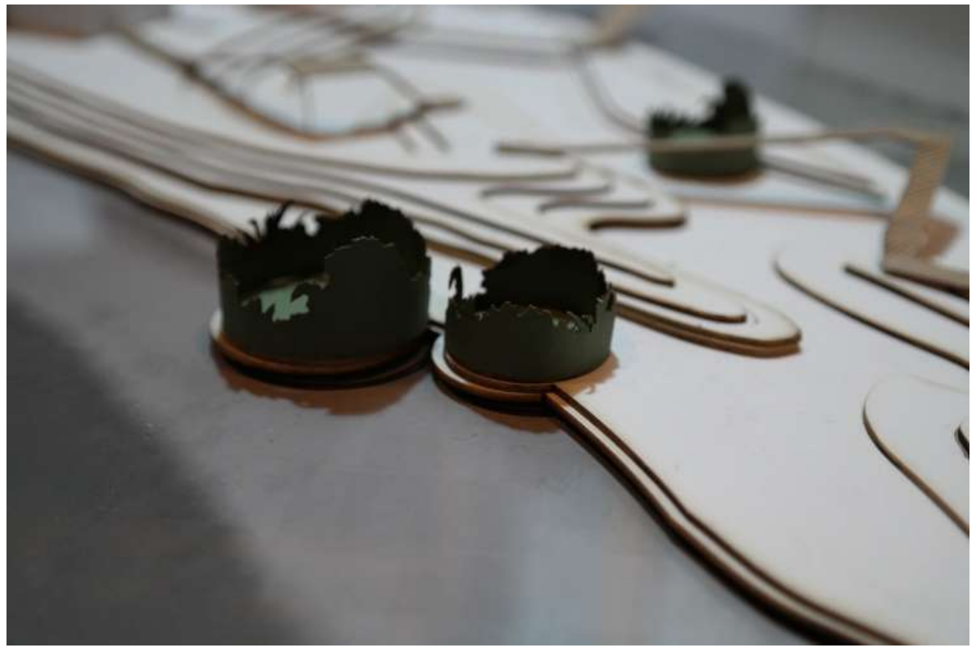
FOR MOMENTUM NORTH COMMUNITY GROUP

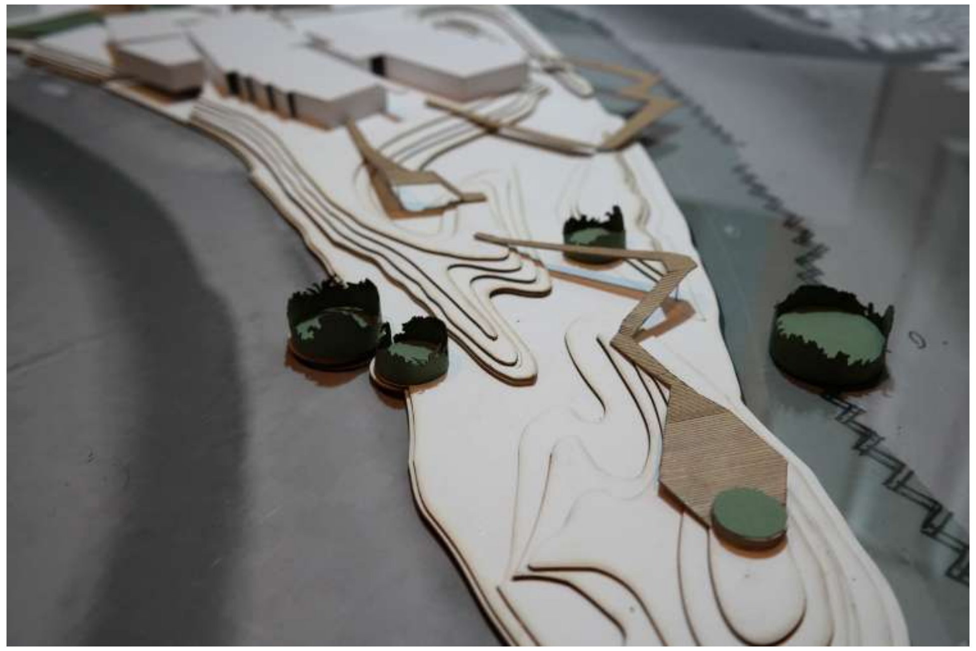

MASTERPLAN
SCALE 1:2,500
@ A3
N

MATARIKI ECOLOGY BASKETS

- Planted islands are located in the landscape, each representing a star in the Matariki constellation.
- Matariki is situated at the central viewing deck from where you can look out and locate each star. This station acts as a living museum to encourage cultural education.
- By isolating and encouraging a different habitat to support differing ecology within each star's retaining 'basket', the Matariki star islands would serve to aid in diversifying and drawing fauna to Hihiaua over time.







