
Appendices



Looking down on Kumeu Town Centre, the New World Supermarket under construction centre of image.

A. Analysis Mapping

Auckland context

This map shows the study area within its context of the Rodney Local Board Area, and the wider Auckland region. The Rodney Local Board is by far the largest Local Board area within the Auckland region, and for this reason, its greenways plans are split into smaller areas - mapping the entire area at once would be extremely unwieldy, and the data presented would be at an unreadably-small scale.

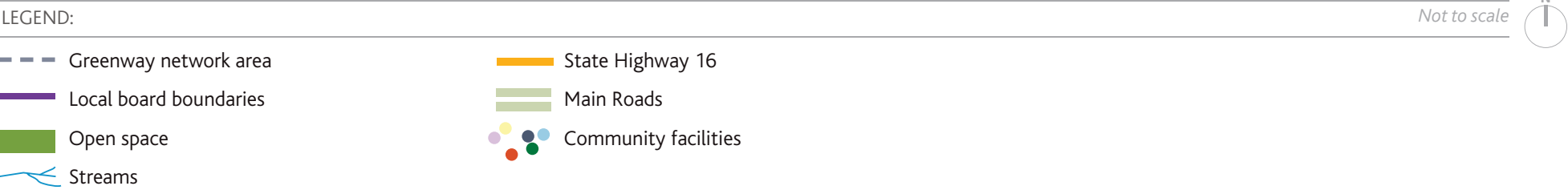
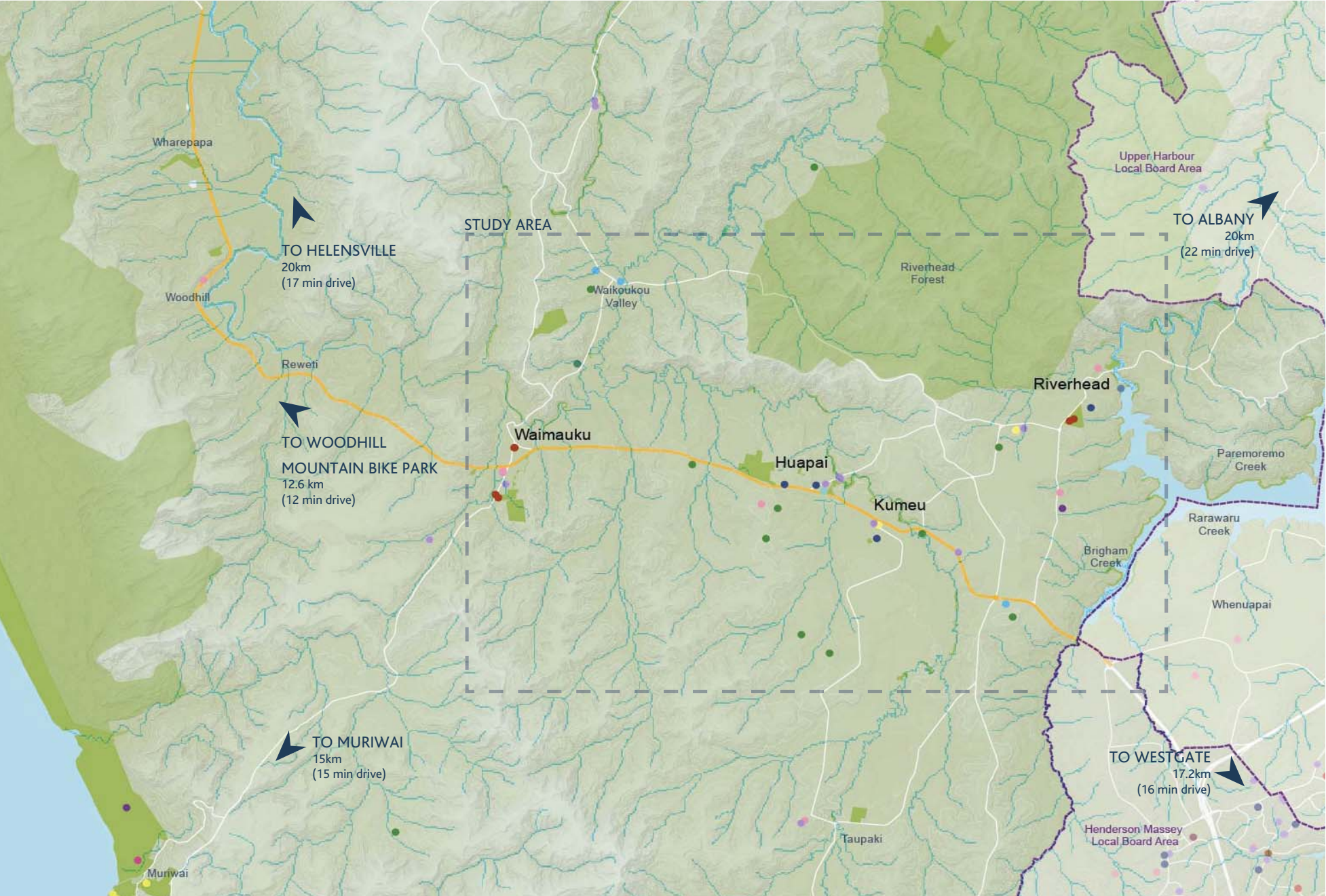
The area hosts (or provides access to) a number of regionally significant recreational amenities, including the Woodhill Mountain Bike Park and Ropes Course, Muriwai Beach and the Riverhead Forest walking and biking tracks.

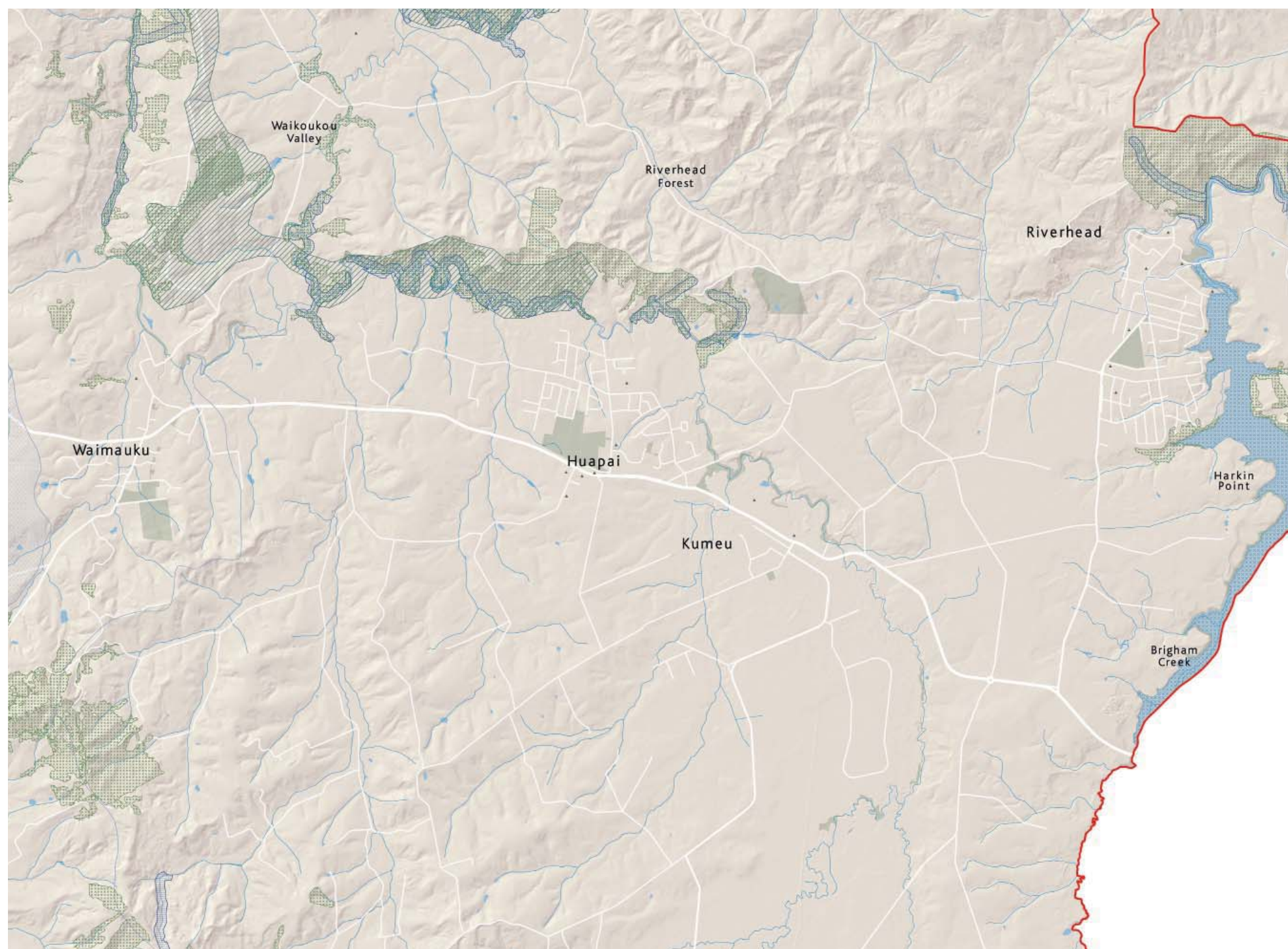
Lacking a coastline, connections to this area are primarily road and rail. SH16 connects east-west through the area, before striking north and passing through Helensville before rejoining SH1 at Wellsford. At Waimauku, many also travel southwest to the popular Muriwai Beach and Gannet colony. The rail line follows SH16 for much of the study area, joining the highway at Kumeu before diverting north again at Waimauku and travelling north through Helensville, Wellsford and beyond.

At this scale, there are several items of particular interest to be considered in the creation of the greenways network:

- The Te Araroa national walkway does not intersect the study area
- The area is well served by road and rail connections, but does not have ferry access, due to a lack of coastline
- The highway and rail network run through the middle of the study area, severing it into two parts
- The study area is large - as large as many urban local board areas

A more detailed analysis of the underlying factors that have shaped and influenced this Greenways Plan is explained in this section.





