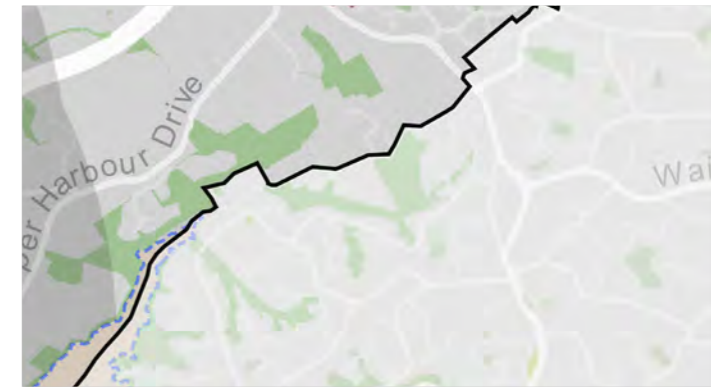


WATER ACCESS ASSESSMENT

UPPER HARBOUR LOCAL BOARD, AUCKLAND



NETWORK STUDY

September 2019

TABLE OF CONTENTS

ASSESSMENT PARAMETERS

INTRODUCTION	01
UPPER HARBOUR STUDY AREA	01
PURPOSE	01
POLICY CONTEXT	01
SCOPE AND LIMITATIONS	01
METHODOLOGY	01
PRIORITY ASSESSMENT AND RECOMMENDATIONS	03

CURRENT NETWORK

EXISTING PROVISION	04
NETWORK GAP SUMMARY	06
POPULATION DYNAMICS	06
CURRENT FACILITY TYPOLOGIES MAP	07
CURRENT ACTIVITY TYPOLOGIES MAP	09

DEVELOPMENT RECOMMENDATIONS

NETWORK DEVELOPMENT OPPORTUNITIES TABLE	11
NETWORK DEVELOPMENT OPPORTUNITIES TABLE	12
NETWORK DEVELOPMENT OPPORTUNITIES TABLE	13
NETWORK DEVELOPMENT OPPORTUNITIES PRIORITY MAP	14

APPENDIX A

DATA CAPTURE SPREADSHEET

APPENDIX B

POPULATION GROWTH MAP

EXISTING POPULATION DENSITY MAP

FUTURE POPULATION DENSITY MAP

APPENDIX C

BIBLIOGRAPHY

ASSESSMENT PARAMETERS

INTRODUCTION

Recreational use of coastal and inland waters of the Waitemata Harbour provides significant benefits to social, environmental and the economic, wellbeing of the region. It is also well documented that access to the water and provision of a fit-for-purpose network of facilities fosters health, wellbeing and an appreciation of the natural environment. Participation is also encouraged by providing a range of affordable and accessible options to encourage participation in diverse communities.

The 2017 Upper Harbour Local Board Plan identifies the importance of open space and connectivity and provision of access to the water in providing opportunities for social connections and participation in recreational and cultural activities for a range of ages and abilities.

Given the challenges associated with providing valuable water access for the public within fiscal constraints, this report builds on several related existing studies and the Upper Harbour Local Board's intent to establish an holistic understanding of existing water access provision and opportunities to inform investment decisions within the upper harbour study area.

UPPER HARBOUR STUDY AREA

The Upper Harbour Local Board area is located in the upper reaches of the Waitemata Harbour and is comprised of the coastal and inland suburbs of Whenuapai, Herald Island and Hobsonville in the west, and Paremoremo, Greenhithe, Albany, Rosedale, Unsworth and Pinehill in the east.

The study area is defined as the coastal and marine areas within the Upper Harbour Local Board area. The estuarine area is characterised by extensive tidal mudflats and inlets that experience significant tidal fluctuations. This tidal fluctuation limits water access from mid – high tide for the majority of existing network structures.

Water based activity typologies present in the area range from swimming and paddle craft activities, to fishing, sailing and motorised recreational watersports. Current infrastructure provision types range from small private structures, to public and club operated facilities.

There are obvious gaps in geographical provision due to topography and absence of suitable reserves in some areas, with the developing Hobsonville and Whenuapai areas requiring specific consideration to address baseline provision.

Refer Study Area Map on Page 02.

PURPOSE

The purpose of this study is to assess current water access provision for sport and recreation at a network level to establish a holistic understanding of relationships between:

- Current facility distribution and associated catchment level of service
- Activity type and related enabling infrastructure provision
- Limitations of existing provision including but not limited to tidal access, aged infrastructure, topographical and carparking constraints, and how these restrict use
- Anticipated demand based on current population density and forecast growth areas

Then, through mapping and analysis, identify:

- Geographical gaps or over supply in water access provision
- Relationships between facilities and activities, and high-level opportunities to improve network functionality and / or flexibility of use
- Areas of forecast population growth as they relate to gaps or over supply in network provision and perceived future demand on infrastructure
- Potential options to increase access to, and utilisation of the marine area for sport and recreation including upgrade of existing, or provision of new facilities to address network gaps

Followed by on site ground truthing of public assets and the provision of recommendations on network improvements to address gaps, and enable the local board to make informed decisions on water access development priorities.

POLICY CONTEXT

Several documents have informed the development of this report and relevant strategies, plans and policies considered to ensure alignment where applicable.

Key documents include:

- The Auckland Plan 2050 (2018)
- Auckland Council Parks and Open Space Strategic Action Plan 2013
- Auckland Council Open Space Provision Policy 2016
- Upper Harbour Local Board Plan 2017
- DRAFT Upper Harbour Open Space Network Plan MARCH 2018
- Sport and Recreation in the Lives of Young Aucklanders Upper Harbour Local Board Area Report (2013)
- Auckland Sport and Recreation Action Plan 2014 - 2024 (2017 Refresh)

Refer to Appendix C Bibliography for additional research references.