MATARIKI ECOLOGY BASKETS

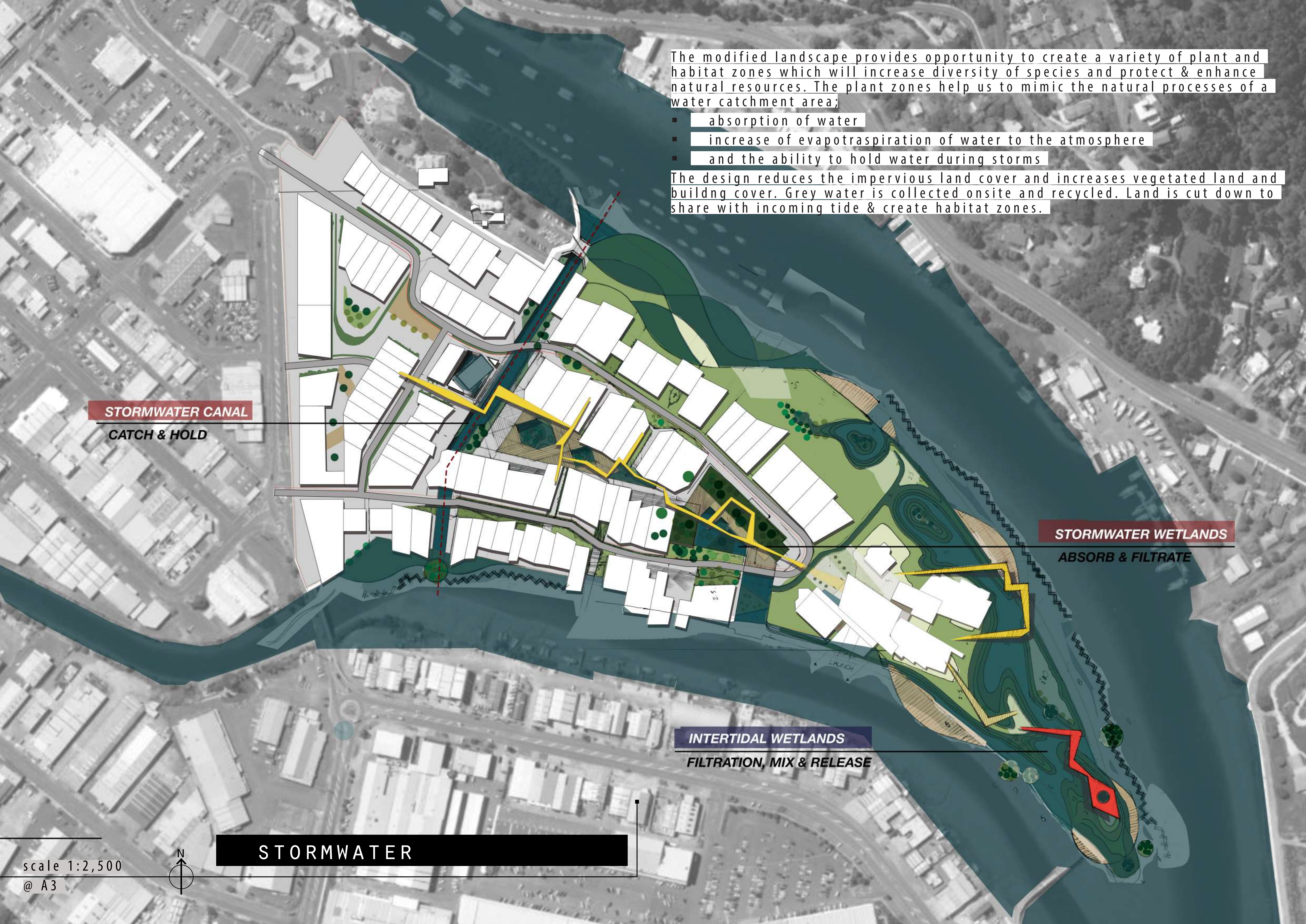
[not to scale]

N

The modified landscape provides opportunity to create a variety of plant and habitat zones which will increase diversity of species and protect & enhance natural resources. The plant zones help us to mimic the natural processes of a water catchment area;

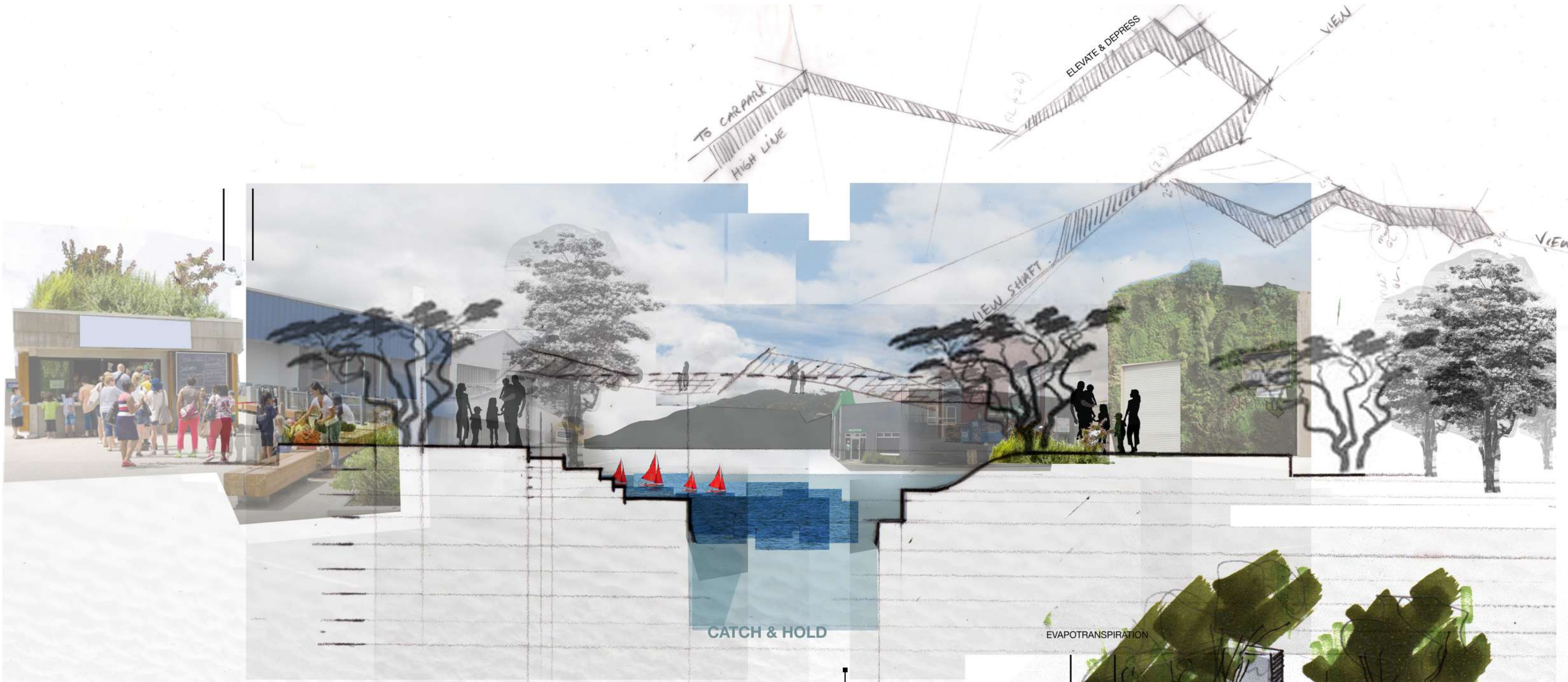
- absorption of water
- increase of evapotraspiration of water to the atmosphere
- and the ability to hold water during storms