LEGEND:

- Boundary
- Stream
- Parks
- Terrestrial [rp/dp]
- Marine 1 [rcp]
- Marine 2 [rcp]
- Natural Stream Management Areas Overlay [rp]
- Quality-Sensitive Aquifer Management Areas Overlay [rp]

Scale 1:45,000

Ecology and Landscape

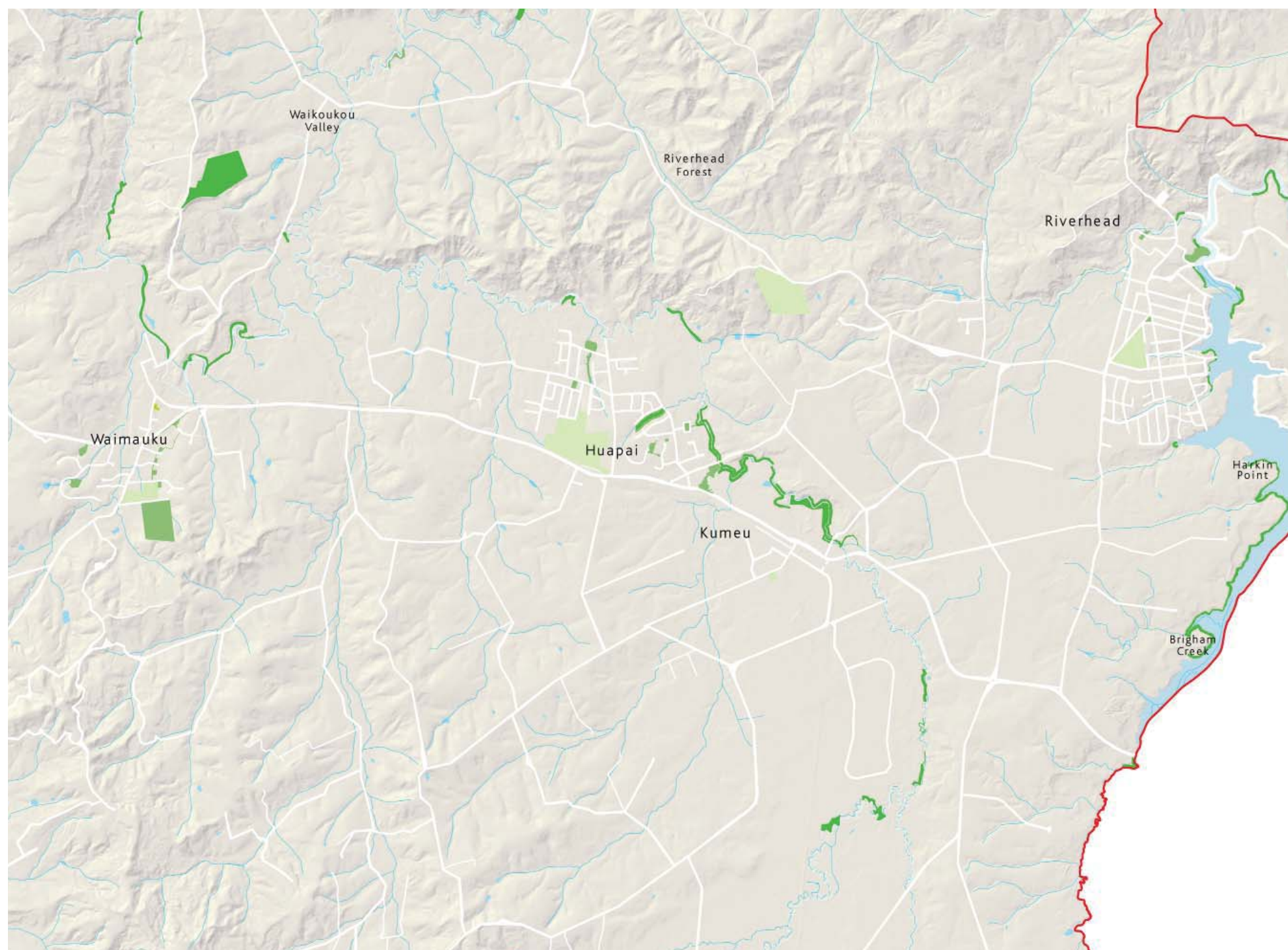
The study area has two notable areas of ecological significance; these being the Brigham/Rangitopuni Creek Inlet, and the Kumeu River (and headwaters). The Kumeu River (and environs) is also designated as an Outstanding Natural Landscape and a Natural Stream Management Area in the Unitary Plan, underscoring its significance. Greenway connections can strengthen and link these ecological areas, improving resilience of the network as a whole. Completed greenways can treat and reduce contaminated stormwater runoff, improving the health of both freshwater and coastal waterways.

The Brigham/Rangitopuni Creek inlet is one of the best examples of unspoilt, muddy, mangrove-lined inlets of the inner Waitemata Harbour. The diversity of the flora and fauna here is generally large with extensive beds of shellfish and abundances of birds and fish. These areas are particularly important as pathways for migration by native freshwater fish, and provide habitat for threatened secretive coastal fringe birds, particularly where abutting terrestrial vegetation, which provides roosts and nest sites for birds. Birds which can be found in the area include black shag, kingfisher and white-fronted tern.

In terms of terrestrial SEA's, the Kumeu River area is the most significant, offering areas of bush which are notable for their diversity of habitat, their rarity and which are also representative of original bush cover which would have existed there. The bush areas around Waikoukou Stream and School Road are also noteworthy as offering 'stepping stones' for wildlife movement throughout the area.

Finally, the area around the Kumeu River/Waikoukou Stream is also designated as an Outstanding Natural Landscape (currently subject to an appeal). This area is described in the Unitary Plan as being Hill country (wild nature), scheduled for its "linear sequence of stream corridors and some more elevated ridge land that is notable for the presence of remnant pockets and bands of native forest, dominated by kauri, puriri, totara and other canopy species". This is described as having a "very clearly defined relationship between topography and land cover creating a quite distinctive and Auckland/New Zealand landscape".

As with archaeological areas, the presence of such rich fauna, flora and landscape brings with it specific development constraints, but adds greatly to the interest and potential education potential of any Greenways routes. Greenways projects carry with them a revegetation component, which can expand on and strengthen these important ecological areas.



LEGEND:

-  Road
-  Boundary
-  Stream
-  Open Space - Conservation Zone
-  Open Space - Informal Recreation Zone
-  Open Space - Sport and Active Recreation Zone
-  Open Space - Community Zone

Scale 1:45,000



Key Open Spaces

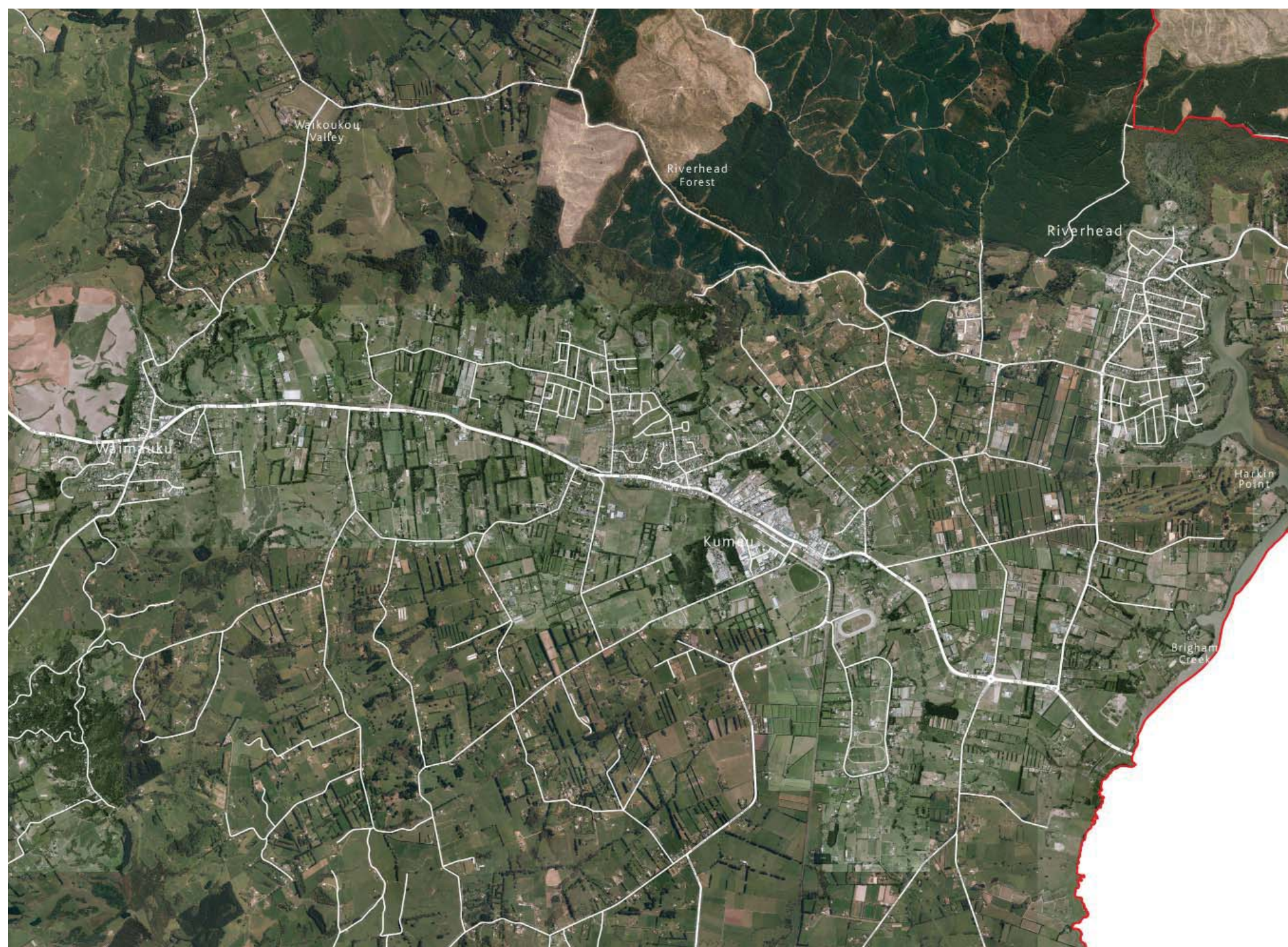
This map shows all land zoned open space within the Auckland Unitary Plan, and is an important map as greenways generally aim to link areas of open space together, via quiet slow speed streets. The zoning breakdown of open space is important as it sets out the type of planning controls that any greenways project would be delivered under.

Based on land area alone, there is a relatively low proportion of open space, although taking into account the low population density in this area, provision starts to balance out. Each of the townships is served by a large centrally located park, and there are a number of stream corridor reserves locally as well. Beyond this, however, there is little in the way of open space provision.

The relative sparsity of open space in the study area presents challenges in developing a greenways plan, as it puts a much greater emphasis on road connections, or on negotiating easements/access arrangements with developers or landowners. These negotiations are not able to be undertaken at the time of preparing this plan, as individuals change regularly, so instead an indication has been given of where these routes would ideally go. Where these occur across private land, these connections are indicative only, and signal an interest that may be considered by Council if property discussions come up.