SCOPE AND LIMITATIONS

The following outlines scope and associated limitations associated with this water access provision assessment:

- High level pedestrian radial catchment analysis provides an acceptable level of information to enable gap analysis assessment in the absence of identifying actual measured walking distances / 'pedsheds', though it is acknowledged that assessment of walking distances is indicative, with related topographical and physical constraints considered at a high level only.
- In order to alleviate bias in evaluation and provide opportunities for debate and creative discussion, assessments were moderated and discussed by two team members to agree appropriate assessment and recommended priority.
- Priority assessment is based on a high-level perception of water access infrastructure and perceived contribution to the network as a whole.
- Unless council asset registers supplied provided a specific condition rating, commentary on asset condition relates to visual inspection of facilities only and further structural assessment may be required in some instances to validate

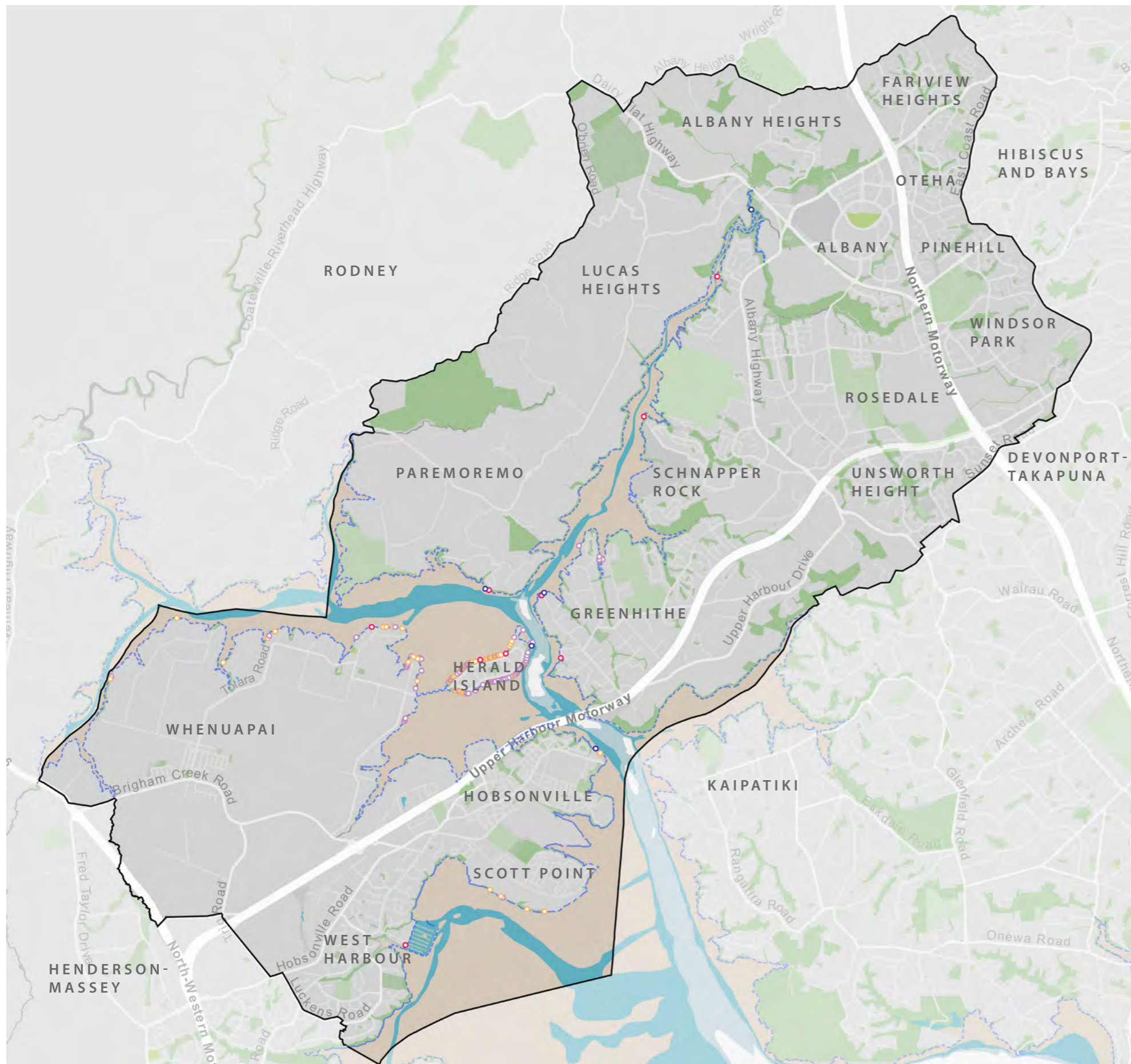
- Community / user group consultation was not conducted in the preparation of this report. Future investigation and consultation, particularly with local community, will be required to inform design and implementation of renewals and / or new facilities.
- Schools have been indicated on the maps to provide a general understanding of the relationship between water access provision, proximity and opportunities to improve access for activities and youth engagement with the water.
- Specific in-depth analysis of club facilities, requirements and the feasibility of co locating user groups does not form part of this scope. This report does however consider the nature of infrastructure required to enable specific activity types and commentary has been provided on this basis.
- This document identifies opportunities to improve water access infrastructure and is not intended to serve as a detailed feasibility analysis. Further investigation will be required to assess the feasibility of identified development opportunities.
- Data collection is largely quantitative from a network planning perspective with limited qualitative assessment of facilities based on site assessment. Where applicable, high level commentary is provided to address gaps and inform potential investment.
- Accurately evaluating the extent of participation of water based activities and provision of appropriate infrastructure is complex, as participants are often engaged in varied and independent recreation making the recording of information and associated demand difficult to measure. This report therefore focuses on the review of population growth data from the Transport Modelling Population Projection (previously ART model) , projected age distribution (Census data) and relationship with current available participation and ethnic data to establish perceived demand on facilities in relation to activity types and geographic distribution.