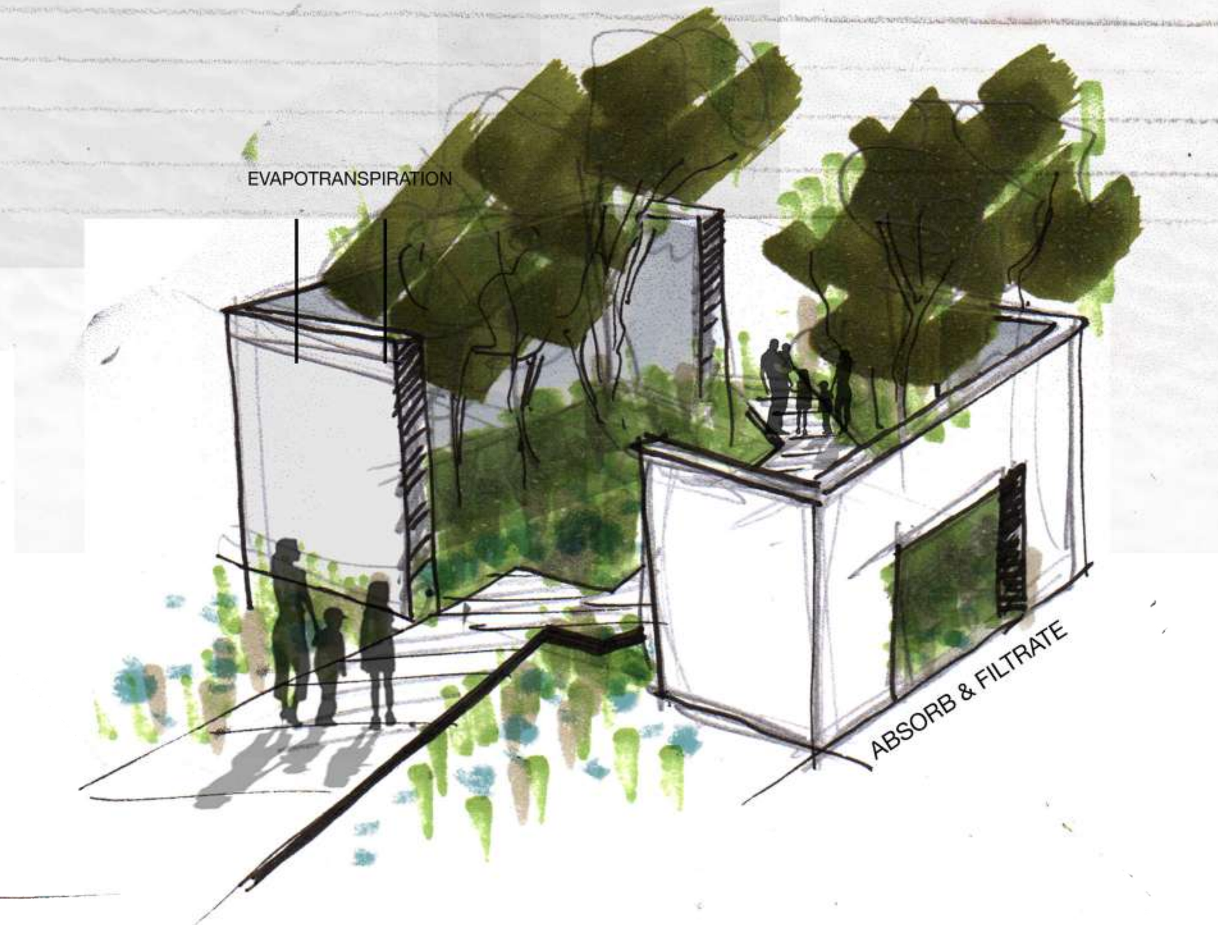
The design reduces the impervious land cover and increases vegetated land and buildng cover. Grey water is collected onsite and recycled. Land is cut down to share with incoming tide & create habitat zones.