It is worth noting that much of the open space in the Waimauku township is undeveloped, so while the zoning provision of open space looks acceptable, in reality there is very little there available for use. This makes provision of a functioning greenways network a higher priority here, due to the lack of other recreational options.

It is also worth noting that open space will be provided over time as residential development occurs, and that the greenways plan offers an ability to inform each standalone development of the regional context that their open space provision could connect into.



LEGEND:

- Road
- Boundary

Scale 1:45,000



Aerial Photography

This aerial photograph shows the broad landscape patterns of the study area within its surrounding context. The four townships can be clearly identified, connected by road and rail. At this scale, Huapai, Riverhead and Waimauku appear as traditional rural settlements, while Kumeu appears more as a collection of industrial and commercial buildings, with residential properties beyond this at a much lower density than its neighbours.

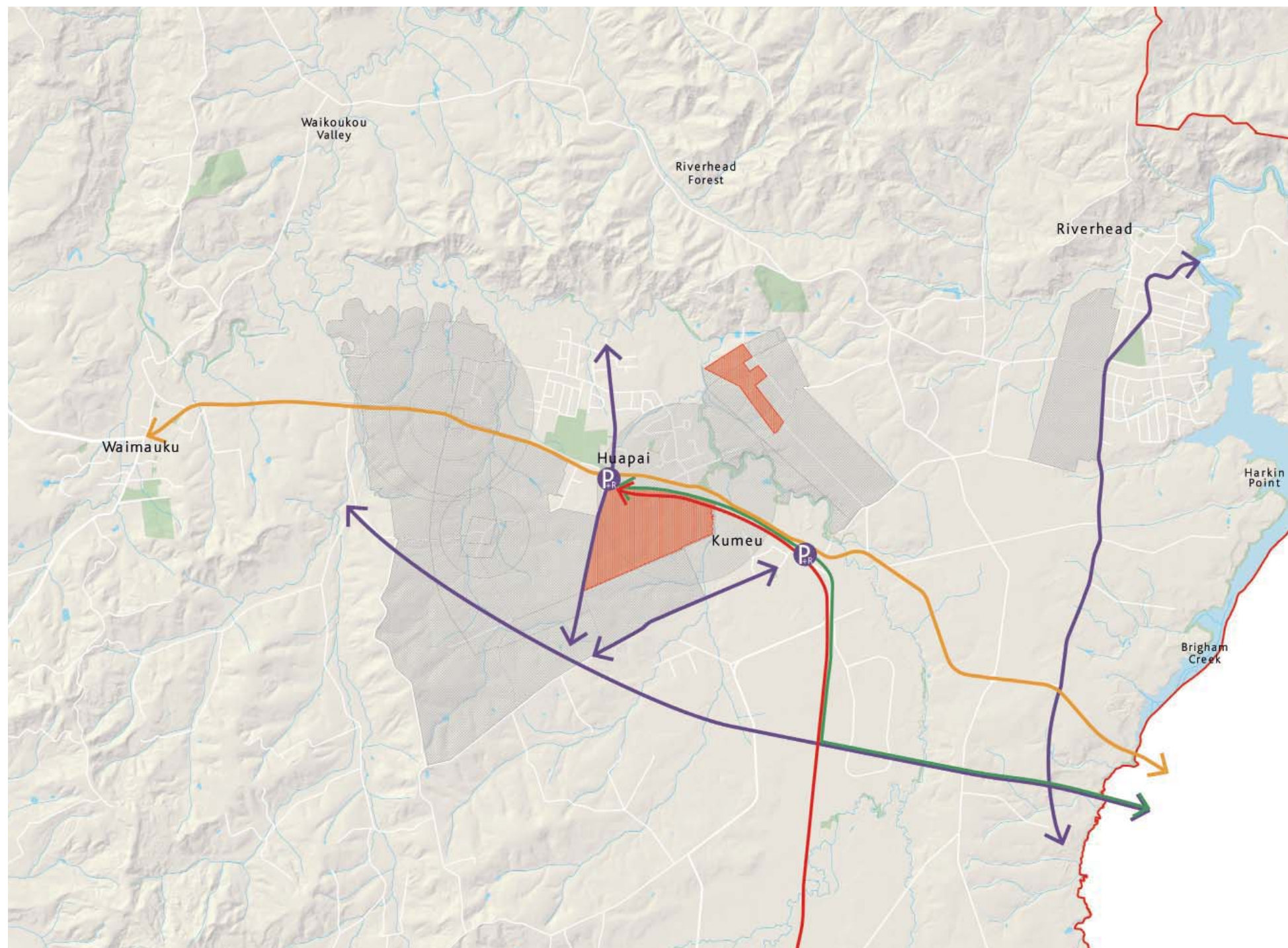
Beyond the townships themselves, the study area is a mix of lifestyle properties, large residential lots and working farms - primarily cropping. At this scale, the typical horticultural land use pattern can be picked out, with shelterbelts chopping the landscape into regular shapes, and sheltering vineyards and crops of strawberries, apples, pears and the like. Some pastoral land uses also exist here.

The study area forms a relatively undeveloped 'gateway' to the urbanised Auckland footprint directly east of here. This is set to change however, with many of these rural areas earmarked for residential development under the Unitary Plan. Much of this land is set out as Special Housing Areas, where conversion to residential properties will be relatively rapid. While this will undoubtedly change the character of the study area, it does offer the ability to 'bake in' a high performing greenways network as part of these developments.

Looking at the study area at this scale, there are four 'macro' landscape patterns which define it from a greenways perspective:

- Relatively flat contour, meaning that the greenways network can occur on good accessible grades to maximise usage.
- Very limited coastline (Brigham Creek), but a number of streams, which often form the 'backbone' of a greenways network
- Severance of the area into two sectors by SH16 and the rail line
- Pockets of industrial land, which further sever neighbourhoods from each other – generally clustered along SH16.

Over time, the Rodney Local Board is planning on completing a Greenways Plan for the entire Board area, and as this develops, care will be taken to ensure that the links shown in this study area flow smoothly out into the surrounding areas.



LEGEND:

Scale 1:45,000



- | | |
|-----------------------|------------------------------------|
| Road | SH16 Safety Improvements |
| Boundary | New or Upgraded Roding Connections |
| Stream | Rapid Transit Network |
| Parks | Rail Corridor |
| Strategic Framework | Park and Ride |
| Special Housing Areas | |

Future Projects

The study area is set to see significant growth over the coming years, as set out in the Unitary Plan, and from a greenways perspective, some of the key moves are shown opposite. This is an important planning map, as it is at the early stages of planning that Greenways can be 'baked in' to development proposals, and delivered in the most efficient manner. Within the study area, there are three main types of future projects:

- Strategic Housing Areas (SHAs)
- Future Urban Zoning
- Auckland Transport for Urban Growth plans (TFUG)

Special Housing Areas (SHAs)

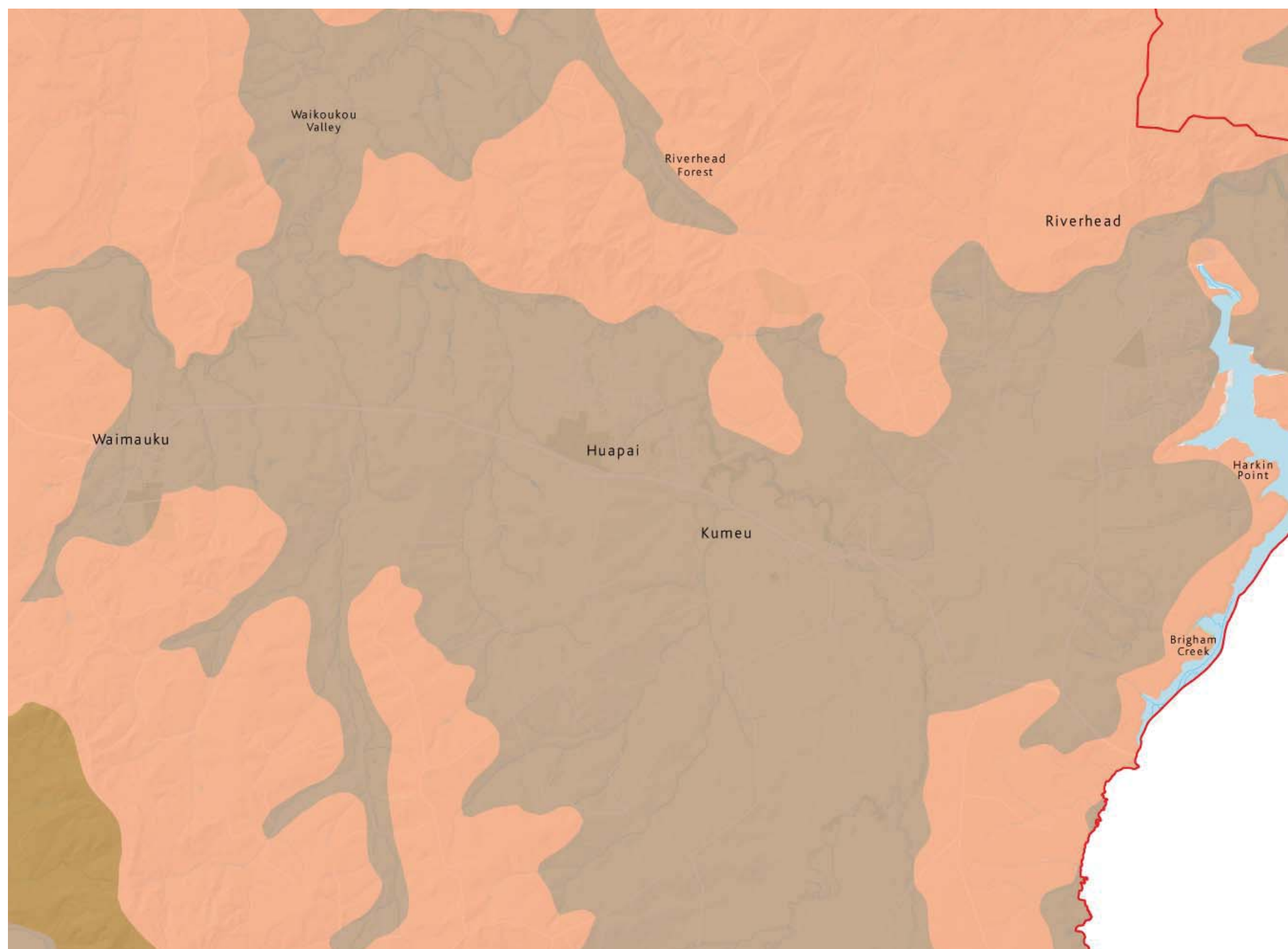
These are housing development areas set out across the city where fast-track development of housing (including affordable housing) can take place. There are two of these within the study area (the Huapai Triangle and Oraha Road), and these will be the first areas developed residentially on a large scale. As these areas are built, there are opportunities to deliver Greenways as part of the development, providing recreational and ecological opportunities within what are likely to be compact, intense pockets of housing.