METHODOLOGY

ASSESSMENT PROCESS

Assessment to establish gaps in water access provision and prioritise investment opportunities at a network level is as follows:

- Prepare Network Prioritisation Principles, Catchment Assessment Parameters and Data Capture Spreadsheet to inform overall network assessment and recommendations.
- Collect raw data and record information on data capture spreadsheets.
- Collate raw data and prepare maps to articulate:
 - + Existing facility and activity provision
 - + Gaps in provision and relationships between individual facilities.
- Prepare population analysis maps addressing current and projected population trends and changes in population density. Cross reference against Census data to provide an understanding of age distribution relationships and potential demand for activity types.
- Undertake analysis of water access relationships at a network level, evaluating data to rationalise geographic provision and communicate options for network optimisation.



STUDY AREA MAP

- Following background research and network assessment, conduct targeted site investigations of public assets and sites with the potential address network gaps to assess facilities, immediate site context, sensitivities, and development potential.
- Prepare Network Development Opportunities Table and Priority Map with concise recommendations and commentary, moderating recommendations where necessary to accurately reflect network requirements and priorities.

KEY NETWORK PRIORITISATION PRINCIPLES

All water access facilities will be assessed using key principles to determine network priorities (high, medium or low).

Where appropriate, brief commentary on priority considerations and development options from a network-perspective will be included within the data capture spreadsheet and / or study synopsis.

Key prioritisation principles are as follows:

Network Provision

- New or existing facilities that, through investment, are able to address significant network provision gaps or improve synergies with adjacent facilities shall generally have higher priority than those with limited opportunity to contribute positively towards balanced and appropriate network provision.
- Where significant catchment overlap exists, facility clusters may be considered for optimisation or complementary facility development as part of a holistic review of network provision.

Location and Access

- Facilities that are well-connected, close to complementary activities and / or are easily accessible from residential areas shall have higher priority than those not located near residential and community amenities. In this regard, barriers to access and connectivity shall be considered to ensure appropriate prioritisation of facilities.

Activity Provision

- Facilities with potential to address significant activity gaps or perceived user group conflicts shall be prioritized over those that do not.

Population

- Facilities located within population growth areas shall generally have higher priority than those within limited growth areas.

CATCHMENT ASSESSMENT PARAMETERS

Based on review of empirical research that investigates the theory behind traveling distances and access relationships, the following catchment provisions have been adopted to assess high level gaps in network provision:

Vehicular Access

- A 4km distance (or 5 – 10min max. drive @ 50km / hr). This equates to a radial proxy assessment radius of 2.8km

- This assessment parameter is aimed at assessing provision for activity types that require the use of vehicles for transportation of equipment.

Pedestrian Access (Suburb Level)

- A 1500m distance (or approx. 15 min walk @ 5km / hr). This equates to a radial proxy assessment radius of 1125m.
- This parameter is aimed at assessing provision for those participating in non-equipment related activities, or those that may not have access to vehicular transport.

It is important to note that pedestrian access distances sit independent of relationships with open space / water access typologies and represent global thinking on acceptable traveling distances as they relate to the travel / time accessibility of public destinations.

ACTIVITY ASSESSMENT PARAMETERS

Determining the suitability of facilities and locations for water based activity types has been assessed in relation to:

- Facility Provision (that supports the activity); including complementary relationships with open space and amenities.
- Environmental factors; including tidal access restrictions, user group conflicts ecological sensitivities and the like.
- Route Synergies: including facilitating on water route and open space connectivity.

Where available, information from clubs, associations, guideline publications and the like have been reviewed to establish and reinforce suitability of locations and facilities for activity types.

PRIORITY ASSESSMENT AND RECOMMENDATIONS

As outlined above, water access and network relationships have been assessed against Key Network Prioritisation Principles to determine high, medium or low development priority. Where appropriate, brief commentary on priority considerations and development options from a network perspective has been included. Refer Development Recommendations section and Data Capture Spreadsheet in Appendix A for additional information.

Commentary also considers gaps in activity provision where improvement in infrastructure may provide additional flexibility of use and enable a wider range of user groups to use facilities.

Network Development Opportunities Table

The Network Development Opportunities Table groups key high and medium priority sites and graphically summarises network opportunities to enable an holistic comparison of key network improvements.

Network Development Priority Map

The Network Development Priority Map identifies the geographic location of sites identified for improvement in the ***Network Development Opportunities Table***, relative priority and proposed locations of new sites to address network gaps where applicable.

Population and Distribution / Highlighted Growth Areas

Population density and growth has also been mapped to clearly articulate water access provision relative to projected growth areas (and potential investment focus). Refer Appendix B for Population Density and Growth Maps.

CURRENT NETWORK

EXISTING PROVISION

Characterised by estuarine coastline with extensive tidal mudflats and inlets, we reiterate that the majority of the upper harbour catchment experiences significant tidal restrictions to access, with the majority of sites providing access at mid – high tide

Statements around good geographic provision therefore relate to catchment coverage and the provision of access to the water at high tide. Refer to current infrastructure, facilities and activities maps, and Appendix A Data Capture Spreadsheet for location and additional contextual information.

The following summarises the current provision of publicly accessible and private facilities within the Upper Harbour Local Board area:

PUBLIC FACILITIES

West Harbour

- Has 1 public boat ramp and pontoon facility in good condition with dedicated carpark at termination of Clearwater Cove in association with Ferry terminal and Hobsonville Marina.
- This facility is a fit for purpose launching ramp for motorised craft though inherently provides for other activities due to all tide access and narrow pontoon structure.
- The facility provides good catchment provision to the West Harbour area and vehicular catchment overlap with lower Hobsonville / Scott Point. Supplementary access to the south at Luckens Reserve and associated West Harbour Esplanade would improve provision at a local, pedestrian level.
- It is noted that access in the Limeburner Bay area is restricted by mangroves and shallow mudflat coastal interface, with a legacy inlet to the historic Limeburner Reserve site providing for potential high tide water access in this location.