STORMWATER

scale 1:2,500
@ A3





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SCALE 1:2,500
@ A3

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ENVIRONMENTAL SOLUTIONS:

EMERGENT LANDSCAPES | DEPAVED BUILDINGS


WETLANDS
Provide feeding grounds for fish, birds and mammals Habitats for juveniles
WRYBILL
OIOI
BANDED KOKOPU
GREEN ROOFS
Reduce heat island effect | provide pollenator trails | Absorb water and assist with evapotranspiration
MARLBOROUGH ROCK DAISY
TARAIRE
RINGLET BUTTERFLY
OYSTER REEF
Remediate contaminated soil, sediment and water| Provide opportunity to plant in the sediment along the edge
GIANT UMBRELLA SEDGE
HARAKEKE
NZ FAIRY TERN
INANGA
SALT MARSHES
The area usually support a large population of wildlife, and are a key habitat.
WHITE HERON
TOETOE
KERERU
TOMTIT
PURIRI TREE
LONG TAIL BAT
FOREST
Provide a Food forest for neighbouring mammals and birds | carbon sink | reduction in heat island effect | increase in evapotranspiration and filtration
ECOLOGY
scale 1:2,500
@ A3
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LOW BUILDING HEIGHT CONNECTS AND RELATES TO CONTEXT

RELEVANT TYPOLOGY FROM SURROUNDING CONTEXT: BOAT SHEDS AT HATEA RIVER

RELEVANT LIGHT INDUSTRIAL TYPOLOGY: SET BACKS FOR PRIVATE / PUBLIC SEPARATION

EXISTING RESIDENTIAL TYPOLOGY AT REYBURN HOUSE LANE: APARTMENTS ABOVE OFFICES + COMMERCIAL

EXISTING BUILDINGS

RE-DEVELOPMENT PROPOSED FOR ALMOST ALL HAIL SITES AND ONLY A SELECT FEW OTHERS

NON-HAIL SITE BUILDINGS

- A select number of existing buildings were selected to be re-designed or relocated to better incorporate the proposed masterplan.

COUNCIL ADVISED 'HAIL' SITES

- Supplementary to the council precinct plan was a map of all suspected contaminated (HAIL) sites.
- HAIL sites are listed as having been associated with an industry that may have led to contamination of the site (for e.g. if certain chemicals could have been stored or used on site)
- Contamination is not confirmed but the site would be subject to additional testing before being issued a resource or building consent.
- These sites are an appropriate choice to be utilised for redevelopment, as new builds will already be likely on many.
- The community could propose these sites be offered for commercial investment to achieve the desired, community-driven plan overall

SITES FOR DEVELOPMENT

EXISTING, NON-HAIL BUILDINGS TO BE KEPT AND RENOVATED, REPURPOSED AND ADAPTED FOR NEW, MIXED USE

EXISTING BUILDINGS

- Rather than wiping the area of any residual history or character, the existing buildings could be utilised to encourage and express cultural identity and character of the area, and encourage 'sense of place'
- A mix of old and new, along with alternating facades and building heights encourage to create variation and add interest, and to frame key views.

GREEN ALLOCATED BUILDINGS

- To open up connection through the site as well as viewshafts to the cultural centre and Waka + Wave sculpture, these buildings would be turned into a reserve/mini wetland park with the Navigator Park travelling through the space.
- Rather than removing the entire buildings and generating waste, key walls would be lowered to open up views and the buildings would be turned into 'planter boxes' - over time and with assistance, returning to an overgrown, natural state.
- In the interim period, the community could utilise these sites for tactical urbanism in the form of murals, colour and planting to transform the space.

SITES FOR ADAPTIVE REUSE

scale 1:2,500
@ A3

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ADAPTIVE RE-USE OF EXISTING BUILDINGS

- Renovations to existing buildings will serve to manipulate and re-shape the existing environment by shifting street fronts to redirect the road.
- Building adaption could take place over a staged period of time in order to allow for the adoption of new tenants and for relocation of current industrial tenants.
- Balconies and roof gardens would be added, with further extensions at and above ground level taking place to increase building footprints to cater for an increase in density and diverse typologies.
- Some 'keep' buildings will feature ground level extensions - use the roof of these extensions as walkways for residential access above.
- Encourage interaction by neighbours through shared walkways and entrances.
- Encourage efficient use of water runoff by the whole community, rainwater catchments for blocks could be used as grey water supply for a collection of residents for shared cost.

NEW FOOTPRINTS

scale 1:2,500
@ A3

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VIEWSHAFTS FROM SITE

- Keep building height low (2-4 storeys, above 2 storeys only at specified sites) to relate to context; mountains, surrounding buildings, rest of Whangarei, Hatea Loop walkway and the cultural centre.
- Further encourage this idea of extending the skyline through placement of roof gardens, green walls and planted balconies.
- Frame views between buildings to accentuate the skyline.
- Place low storey buildings at key viewpoints so mountain ranges are not obstructed
- Elevate pedestrians above road level via the Navigator Path with special attention in design to the orientation of the path as it moves through the site to further highlight and reveal views.

PEDESTRIAN CONNECTION

- Shared, curbless streets to remove the priority of the car. Curbless street design combined with planted swales to double as flood tactic to reduce stormwater flow
- Pedestrian and cyclist shared relationship, reduced speed limit. Reduced vehicle access to Cultural Centre end (drop-off, service, disabled vehicle access only)
- Public parking pulled to back of village to encourage public movement through space, improve relationship of public with surroundings. Re-use existing building facades for carparking building so as not to on landscape.