Future Urban Zone

This is explained in more detail within the zoning section, but for the purposes of this plan, these could be seen to be the next areas to develop residentially, albeit in a more organic manner and over a longer time frame than the SHAs. As above, development in these areas raises the possibility of including greenways within their delivery.

Transport for Future Urban Growth






The proposed zoning and future projects as described above, in Kumeu, Huapai and Riverhead will provide around 900ha of future urban land, resulting in around 9,200 dwellings and 3,600 new jobs. To cater for this growth, Auckland Transport have created a draft network of transport improvements in this area, with delivery likely to occur post 2020. This suite of improvements includes safety upgrades, new roads, light rail and Park and Ride facilities. As above, opportunity exists to include greenways planning within some of these designs as they develop.



LEGEND:

Scale 1:45,000



-  Road
-  Boundary
-  Stream
-  Parks
-  Alluvial Soils
-  Waitakere Volcanic Soils
-  Waitemata Residual Soils

Soil Types

While the underlying geomorphology of the Auckland region is heavily influenced by its volcanic history, in this area the soils are generally from more sedimentary or alluvial origins.

In sedimentary terms, the 'Waitematā Basin' is the underlying process at play here. The Waitematā Basin formed quite rapidly between 24 and 18 million years ago, and extended from the North Waikato to Whangarei. This underwater landform collected sand and mud from eroding landforms including the Manukau volcanoes, and the giant Waitakere Volcano further west. This sediment was dominated by silts and muddy sands with some coarser grained sediments.





As the basin sunk, the sediments were buried to greater depths. The basin is thought to have subsided to depths of between 1 and 3 kilometres. The sediments infilling the basin were compressed, consolidated and in places cemented to form a thick sequence of inter-bedded weak siltstone and muddy sandstones. Between 15-17 million years ago, this area was uplifted via tectonic activity, and this geological sequence is now collectively referred to as the Waitematā Group. Residual soils of the Waitematā Group are made up of mudstone and sandstone, and while relatively fertile, are also soft and readily eroded.

The low-lying alluvial soils around Huapai/Kumeu have likely been formed via stream erosion/deposition processes more recently. Alluvial soils are found in the areas where stream gradients flatten off, allowing the sediment load in the water to drop out. These soils are a mix of mud, sand and gravel (often with organic matter) and provide the most fertile areas found locally. These would have typically been colonised by Kahikatea and other broadleaf species. There are also likely to be some pockets of muddy substrate at coastal inlets and around waterways.

In the southwestern corner of the study area, a small area of Waitakere Volcanic soils is found, signalling the northernmost toe-slopes of the Waitakere Ranges - a geological formation comprising all that is left of the Waitakere super-volcano.



LEGEND:

-  Road
-  Boundary
-  Parks
-  Streams
-  Overland Flow Paths
-  Flood Plains

Scale 1:45,000

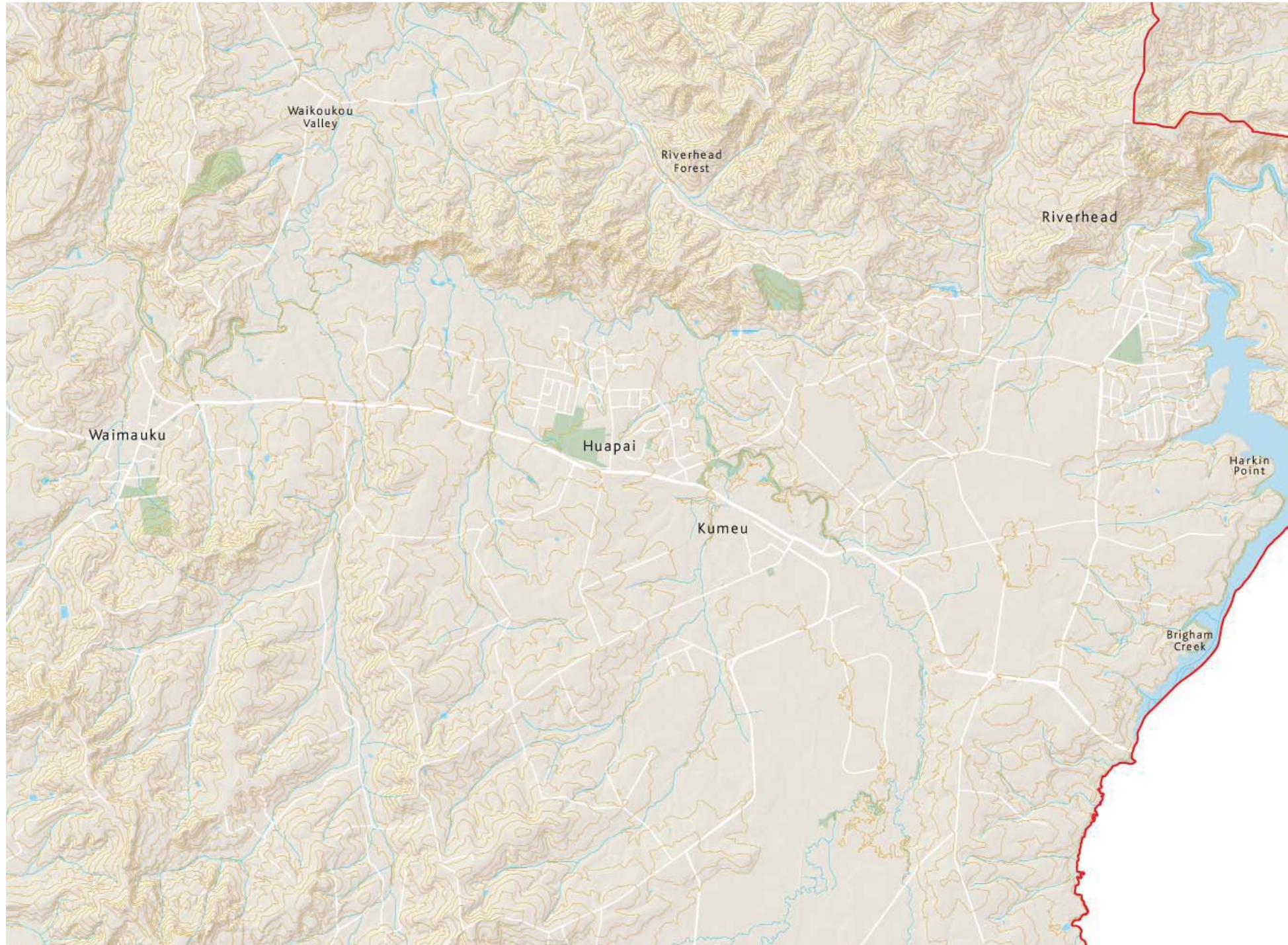


Hydrology and Catchments







This map shows overland flow paths, and the 100 year flood plains within the study area, as well as permanent local watercourses. Compared with much of the Auckland region, the stream profiles within the study area are in a relatively unmodified state, although a number of the smaller/ephemeral watercourses have been straightened for agricultural purposes.

Having said that, streams within agricultural areas often suffer high levels of nitrates and other pollutants, as a result of fertiliser, pesticide and herbicide runoff from surrounding farms. These then flow out via to the harbour, and affect the water quality in the Brigham Creek Inlet, and Waitemata Harbour. The 2015 State of the Environment Report Card marks the benthic health of this inlet as moderately to severely unhealthy. The Rodney Local Board is committed to protecting and restoring both the riparian and coastal environment. It is noted in the 2014 Local Board that planting stream banks and fencing off waterways helps reduce the sediment going into our waterways, and implementation of the greenways plan can help achieve this.

One notable feature of the board area is the extensive flood prone area running through the centre of the study area, and affecting Kumeu in particular. This is likely an indication of 'flashy' floods coming down from more steeply contoured catchments, and suddenly hitting a flat plateau. The result is that many of the properties in this area have minimum floor level heights well above the surrounding ground, and that we may see greenways in this area often under water. As this area develops residentially, scrutiny will also go on sustainable water treatment practices, to ensure that this problem is not worsened as impervious surfacing increases. There may also be flood mitigation projects proposed by Council. Such projects, typically supported by native planting and walking/cycling and recreational facilities have the potential to form/drive the greenways network in this area as development proceeds.



LEGEND: Scale 1:45,000 

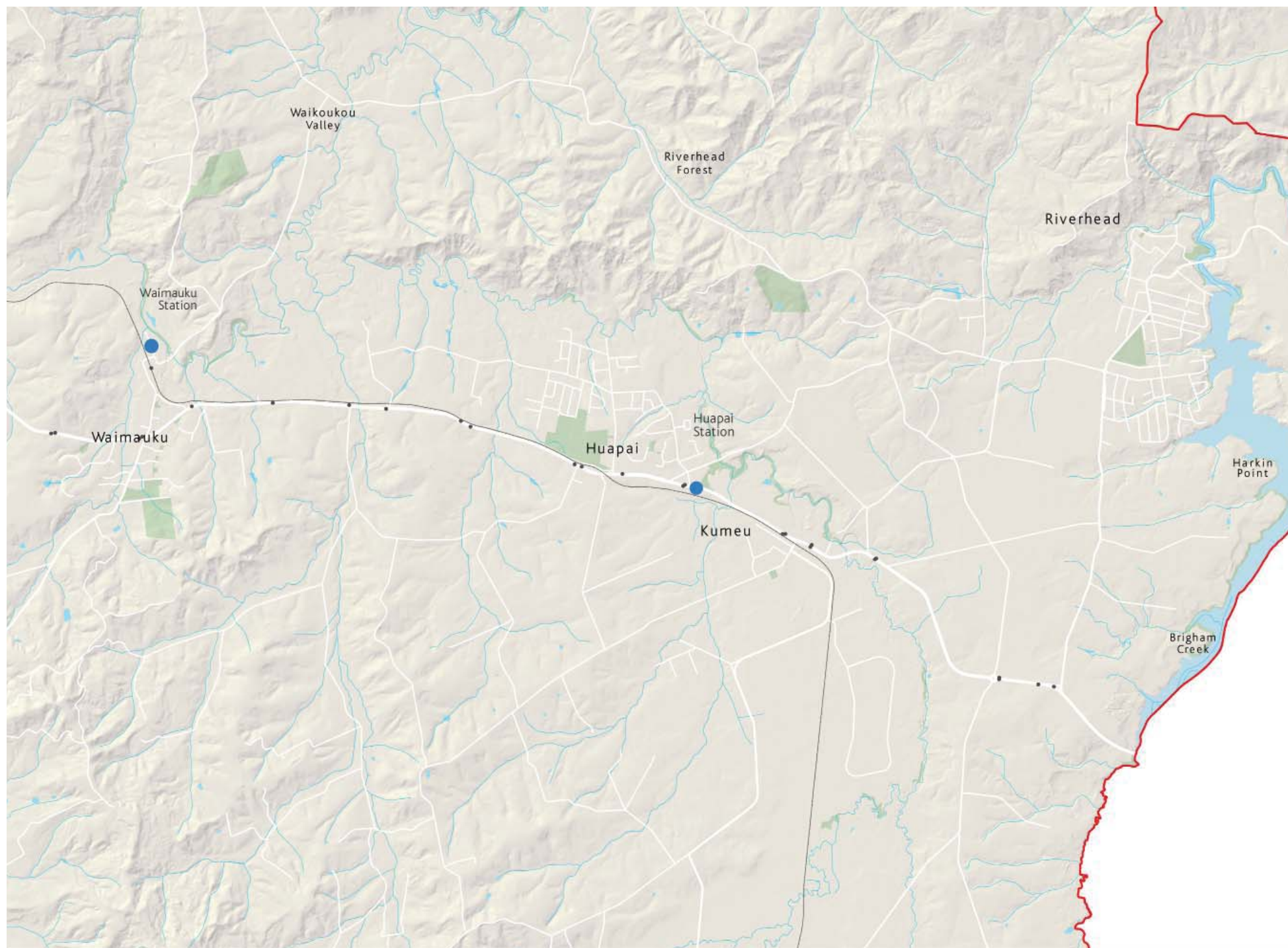
-  Road
-  Boundary
-  Stream
-  Parks
-  Latest Contour (10m)
-  Latest Contour (5m)