Hobsonville

- Has no public facilities listed on current asset register supplied, though Auckland Council holds the coastal permit for the boardwalk from Catalina Bay to Marine Parade and the majority of this access is now vested with council.
- The boardwalk facility is in good condition and provides for coastal access and rest / stop off points between destinations at high tide, but the structure is not fit for purpose in accommodating land based access for launching paddle craft.
- The existing Hobsonville seaplane ramp coastal permit is held by the Home Land and Community (HLC) company and is effectively a private asset that is open to the public. The ramp is also used by several clubs but the asset is nearing the end of its lifecycle and renewal is required to maintain access to the water for the full tidal cycle.
- Residential development is planned for the sites currently occupied by sailing / rowing clubs. Without the provision of long term water access or ability to store equipment these activities would likely be faced with relocation.
- Apart from partial vehicular catchment overlap with Hobsonville

Marina, geographic catchment coverage in the Hobsonville, Scott Point and Limeburner Bay areas is poor due to the absence of flexible, fit for purpose public facilities and it is noted that the Catalina Bay area is one of six sites in the upper harbour area that provide water access for the full tide cycle.

- It is acknowledged however that Auckland Council is currently working with HLC to lodge resource consent for a Marine Recreation Centre at Catalina Bay which includes a jetty and pontoon to replace the seaplane ramp and provide deep water access.

Whenuapai

- Has 1 public boat ramp facility located at termination of Pohutakawa Road. All structures are in good working condition apart from timber stair access to small open space area that requires renewal.
- The ramp and associated open space provides for coastal access and rest / stop off points between destinations at high tide.
- There is no dedicated parking with limited space to provide formal car or trailer parking on side of road.
- Geographic catchment coverage in the Whenuapai area is poor due to the absence of flexible, fit for purpose public facilities, particularly in the west - northwest noting that there is potential to provide water access for the full tide cycle at Riverlea Reserve depending upon length of structure.
- It is acknowledged that the area is currently has a very low population density with significant area occupied by the Whenuapai RNZAF Air base.

Herald Island

- Has 3 public facilities including:
 - + 1 beach ramp in average working condition on Christmas Beach at No. 86 The Terrace within grassed open space adjacent existing playground facility.
 - + 1 boat ramp in good condition on Landing Reserve at No. 56 The Terrace with dedicated, unsealed carpark
 - + 1 wharf and associated pontoon in good working condition on Pahiki Reserve at No. 3 Twin Wharf Road
- 1 short wharf associated with No. 90 The Terrace appears to be publicly accessible but is under private ownership.
- All facilities are serviced by on road or dedicated car parking, though space is limited at Twin Wharf Road and Christmas beach provides limited on road parking access only.
- Pahiki Reserve facilities provide shelter, seating, public toilets and water access for the full tidal cycle, with other facilities providing functional access at high tide only.
- Herald Island has good geographic provision with significant overlapping catchment of existing facilities with no gaps in public provision

Greenhithe

- Has 3 public facilities including:
 - + 1 boat ramp in average condition on Rame Reserve
 - + 1 wharf and associated pontoon in good condition on Rame Reserve
 - + 1 boat ramp in average condition on Rahu Reserve

- The boat ramp at Rame Reserve is a legacy single structure with split public / private (Salhouse Boatbuilders) access physically separated by an open chain link fence that requires consideration to improve amenity and legibility.
- The wharf and pontoon structure are fit for purpose launching facilities for rowing, canoeing and similar paddle craft, though inherently accommodate other activities due to the nature of structures and the provision of water access for the full tidal cycle.
- Rame Reserve facilities also include a storage facility currently occupied by the North Shore Rowing Club, a Panuku Development dinghy locker, seating and public toilets.
- Rahu Reserve facilities include public toilets and a small single level building currently occupied by Tauhinu Sea Scout Group. The ramp provides direct water access at high tide only.
- All facilities are serviced by on road or dedicated car parking, though space for expansion is limited at Rame Reserve and Rahu Reserve provides limited on road parking access only.
- There are conservation, tidal and steep escarpment constraints to the south eastern inlet and Lady Phoenix Reserve area that likely preclude the development of meaningful facilities along this coastal interface.
- In considering the physical and environmental constraints, current facilities provide an acceptable level of geographic provision in so far as practical with minor gaps, primarily at pedestrian / non-vehicular access level.

Schnapper Rocks

- There is 1 public boat ramp facility listed on Wharepapa Reserve at No. 286 Schnapper Rock Road. However, this facility no longer exists and was likely removed due to its poor condition status.
- There is potential to provide water access from mid - high tide in this location depending upon the length of structure.
- A geographic gap therefore exists in the Schnapper Rocks area due to the absence of a facility at Wharepapa Reserve. The provision of water access at Wharepapa Reserve would however provide good geographic provision with limited catchment overlap with other facilities.
- There are conservation, tidal and steep escarpment constraints to the southern inlet and Lady Phoenix Reserve that likely preclude the development of meaningful facilities along this coastal interface.

Albany and Albany Heights

- Has 2 public facilities including:
 - + 1 boat ramp in good condition on Wharf Reserve at No. 29 Wharf Road
 - + 1 short wharf / platform in good working condition on Kell Park at No. 257 Dairy Flat Highway
- The structure on Wharf Reserve is a fit for purpose boat launching facility with access to the water at low-mid tide onwards due to the proximity of current water channel. There is potential to provide improved infrastructure to access the water at low tide, particularly for recreational paddling craft.
- The Wharf Road facility also has an appropriate turning area with limited on road parking access. It is noted however that the ability to launch

motorised craft is precluded by bollards and capacity to formalise or expand car parking is limited.

- The Kell Park facility provides for coastal access and rest / stop off points between destinations at high tide, but the structure is not fit for purpose in accommodating land based access for launching paddle craft due to multiple stair transitions and notable physical separation from car parking facilities. It does however provide a structure that enables interaction with the water in association with experiential boardwalk and play facilities.
- In considering the physical constraints, current facilities provide an acceptable level of geographic provision in so far as practical.