VISUAL + PHYSICAL CONNECTION

scale 1:2,500
@ A3

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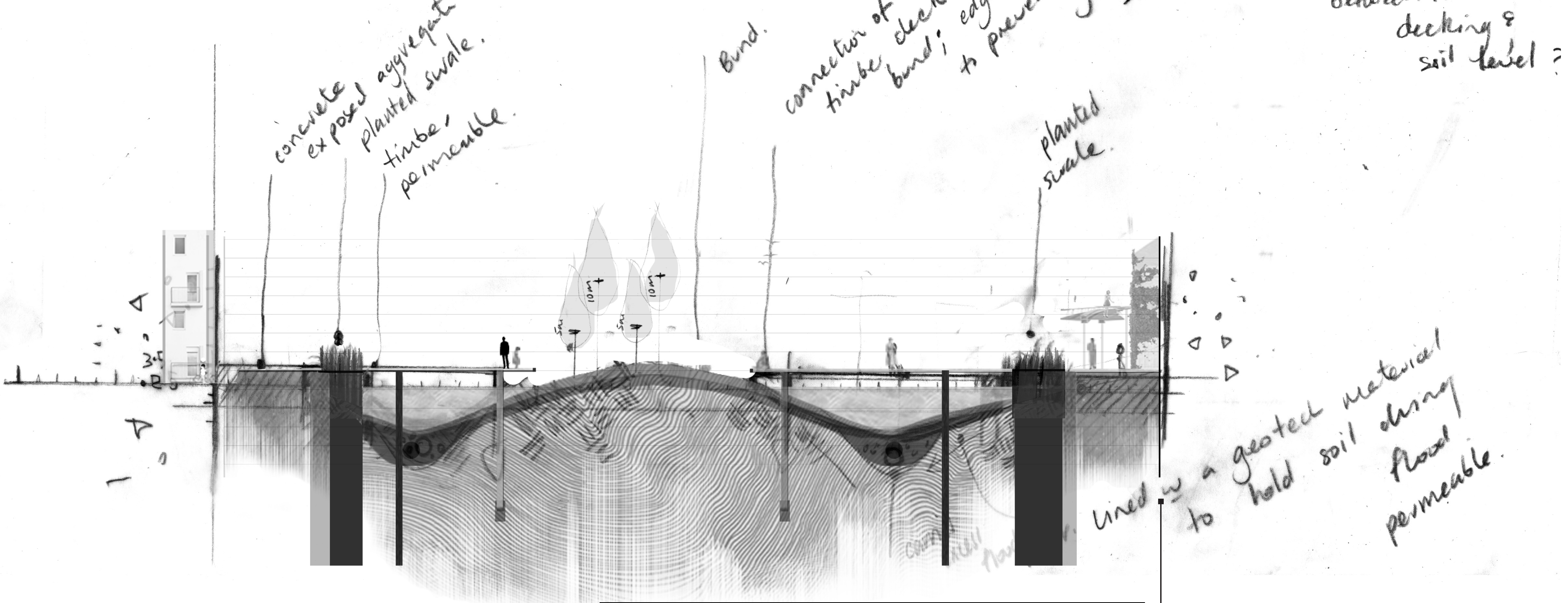
| ADAPTIVE RE-USE OF EXISTING BUILDINGS TO REDUCE WASTE + COST AND GENERATE ARCHITECTURAL CHARACTER FOR HĪHĪAUA |

| TALLER DEVELOPMENTS POSSIBLE WHERE VIEWSHAFTS ARE NOT INTERUPTED TO PROVIDE INTEREST TO BUILT ENVIRONNENT + FRAME VIEWS|