Topography

The majority of the study area is relatively flat – the exception being Riverhead Forest to the north, and to a lesser degree the foothills on the road out to Muriwai Beach. There are minor local incisions carved by the stream network, but topography along these corridors is generally non-challenging.

From a Greenways' perspective the flat contour is favourable, as it allows for a range of route options, avoiding busy roads; and is suitable for a wider range of ages and physical abilities. Where Greenways encounter more sloping areas, routes will be selected to minimise vertical climb, by orientating the paths along cross slopes.

In terms of the proposed greenway routes, further investigation is required at a detailed stage to determine the feasibility of providing 'all ability' cycle access in the steeper sections just described. There may be walking-only tracks provided where cycling is not possible due to slope.



LEGEND:

- Road
- Boundary
- Stream
- Parks
- Rail Stations
- Bus Stops
- Railway

Scale 1:45,000

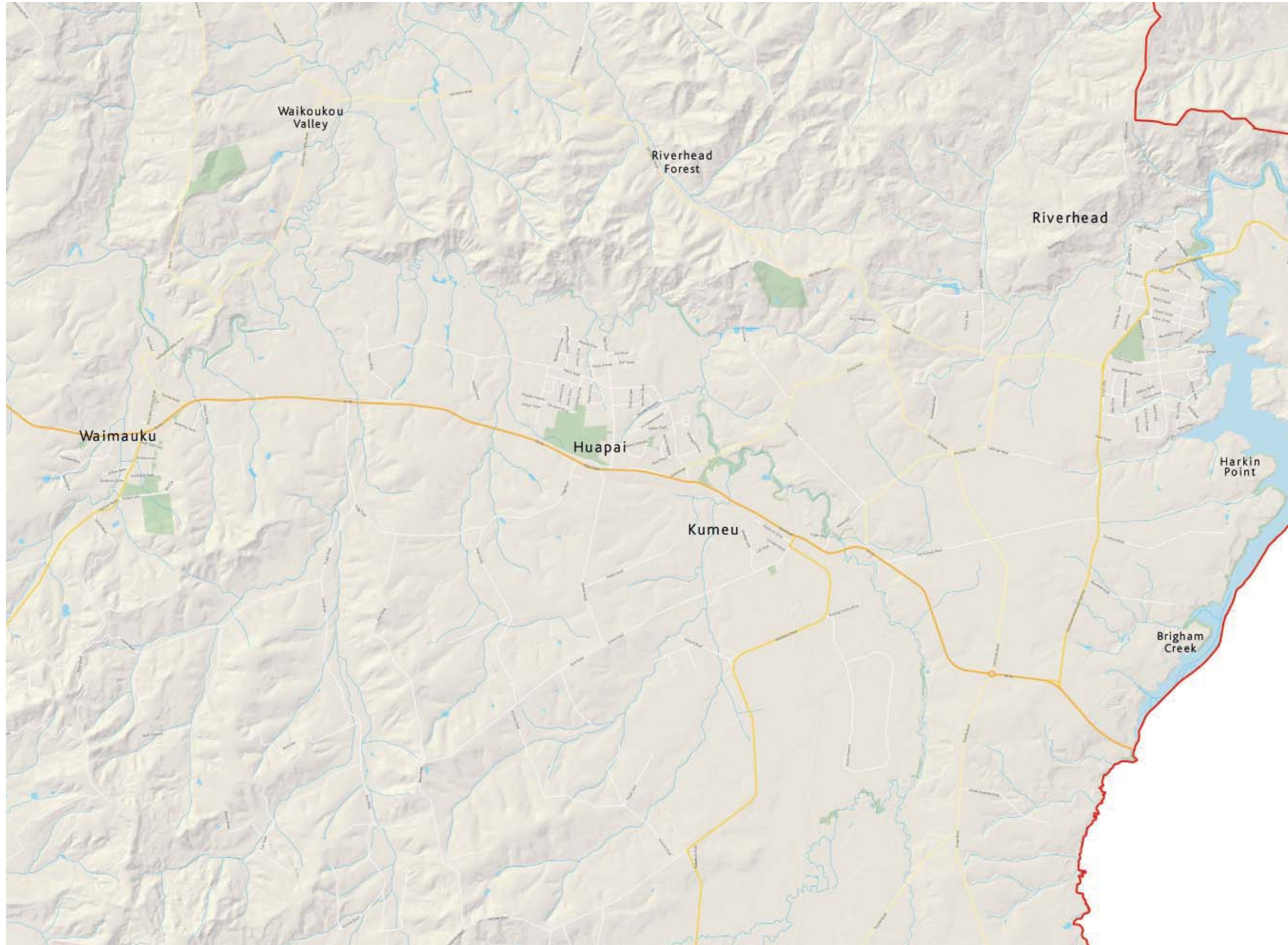


Public Transport Network

Existing and planned public transport routes are illustrated on the adjacent map, showing that the townships within the study area are relatively well served by public bus services, although it is a long trip for most residents to the nearest train station. Auckland Transport are planning improvements to this network, to cater for population growth. While much of this appears focused on roading improvements, there is rapid transit planned as far as Kumeu, and potentially some improvements to the rail corridor as well. Park and Ride facilities are proposed at both Kumeu and Huapai, and connecting greenways to these could further reduce reliance on the private motor vehicle.

In planning the Greenways routes, train stations in particular were taken into account as these are less regularly distributed than bus stops, and have potential to bring visitors into the area on 'day trips' and walk the greenways network - particularly the more scenic waterway routes. The future planned rail stations were also taken into consideration, although the staging of Greenways to connect to these would not necessarily be prioritised until their timing is better known. It is worth noting that the rail corridor – while currently severing the study area into two halves – may in the future be able to be used as a greenway, due to the space in the corridor, combined with large areas of adjoining reserve or road corridor land. Such an approach is currently being constructed in New Lynn.

Bus routes were also taken into consideration, as these routes offer less potential for creating 'slow speed' Greenways street environments, and the buses themselves create more risk to cyclists. On-road Greenways therefore avoid bus routes wherever possible, although links to bus stops have been considered.



LEGEND:

- Boundary
- Stream
- Parks
- Major Road
- Arterial Road
- Medium Road
- Minor Road

Scale 1:45,000



Road Hierarchy

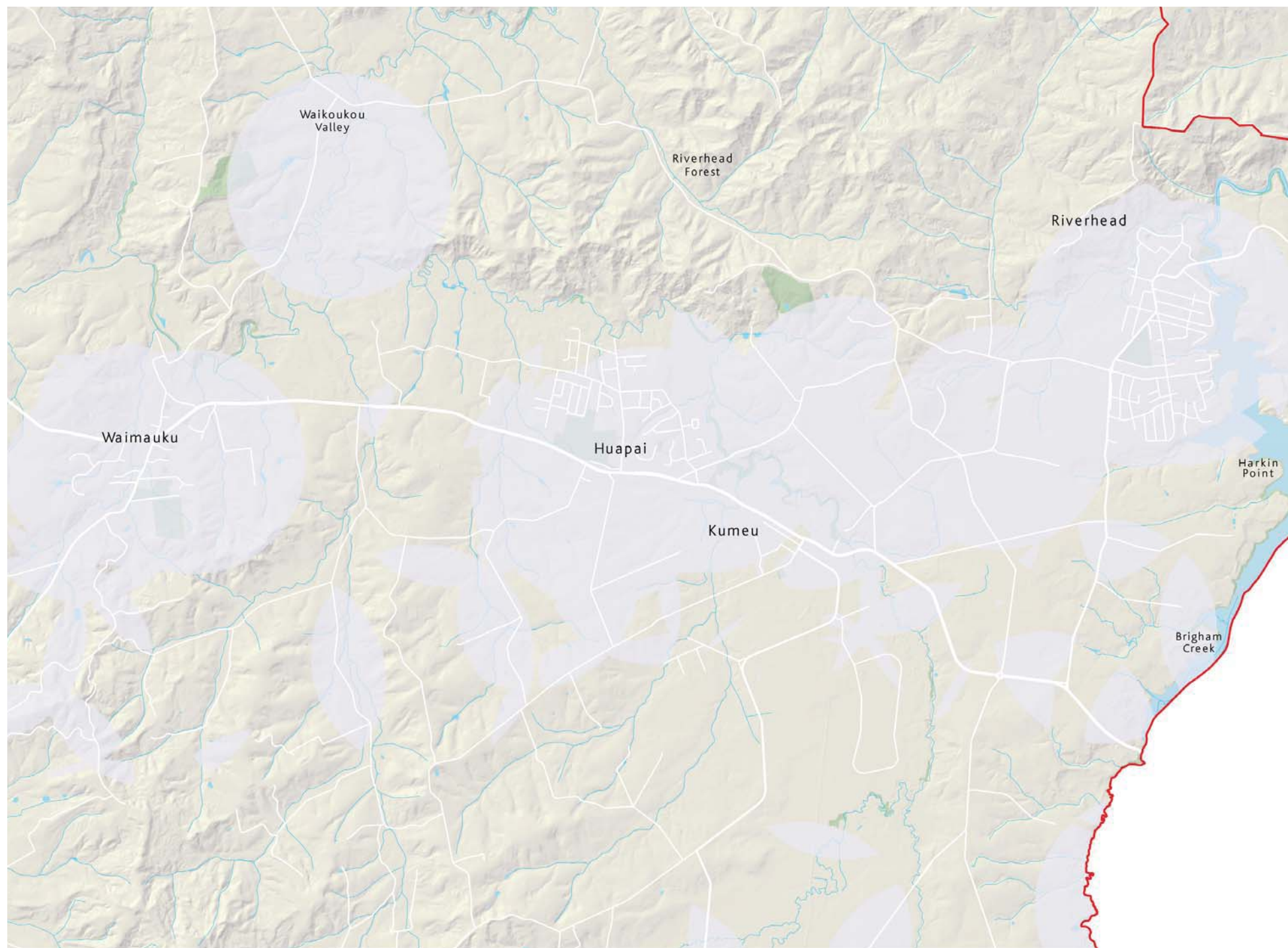
Existing road hierarchy has been considered when determining the Greenways routes, in order to create safe, desirable and high-amenity environments, encouraging use by as many Aucklanders as possible.