Lucas Heights

- Has 0 public facilities and it is noted that there are conservation, tidal and steep escarpment constraints to the eastern inlet that likely preclude the development of meaningful facilities along this coastal interface.

Paremoremo

- Has 1 wharf and associated boat ramp in average working condition on Attwood reserve at No. 138 Attwood Road.
- The facility provides shelter, seating, water access for the full tidal cycle and is a notable rest / stop off point between destinations given the absence of other facilities in the area.
- There is potential to provide improved infrastructure to access the water at low tide, particularly for recreational paddling craft.
- The facility also has limited on road parking, though space is constrained with little capacity for improvement.
- Geographic catchment coverage in the Paremoremo area is average due to the absence of flexible, fit for purpose public facilities to the west and east of Attwood Reserve. It is acknowledged however that this is largely due to physical and environmental constraints associated with conservation areas, tidal restrictions and steep escarpments that likely preclude the development of meaningful facilities along the coastal interface.
- It is noted that there is potential to provide water access at Sanders Reserve. The cost and complexity of providing land based launching and / or access at all tides would be considerable however, and options providing better access at mid - high tide would likely provide better value for investment.
- In considering the physical constraints, the provision of water access at Sanders Reserve would however provide good geographic provision in so far as practical with limited catchment overlap with Attwood Reserve facilities.

PRIVATE FACILITIES

West Harbour

- Has 592 private berths, boat ramp launching facilities, car parking and ancillary amenities associated with Hobsonville (West Harbour) Marina. Potential redevelopment of the marina proposes expansion and the provision of improved public access and better connectivity with parking, bus and ferry services.

- There are no individual structures associated with private residential lots in this area

Hobsonville

- Although publicly accessible, all facilities (apart from the public boardwalk) in the Catalina Bay area are private. These include the existing seaplane ramp (with permit currently held by HLC), Westlake Boys High School Rowing Club storage, TS Bellona Navy Sea Cadet Corps and Hobsonville Yacht Club facilities.
- It is re iterated that the seaplane / boat ramp structure is nearing the end of its functional lifecycle and requires renewal to maintain craft launching access in this area.
- There are localised private structures in the southern Scott Point / Limeburners Bay area, with no known facilities in the tidal Bomb Bay or Nimrod Inlet areas.

Whenuapai

- There are several private structures in the north eastern Whenuapai area. These are primarily located on the small headland adjacent the Herald Island causeway
- Other private structures, though limited due to the nature of land ownership, are relatively evenly distributed along the Kotukutuku Inlet. Several of these structures are not captured on council asset registers.

Herald Island

- Has extensive private lot access with a range of wharf and ramp structures along the coastal interface.
- Herald island boating club at Twin Wharf Road is a private facility with pontoon and paddle craft storage area that shares access with public water access provision.

Greenhithe

- Salthouse Boatbuilders is a private wharf and ramp launching facility with an open chain link fence that separates public and private activities.
- There are several private structures in the northern Greenhithe area. These are primarily located on the headland to the east of Wainoni Park.

Schnapper Rocks

- There are no individual structures associated with private facilities in this area.

Albany and Albany Heights

- There are no individual structures associated with private facilities in this area.

Lucas Heights

- There are no individual structures associated with private facilities in this area.

Paremoremo

- There are no individual structures associated with private facilities listed on council asset registers in this area. There are however several non

listed private structures that provide private access to the water in this area.

NETWORK ACTIVITIES

The following outlines key activities accommodated within the upper harbour area with commentary on level of provision in relation to facilities and geographic distribution.

Rowing and Canoeing

Rowing and canoeing require fit for purpose facilities and typically this includes the provision of pontoon structures for launching, and sheltered, unobstructed straight stretches of water up to 2km in length to enable meaningful training and competition. The ability to store gear is also fundamental to effective access and operation.

There are two network facilities currently in operation:

Rame Reserve (Greenhithe Wharf and pontoon)

- Existing facilities at Rame Reserve are appropriately located within the upper harbour area and provide good baseline access to the water for rowing (including the North Shore Rowing Club) and canoeing activities. There are however complexities to improving facilities with spatial restrictions limiting potential expansion and operational improvements in Lucas Creek itself.
- This requires further investigation noting that several potential steps to improve facility functionality were identified in the ARPASS Paddling and Rowing Study 2007.

Catalina Bay (legacy sea plane access ramp.)

- This ramp with craft storage facilities in close proximity currently provides launching access for the Westlake Boys High School Rowing Club, TS Bellona Navy Sea Cadet Corps and Hobsonville Yacht Club.
- However, it is noted that future residential development plan will displace the Westlake Boys High School Rowing Club and Hobsonville Yacht Club and the unknown future of the deteriorating ramp may result in the loss of facilities in this location.
- If a Marine Recreation Centre facility was unable to be built, the loss of this asset would leave a significant gap in the provision of strategic network facilities in the Hobsonville area.

Recreational Canoeing / Sea Kayaking and Paddle Craft

Although fit for purpose pontoon type facilities are preferred, the majority of recreational users are satisfied with boat ramp, and to a lesser extent wharf structures that provide for improved access. In considering this:

- Facilities at Hobsonville Marina, Rame Reserve and Herald Island provide fit for purpose facilities and good water access for paddling craft.
- Boat ramp and / or wharf facilities that enable craft access to a lesser standard are also provided at Catalina Bay, Attwood, Ranui, and Waimari Reserves.
- Key network gaps in access and connectivity exist in the western Whenuapai (Riverlea Reserve) and Paremoremo (Sanders Reserve) areas.

Fishing

Land based recreational fishing does not require specific structures though the provision of wharf type facilities typically provide a safer and more comfortable experience for a wider range of users. In considering this:

- Geographic land based access for fishing is generally well distributed for across the network via wharf, pontoon and related boardwalk / structures.
- The provision of facilities that address explicit gaps in Public Facilities would ensure that safe access for a wide range of user groups is provided in all suburban catchment areas.