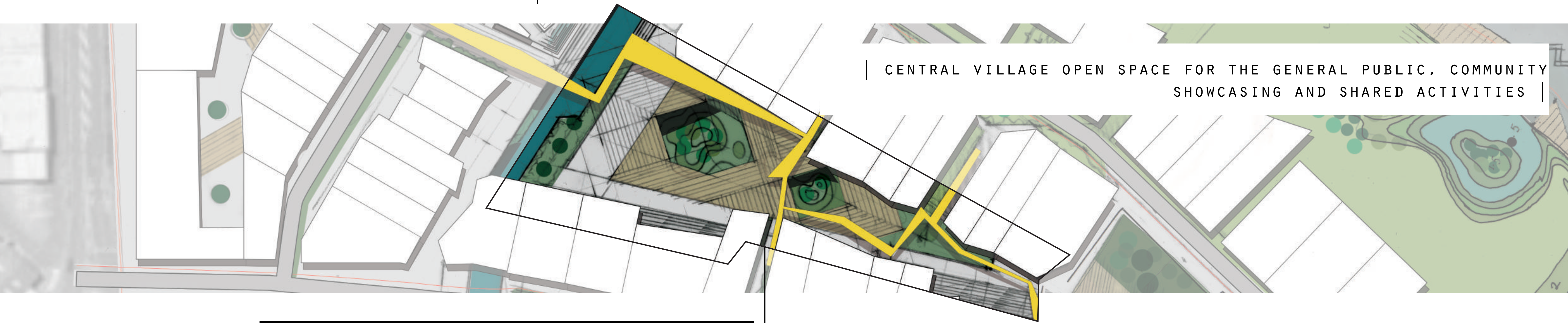
ADAPTIVE RE-USE



SECTION BB

SCALE 1:200 @ A3

PUBLIC INTERACTION ENCOURAGED VIA PEDESTRIAN ACCESS ON NAVIGATOR PATH TO CULTURAL CENTRE

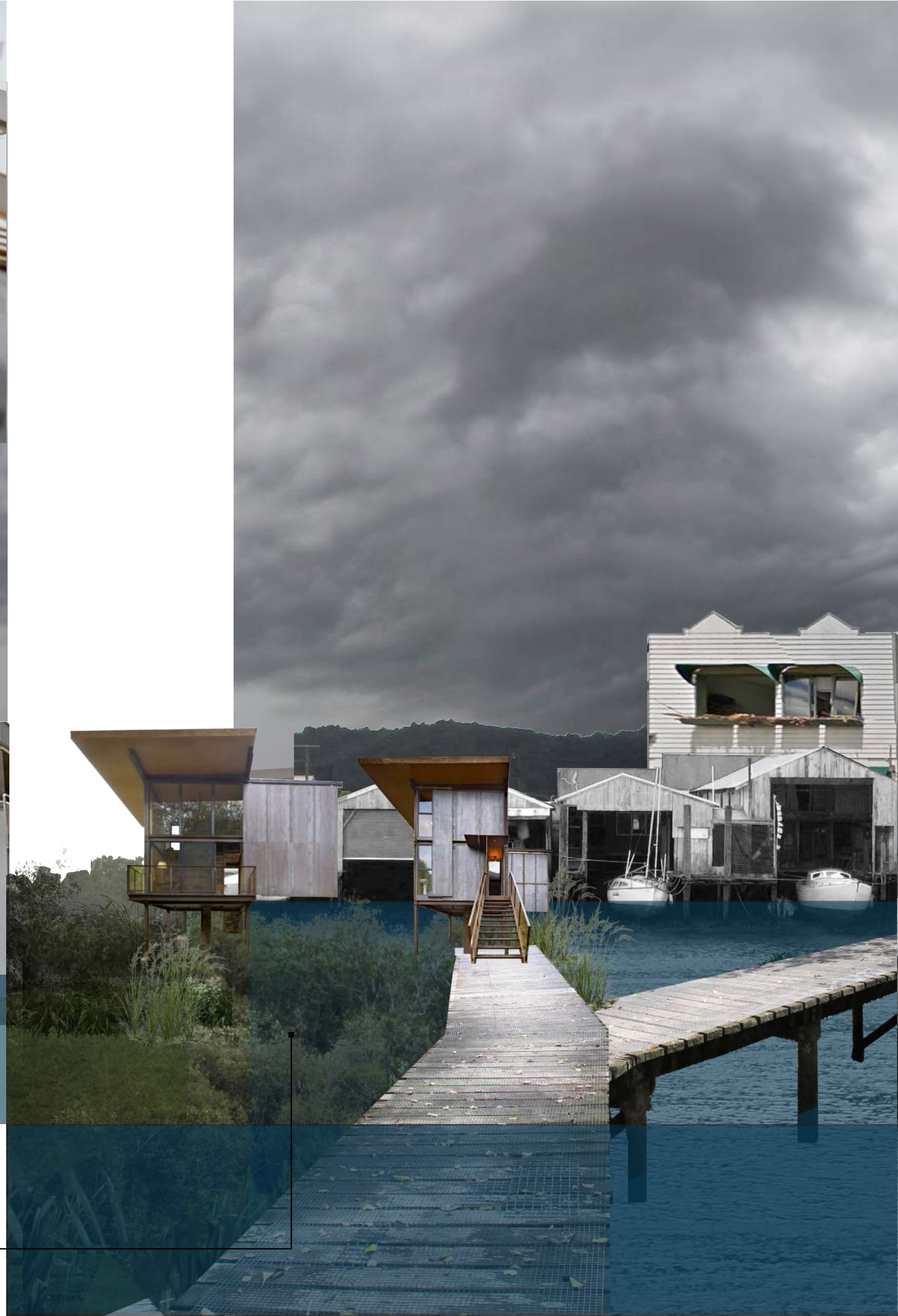


CENTRAL VILLAGE OPEN SPACE FOR THE GENERAL PUBLIC, COMMUNITY SHOWCASING AND SHARED ACTIVITIES

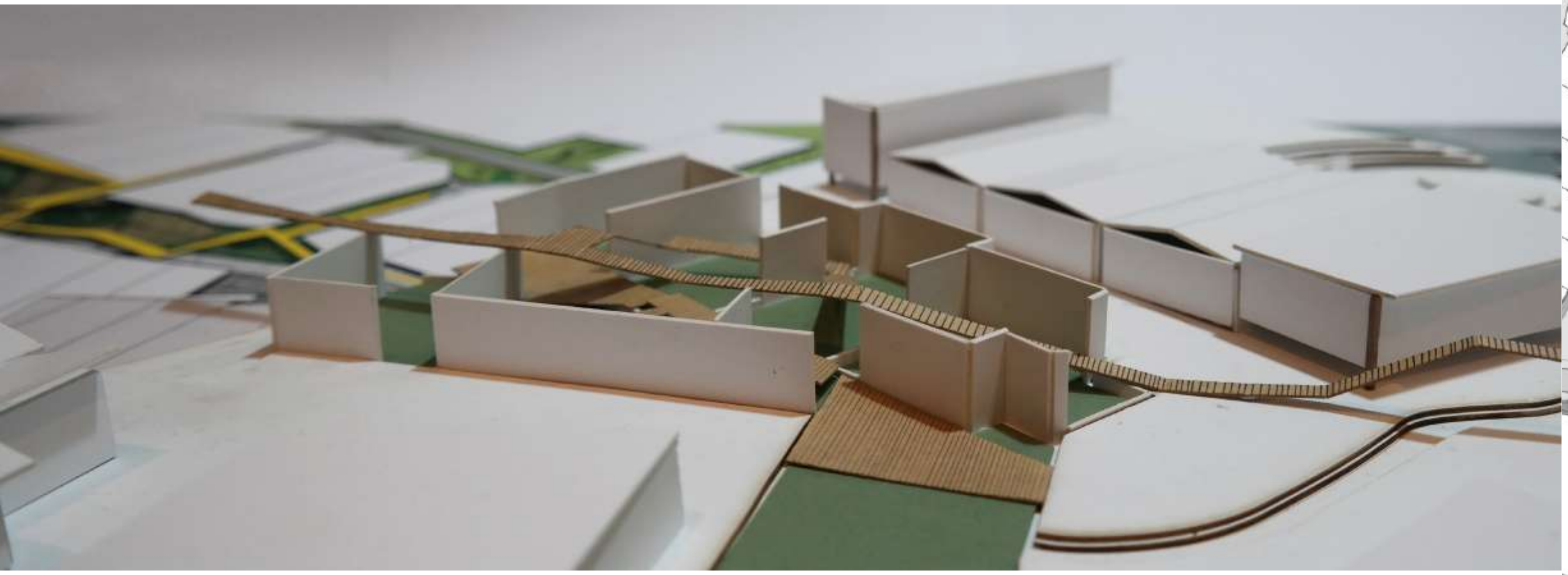
HIHIAUA VILLAGE

FLOOD RESILIENCE

- Whangarei largely revolves around its harbour, with many existing boat houses remaining along the waterfront. This shape is reiterated around the site and could be further encouraged in the stilt typology to address flooding issues.\
- New builds must have a raised floor (+1m above current GL) on piles for future flood proofing.
- Existing buildings to be renovated for mixed use, with lower floors as retail or commercial space and residential on upper floors as further flood protection in the case of an extreme event.