Major, medium and arterial roads are typically busy roads that provide for a range of transport types, including cars, buses and trucks. Careful consideration needs to be taken where the green links network intersects or runs along these roads, to ensure desirable/safe routes are formed, and Greenways generally avoid these routes.

Minor or local roads are slower speed environments with lower traffic flows and typically provide more desirable Greenway connections. While these tend to be prioritised when planning Greenway routes, careful consideration at the design stage will still be required in order to ensure adequate passive surveillance and motorist awareness of pedestrians, cyclists and recreational users.

The road hierarchy also affects potential for street 'greening' initiatives, such as narrowing traffic lanes, providing vegetated chicanes and shared spaces, and treating stormwater on site. Methods for providing safe crossing points will also be affected by the road hierarchy - for instance, un-signalised crossings are unlikely to be permitted on arterial roads.

One particular issue for the study area is the conversion of high speed rural roads into those serving as collectors for developing residential areas. Significant safety improvements will be required to lower speeds, due to the straight and flat nature of these roads, and this is the opportunity to 'bake in' some of the greenways network, where the routes overlap.



LEGEND: Scale 1:45,000

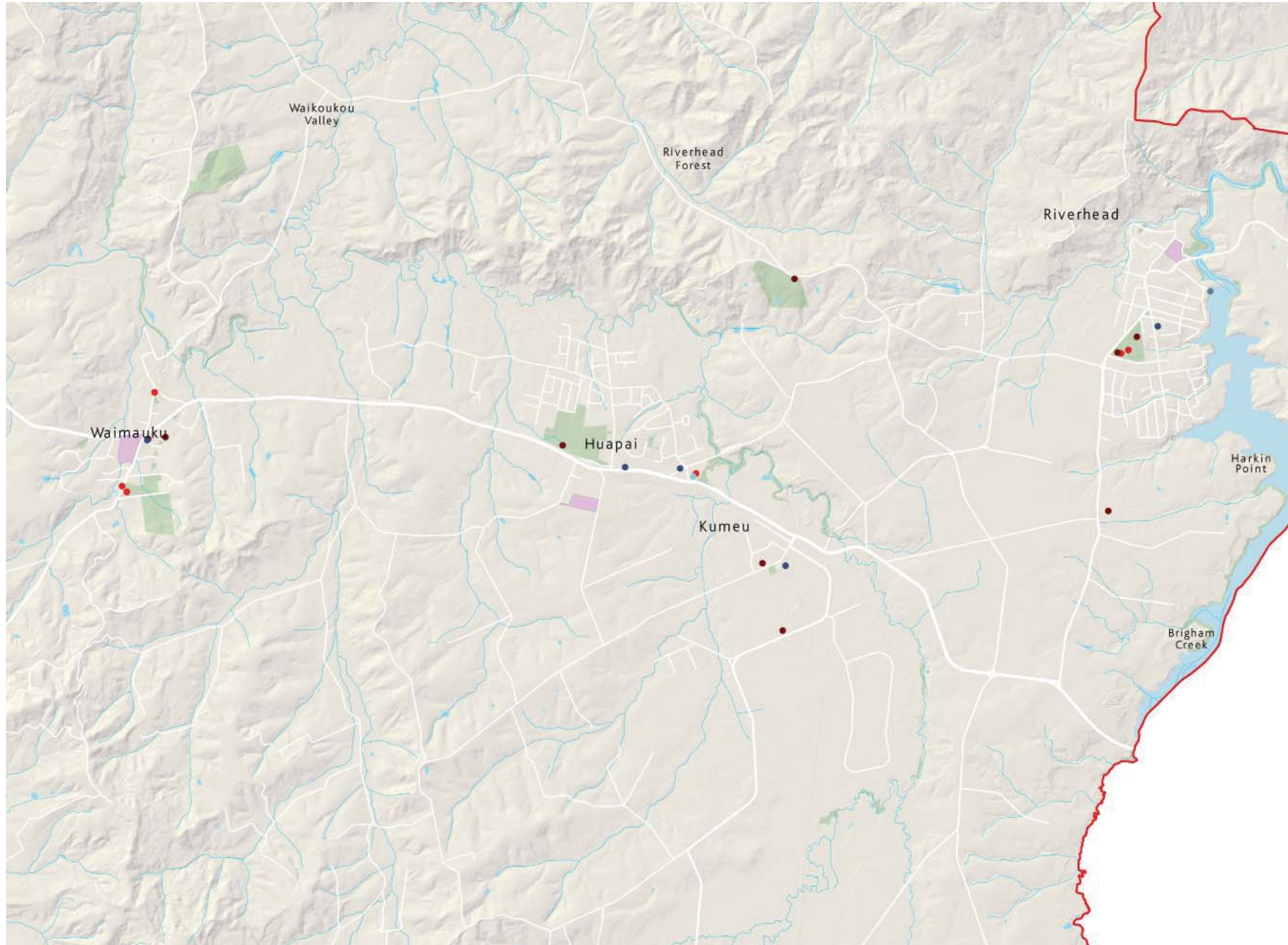
- Road
- Boundary
- Population density:
 - High Density to Low Density

Population Density

This 'heat chart' map, sourced from the Auckland Plan (2012) shows population densities based on Census meshblock data. Population density is important in Greenways planning as it shows where potential users will be coming from, and it is logical to focus efforts in these areas (in addition to providing strategic regional connections, which are not as influenced by proximity to housing).

This map shows that overall density in this area is at the lighter end of the spectrum within the Auckland region. It illustrates that population in this area is significantly clustered around the townships of Huapai, Kumeu and Riverhead, with Kumeu populated to a lesser degree, due to the predominance of industrial and commercial activity there. Outside of these townships, there are only sporadic clusterings of population, although the band between Riverhead and Huapai has been steadily intensifying in recent years. In terms of greenways, the sparse population density poses some challenges in terms of making connections through areas of low population, and the inherent safety challenges in this. On the other hand however, when planned properly these connections can be some of the most scenic and popular routes, and can draw significant numbers of people to an area.

Population density in the study area is forecast to change significantly over the coming years, with rezoning and expansion of the residential areas around Kumeu and Huapai of particular note. In general, as a city intensifies, residential section sizes become smaller, and residents require recreation facilities beyond their backyard. While this can be perceived as a negative impact of intensification, if well planned, these public open spaces can actually build communities by providing locations and facilities where people from different communities can come together and meet.



LEGEND:

Scale 1:45,000



- | | |
|--|---|
|  Road |  Places of Worship, Church |
|  Boundary |  Sports Complexes and Clubs |
|  Stream |  Tourism, Information Centre |
|  Parks |  Water Transport Services, Boat Ramp |
|  Ministry of education |  Community Hall and Libraries |

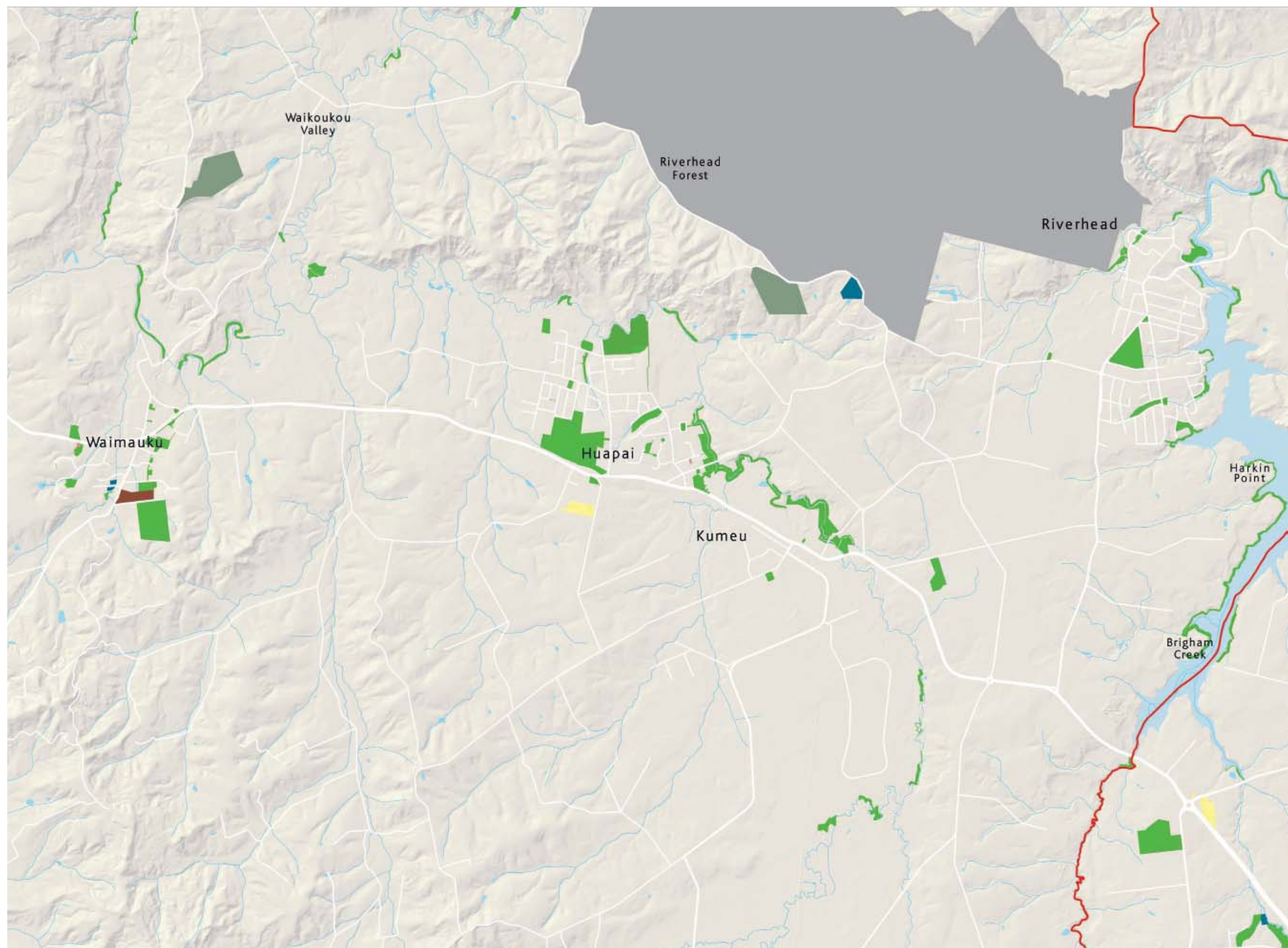
Social Infrastructure

This map shows community facilities in the study area, including community halls, places of worship, community centres, libraries and recreation facilities. Other community facilities sometimes noted here are swimming pools, Marae and the like, however we were not able to locate any of these within the study area.