Swimming

Due to the tidal nature of the upper harbour area access to the water for recreational swimming is largely restricted to 1-2 hours either side of high tide. In this regard it is noted that:

- Formal and informal access is afforded at all key reserves.
- Addressing identified geographical gaps and implementing network improvements should also give consideration to improving user experience and safety from a swimming perspective.

Boating

Boating activities including power, sail, and dinghy typologies require fit for purpose facilities. Typically this includes the provision of ramps for launching and areas for parking as a baseline minimum, with additional structures and supporting amenities like toilets provided based on association with club facilities and / or a higher frequency of use. All tide access is preferred but not essential. In considering this:

- Other than explicit gaps in Public Facility provision identified above, power, sail and shallow drawing boating is appropriately located and well distributed across the network, with access provided via boat ramp launching facilities and several stop off wharf and pontoon structures.
- All facilities have tidal restrictions apart from Attwood, Catalina Bay (Private), Hobsonville Marina, Rame and Wharf Reserves. There is potential to improve access for the full tidal cycle at Riverlea Reserve in Whenuapai and addressing geographical gaps in the Hobsonville area requires further investigation.
- Spatial and physical constraints associated with improving car / trailer parking is perceived as the most limiting factor to access, use and catchment capacity.
- If not already accommodated, access to potable water and toilet facilities should also be considered in areas set to experience population growth.

Skiing and Wakeboarding

The Paremuremo Creek is a recognised area under Auckland Transport safety bylaws as reserved for water skiing, wakeboarding and towing sea biscuits.

Physical facilities enabling power boat access are identified in Boating above.

NETWORK GAP SUMMARY

GEOGRAPHIC GAPS

The mapping of existing facilities indicates there are geographic gaps in the following areas:

- Lower West Harbour (Luckens Reserve / West Harbour Esplanade)
- Hobsonville (Bomb, Catalina, Limeburners Bay and Nimrod Inlet)
- West / northwest Whenuapai (Riverlea Reserve)
- Paremuremo (Sanders Reserve)

With ability to address gaps in the following areas limited by conservation, tidal and steep escarpment constraints

- South East Greenhithe
- South Schnapper Rocks
- Lucas Heights

Refer Development Recommendations section for additional commentary and opportunities to improve water access in the upper harbour area.

ACTIVITY GAPS

Currently, the location of facilities and different user groups within the upper harbour area is complementary and conflicts of use largely minimised by regulation and location of facilities themselves.

Most activities are accommodated across the network via structures and / or general provision of access, though significant gaps in provision exist in the Hobsonville and western Whenuapai areas due to a lack of formal, public facilities.

POPULATION DYNAMICS

GROWTH AND DENSITY

Population growth data from the Transport Modelling Population Projection has been used to obtain an understanding of population growth and density projection in relation to water access provision.

Based on review and mapping of the above, the following areas are projected to experience significant population growth and increase in density:

- Albany
- Hobsonville
- Whenuapai
- West Harbour (Northern)

Remaining areas within the Upper Harbour catchment are projected to experience minor or neutral / negative population growth.

AGE AND INCOME (CENSUS 2013)

Legacy Census data indicates that:

- 89.5% of the upper harbour population are pre-retirement age (<65) with a median household income of \$89K which was the second highest in Auckland at the time.
- The median age in the upper harbour area was 36 with 69.8% of the population aged between 15 and 64.
- Ethnic distribution was largely European (65.7%) and Asian (29.4%) with Maori (5%) and Pacific (3%) minorities.
- Almost all schools received a higher than average decile rating.

Based on the above it can be assumed that on average, the upper harbour population is relatively active with a level of income that would enable participation in water based activities at a basic level (minimum).

DEMAND

As outlined in Scope and Limitations, accurately evaluating the extent of participation of water based activities and provision of appropriate infrastructure is complex, as participants are often engaged in varied and independent recreation making the recording of information and associated demand difficult to measure.

However, available data indicates that the popularity of the recreational paddling sports is likely to grow in the future due to:

- Increased population growth (projected) in the upper harbour area
- The higher profile of watersports on various media platforms
- The upper harbour marine area that, although tidal, provides a varied environment with a range of bays and inlets that are complementary for a range of recreational uses

It is noted that growth in recreational activities often translates into an increased participation in structured activities that may long term require the consideration of additional facilities to support baseline provision outlined in this report.

It is also acknowledged that pressures associated with projected levels of population growth will likely have an impact on the region's waterways, where recreational activities can be increasingly expected to encroach upon each other. In this regard facilities should be developed to be as flexible as practical to aid in relieving localised network pressures associated with demand.

CURRENT FACILITY TYPOLOGIES MAP

This map locates public (council) and privately owned water access facilities and associated area catchments within the Upper Harbour Local Board. Assets are classified by Wharf or Boat Ramp access as applicable.

KEY

Water Access Typologies

- Public Wharf Access
- Public Boat Ramp Access
- Private Wharf Access
- Private Boat Ramp Access