- Renovations must allow an extra 1m in ceiling height for ground floor to enable future raising of FL for flood proofing.
- Encourage efficient use of water runoff by the whole community, rainwater catchments for blocks could be used as grey water supply for a collection of residents for shared cost.
- Raised, permeable timber walkways connect pedestrains around the site, to encourage a business-as-usual mentality in the event of flooding.



FLOOD RESILIENCE



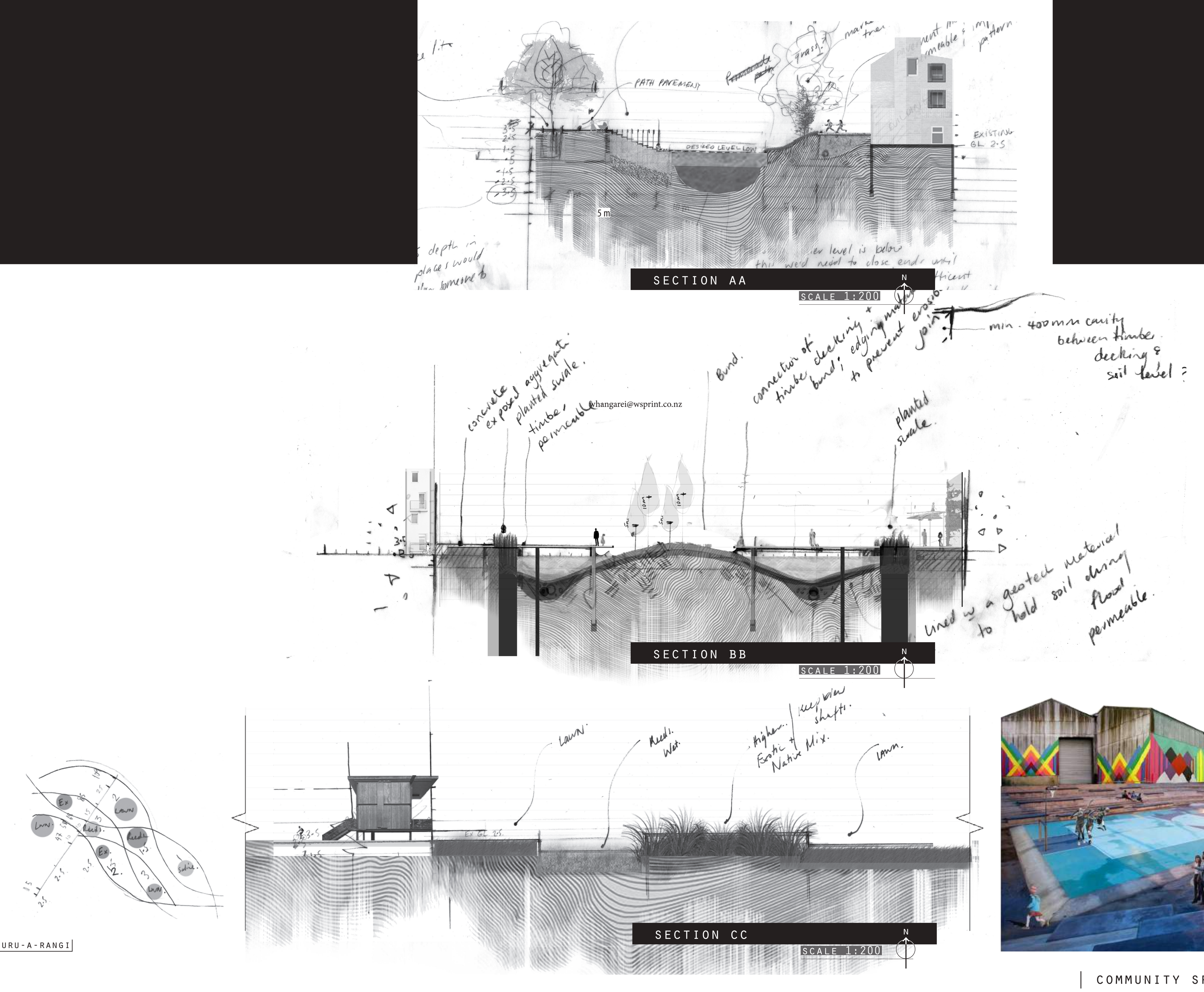
| NAVIGATOR PATH ALLOWS VISUAL CONNECTION TO SIGNIFICANT SITES |

| THE PATH SYMBOLISES PAPATUANUKU IN THE UNDULATING SHAPE, EMMULATING THE PEAKS SURROUNDING HIHIAUA |

NAVIGATOR PATH

| TACTICAL URBANISM TO ENHANCE PUBLIC SPACE, PARTICULARLY STREET ART, MURALS/COLOURFUL INSERTS, CARVING, AND COMMUNITY PLANTING |