Schools and other community facilities are critical points in the Greenways plan, providing both an opportunity to create connections via easements, while also providing destinations in their own right. These facilities are visited on a frequent basis, and providing safer, higher amenity and more accessible connections has great potential to reduce reliance on private vehicles.

Access to schools is of particular benefit, as it encourages parents to let kids travel actively to school, improving fitness, gaining an appreciation of the natural environment, and locking in good habits for later life. Proposed connections to schools may be influenced by existing 'walking school bus' routes. Auckland Transport makes funding available for walking school bus routes, and it is possible that some connections could be supplemented by this funding stream.

Any easement proposal within the boundaries of a community facility would need to be firstly consulted with the landowner or leaseholder, and needs to be carefully considered to ensure the safety of students/facility users, and minimise risk of property damage. Some accesses may need to be limited to certain times of day for these reasons.



LEGEND:

Scale 1:45,000



- | | | |
|-----------------------|----------------------------|--|
| Road | Her Majesty the Queen | Open Space Owned by Charities or Societies |
| Boundary | Land Owned by Mana Whenua | |
| Stream | Housing New Zealand | |
| Auckland Council | Watercare Services Limited | |
| Ministry of Education | DOC | |
| Energy Company | | |

Land Ownership

This map shows land within the study area that is in some form in public or community ownership. This information is important, as connections on publicly-owned land are more readily achieved than those on privately-owned property.

Publicly-owned land within the study area has been divided in to five types of ownership:

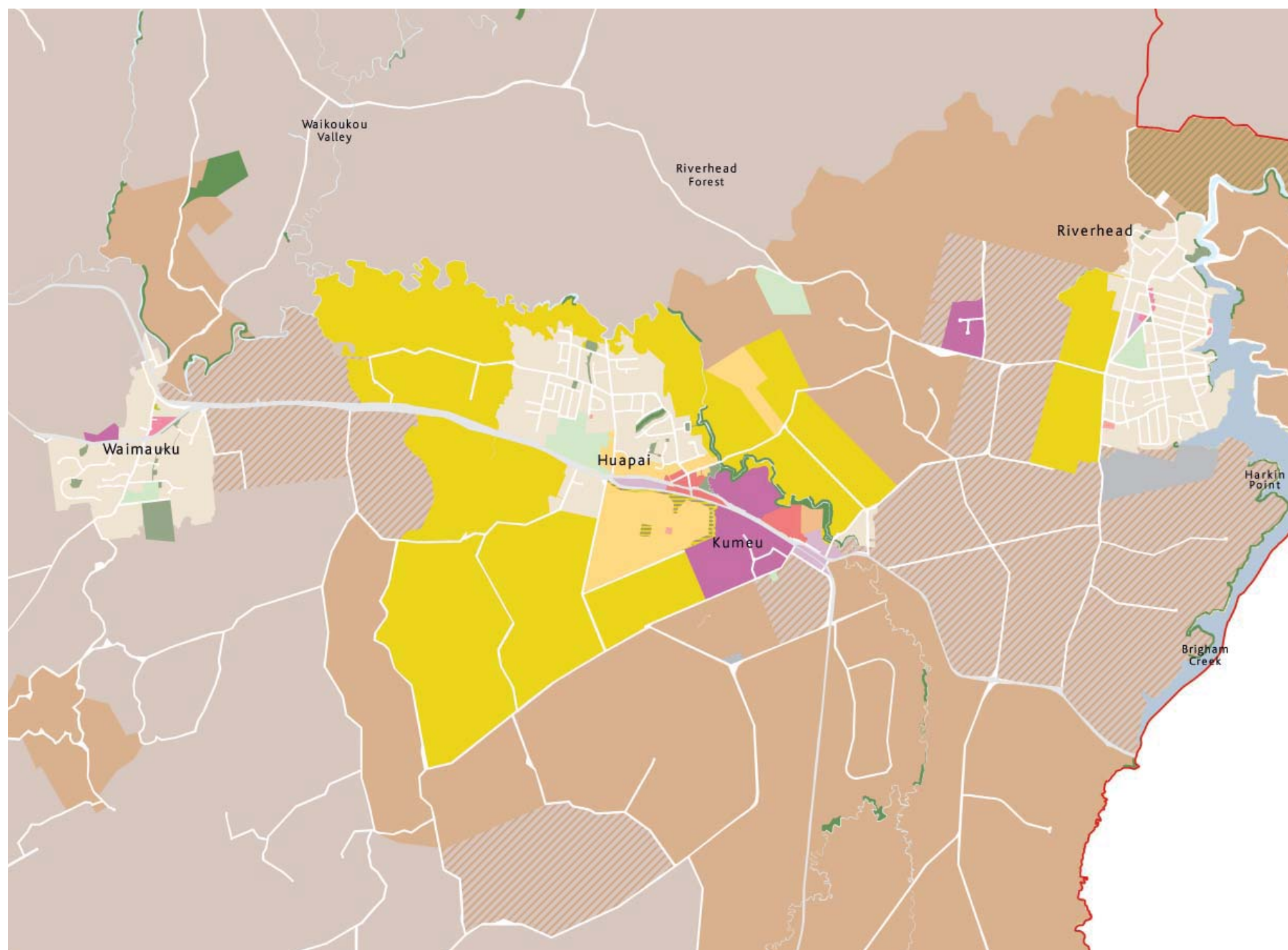
Auckland Council: This land may be available for Greenway connections, dependent on the current or proposed usage of the site. Council Controlled Organisations include Watercare Services Ltd, Auckland Transport, Panuku (Development Auckland), Regional Facilities Auckland and Auckland Tourism, Events and Economic Development (ATEED).

Government Departments and Ministries: Educational institutions generally feature large areas of open space, and discussions may be held regarding public use and/or connection easements over this land. This area also features some DoC land.

Treaty Settlement Areas: These are areas of land handed back to Mana Whenua as part of the ongoing treaty negotiations. Often public access to these areas is retained.

Energy Companies: This is land owned by Transpower or Vector. While safety considerations may preclude public access, there are often ecological opportunities present here.

Trusts and Societies: Several properties in the study area are owned by charitable trusts or other community groups. There may be opportunities to engage with these groups, for mutually beneficial projects.



LEGEND:

Boundary	Business - Town Centre Zone	Rural - Rural Production Zone
Residential - Single House Zone	Business - Local Centre Zone	Rural - Mixed Rural Zone
Residential - Mixed Housing Suburban Zone	Business - Neighbourhood Centre Zone	Rural - Rural Conservation Zone
Residential - Mixed Housing Urban Zone	Business - Mixed Use Zone	Rural - Countryside Living Zone
Open Space - Conservation Zone	Business - Light Industry Zone	Strategic Transport Corridor Zone
Open Space - Informal Recreation Zone	Future Urban Zone	Special Purpose Zone
Open Space - Sport and Active Recreation Zone	Green Infrastructure Corridor (Operative in som	Coastal - Coastal Transition Zone
Open Space - Community Zone		Water [i]

Scale 1:45,000



Unitary Plan

This map shows Auckland Council Unitary Plan zoning, which was not operative at the time of writing the report, but which is likely to become operative in the very near future. To futureproof this report, zoning has been described under the Unitary Plan. Zoning in the study area can be summarised as:

Business Zone: Relates to commercial and industrial activities, including retailing, servicing, offices, warehousing, manufacturing and research orientated activities.

Residential Zone: Is the largest land use, and relates to areas that are predominately but not exclusively used for residential activity.