Tidal Typologies

- Tidal Mudflat
- Intertidal
- Permanent Channel
- Deep water

Open Space Typologies

- Conservation
- Informal Recreation
- Sport and Active Recreation
- Community

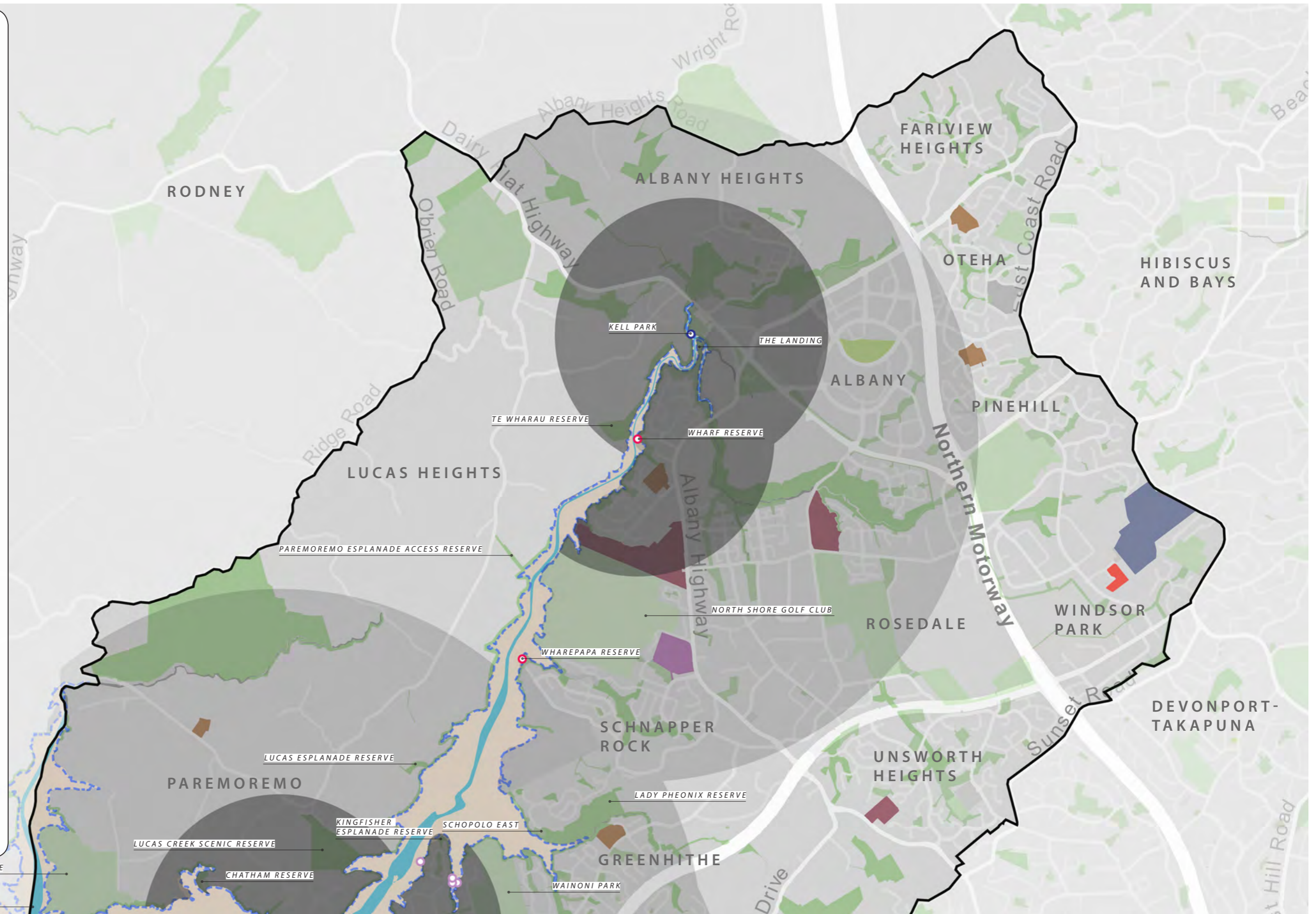
Schools Typologies

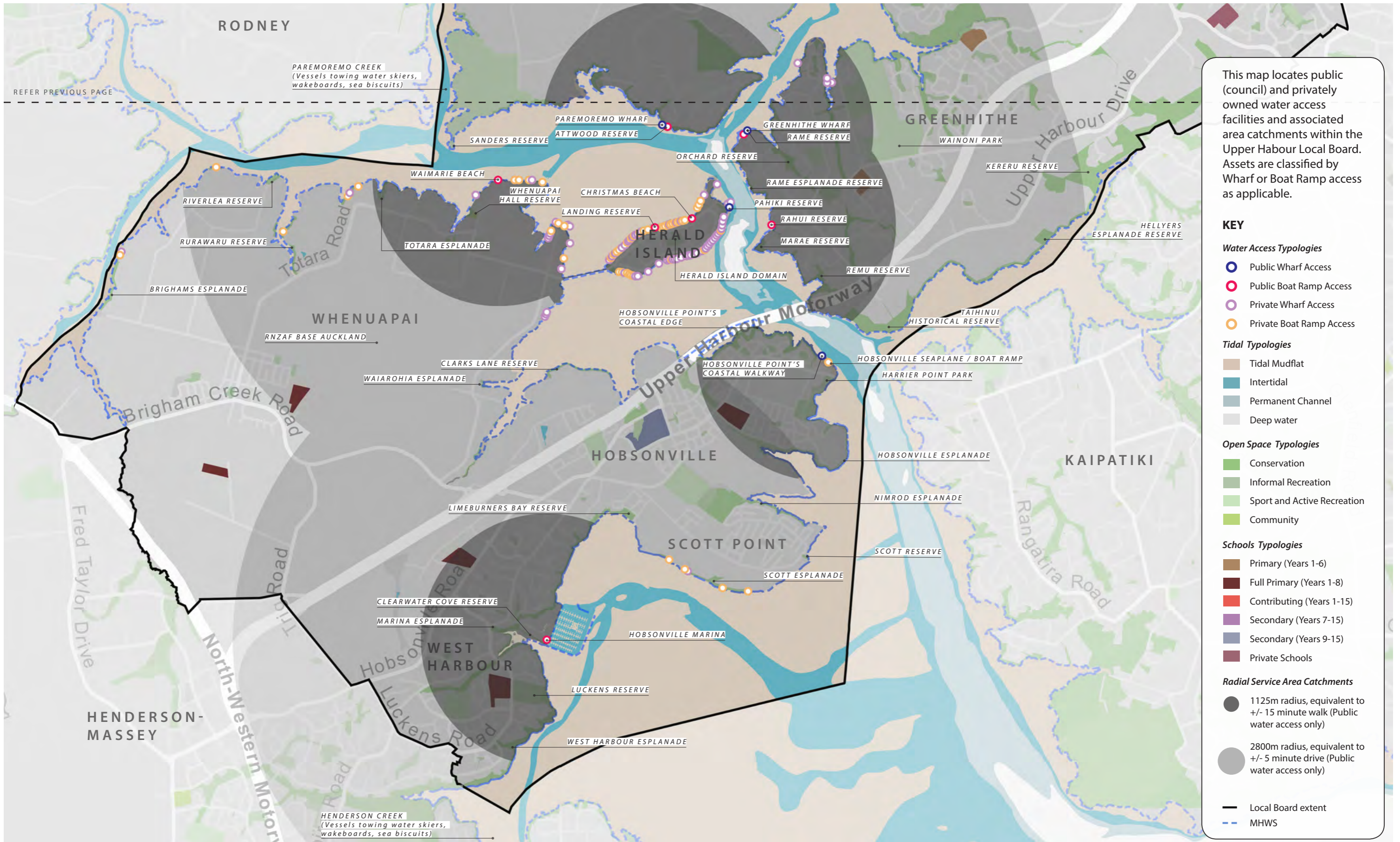
- Primary (Years 1-6)
- Full Primary (Years 1-8)
- Contributing (Years 1-15)
- Secondary (Years 7-15)
- Secondary (Years 9-15)
- Private Schools