TACTICAL URBANISM



HĪHĪAUA PENINSULA MASTERPLAN PROPOSAL: ADAPTIVE RE-USE + EMBRACING THE FLOOD

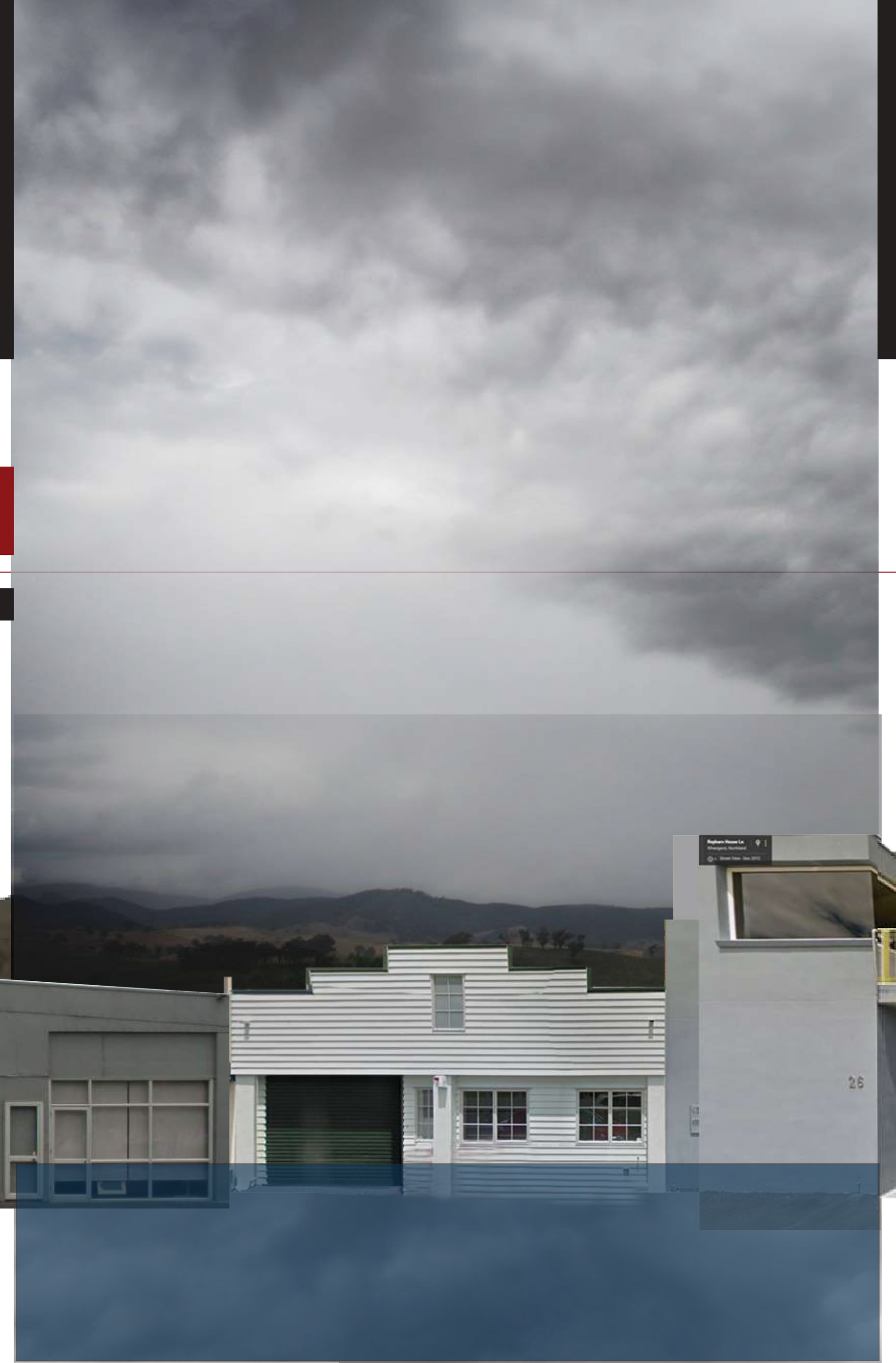
SIANNE SMITH | SHARON ECCLESHALL | ALEESHA KUMAR | VIGNESH KRISH | SHIBLING LI

LOW BUILDING HEIGHT TO KEEP VISUAL CONNECTION WITH MOUNTAINS

CURBLESS SHARED STREETS

TACTICAL URBANISM IN THE FORM OF COLOUR, PLANTING AND INSTALLATIONS BY COMMUNITY

COMMUNITY SPACES THAT DUALLY FUNCTION TO PROTECT AGAINST FLOODING



FLOOD RESILIENCE

SELECTED BUILDINGS ONLY WITH TALLER HEIGHT TO HIGHLIGHT AND FRAME VIEWS

CONNECTION THROUGH SITE VIA ELEVATED WALKWAYS

ADAPTIVE RE-USE OF EXISTING BUILDINGS TO REDUCE WASTE + COST AND GENERATE ARCHITECTURAL CHARACTER FOR HĪHĪAUA