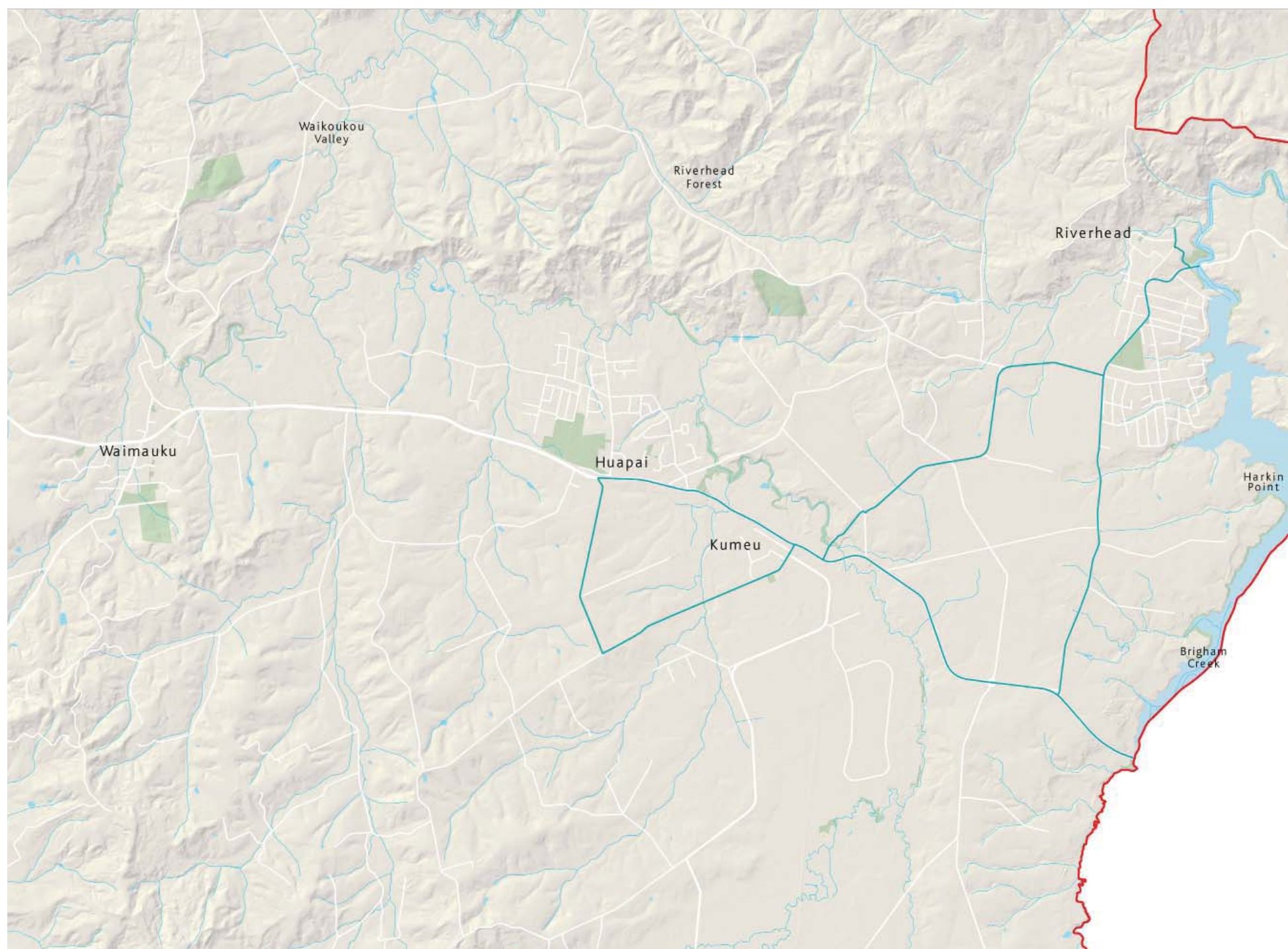
Open Space Zone: Relates to a range of open space used for recreation activities, and conservation and visual purposes, and applies to both public and privately-owned land.

Special Purpose Zone: Relates to sites or areas that require special treatment and are of particular consequence to the communities well-being, health and safety but do not conform to the provisions of the standard zones.

Rural Zone: Relates to rural activities, including rural production, rural character and amenity, rural industry and services. Rural areas may include areas of ecological significance as well as countryside living.

Future Urban Zone: This zone is applied to land located on the periphery of existing urban areas within the Rural Urban Boundary (RUB), which Council has determined is suitable for future urban development. This is a transitional zone, which provides for the land to be used for rural activities until it is able to be developed, via the structure plan and plan change process. A structure plan or plan change can be initiated by Council, an individual, group or partnership (source; Unitary Plan).

This zoning has potential to create the most noticeable landuse change, as it expands the townships of Kumeu and Huapai out in all directions, and also pushes Riverhead significantly west. While this will result in a more urban feel to these areas, development allows greenways to be 'baked in' to new neighbourhoods, and delivered at no cost to the ratepayer.



LEGEND:

-  Road
-  Boundary
-  Stream
-  Parks
-  Connector

Scale 1:45,000



Auckland Cycle Network (ACN)

This map shows the Auckland Cycle Network (ACN) overlaid onto the Rodney Local board area. The ACN is based on the Regional Cycle Network (RCN), which was developed by the former Auckland Regional Transport Authority in conjunction with former legacy Auckland councils and the NZTA. The ACN is driven by the Auckland Plan growth projections and the Auckland Integrated Transport Plan 'One Network' approach, both of which share an estimated completion date of 2040.

The draft ACN is broken into three types of cycleways:

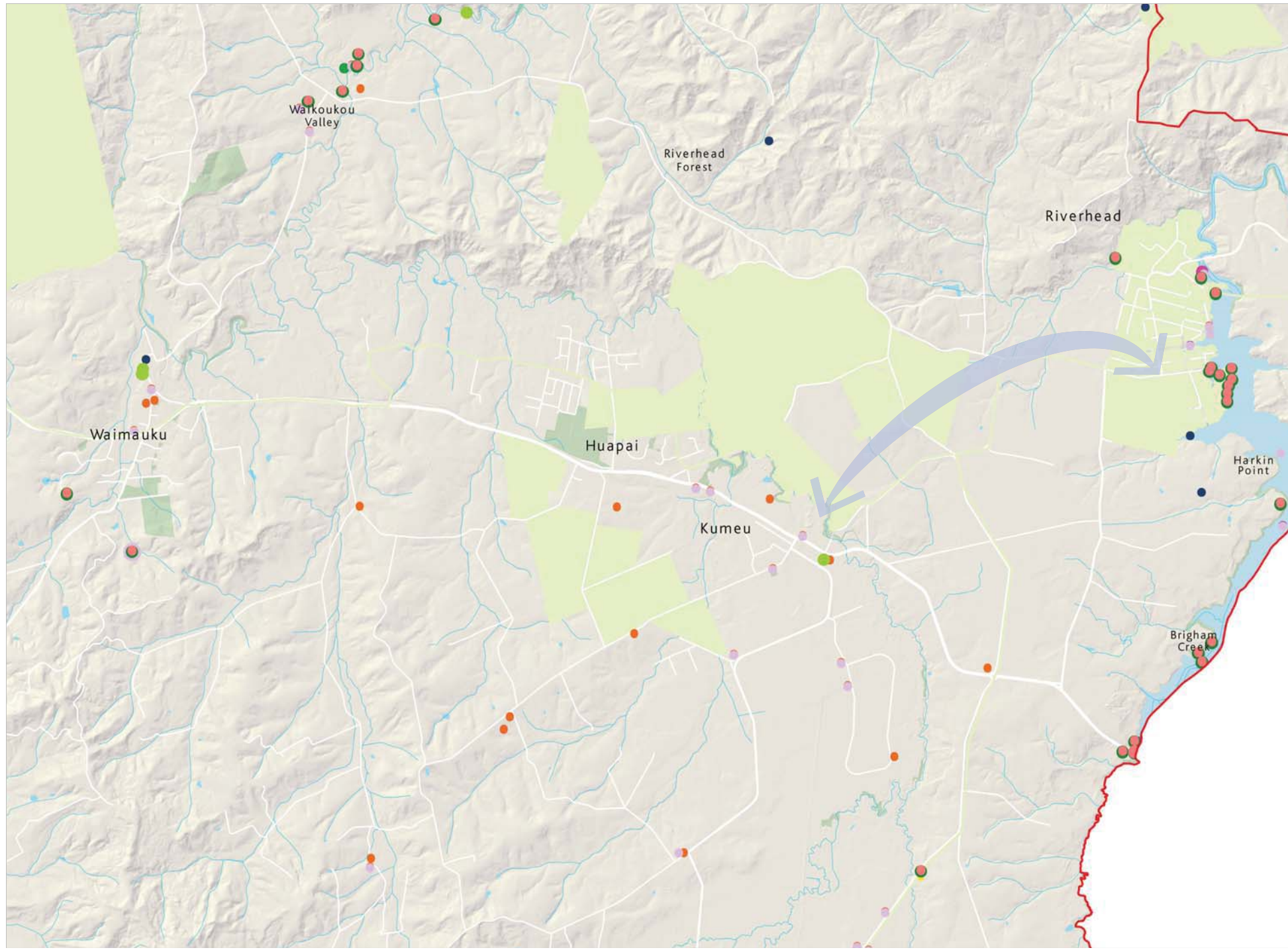
- **Metros**
- **Connectors**
- **Feeders**

'Cycle metros' offer the highest level of service to the cyclist, in that they are dedicated connections, continuous, direct and traffic free. They typically exist along motorway or railway corridors. There are no cycle metros existing or planned for the study area at this stage.

'Connectors' follow arterial routes, and are designed to connect people quickly and directly to key destinations and public transport nodes. They are typically 'on road' connections. A connector loop is planned as shown adjacent, taking in Kumeu, Huapai and Riverhead. As plans for this develop, there will be opportunities to work together to achieve the joint (and linked) aims of the ACN and Greenways plans.

'Feeders' are local neighbourhood connections. These may include and/or double up with Greenways routes. 'Feeder routes' are intended to connect open spaces, and like Greenways, are likely to follow quieter streets. Feeder routes are not currently planned for this area, and would likely follow the Greenways network.

Within internal officer workshops for the development of the Greenways, Auckland Transport has expressed an interest adjusting their 'feeder' routes over time to align more closely with those routes developed via the Greenways plans – so as to align delivery and funding.



Cultural Heritage Inventory

This map shows sites that identified by the Cultural Heritage Inventory (CHI) that was created by the former Auckland Regional Council. The CHI was established to promote sustainable management of our cultural heritage by providing easy access to relevant information, and should be used as a resource when developing the network.

CHI sites are classified as follows:

- **Archaeological Sites** - e.g. midden and pa sites;
- **Historic Botanical Sites** - e.g. specimen trees;
- **Built Heritage Sites** - e.g. typically early European buildings;
- **Maritime Sites** - e.g. shipwrecks, wharfs, boatsheds; and
- **Reported Historic Sites** - e.g. known locations of battles.

Compared to other parts of Auckland, there are a relatively low number of recorded archaeological sites within the study site. This is not necessarily reflective of a lack of historical features/sites, but perhaps rather a lack of investigations that have occurred in this area. Of those that do exist, many are clustered around the coastal edge and in Waimauku and the Waikoukou Valley.

Archaeological sites are clustered along the coastal edge generally, illustrating the significance of this area to Maori - the coastal margins typically being desirable for occupation and food gathering. The Ngongitepata Portage route is located at the eastern end at Riverhead and is sign posted 'Kaipara Portage Road'. Overall there appears to be a lack of known pre-European sites in this area, however this is likely to be due to the relative lack of development that has occurred here. These sites are often found as archaeological reporting is carried out for development.

The Greenways routes will take in many of these historic sites, especially those along the waterways and coastline. While this may create development constraints, it also adds greatly to the interest of the routes.

LEGEND: Scale 1:45,000

Road	NZ Archaeological Association	Historic Botanical Site
Boundary	Historic Heritage Sites	Historic Structure
Stream	ACC Archaeological Site	Maritime Site
Parks	Crown Owned CHI Sites	Reported Historic Site
Priority Coastal And Waterway Areas For Survey	Archaeological Site	Archaeological Surveyed
NZAA ArchSite Archaeological Sites	Historic Botanical Site	Indicative Ngongitepata Portage crossing