Radial Service Area Catchments

- 1125m radius, equivalent to +/- 15 minute walk (Public water access only)
- 2800m radius, equivalent to +/- 5 minute drive (Public water access only)

- Local Board extent
- - - MHS





CURRENT ACTIVITY TYPOLOGIES MAP

This map articulates **public** (council) owned assets and associated activity typologies that current facilities enable.

It is important to note the size of each 'target' is proportional to activities provision. The larger the target, the more activities enabled.

KEY

Water Access Activities Typologies

- Rowing
- Canoeing/Kayaking/paddleboarding
- Swimming
- Fishing
- Boating
- Ferry terminals

Tidal Typologies

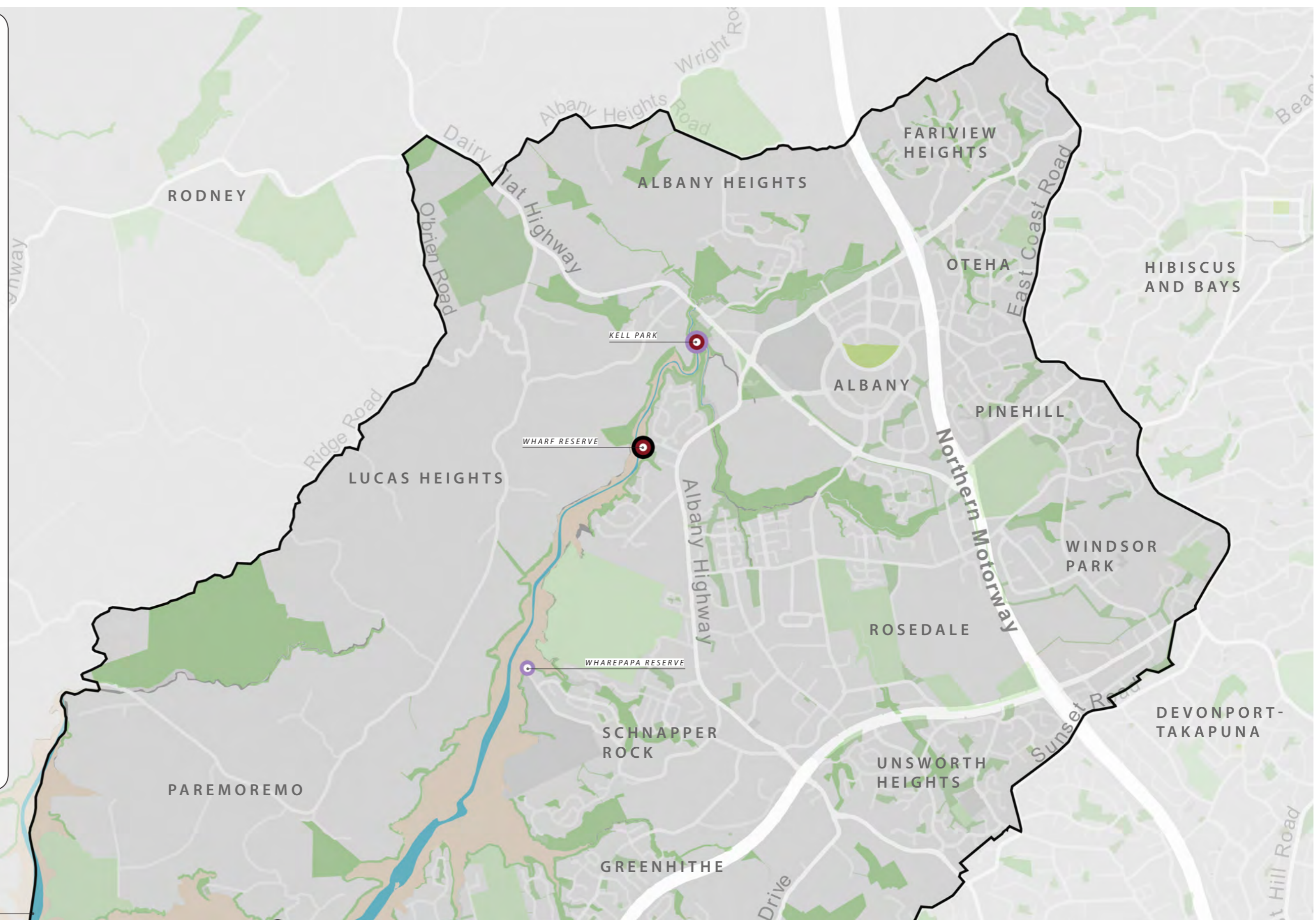
- Tidal Mudflat
- Intertidal
- Permanent Channel
- Deep water

Open Space Typologies

- Conservation
- Informal Recreation
- Sport and Active Recreation
- Community

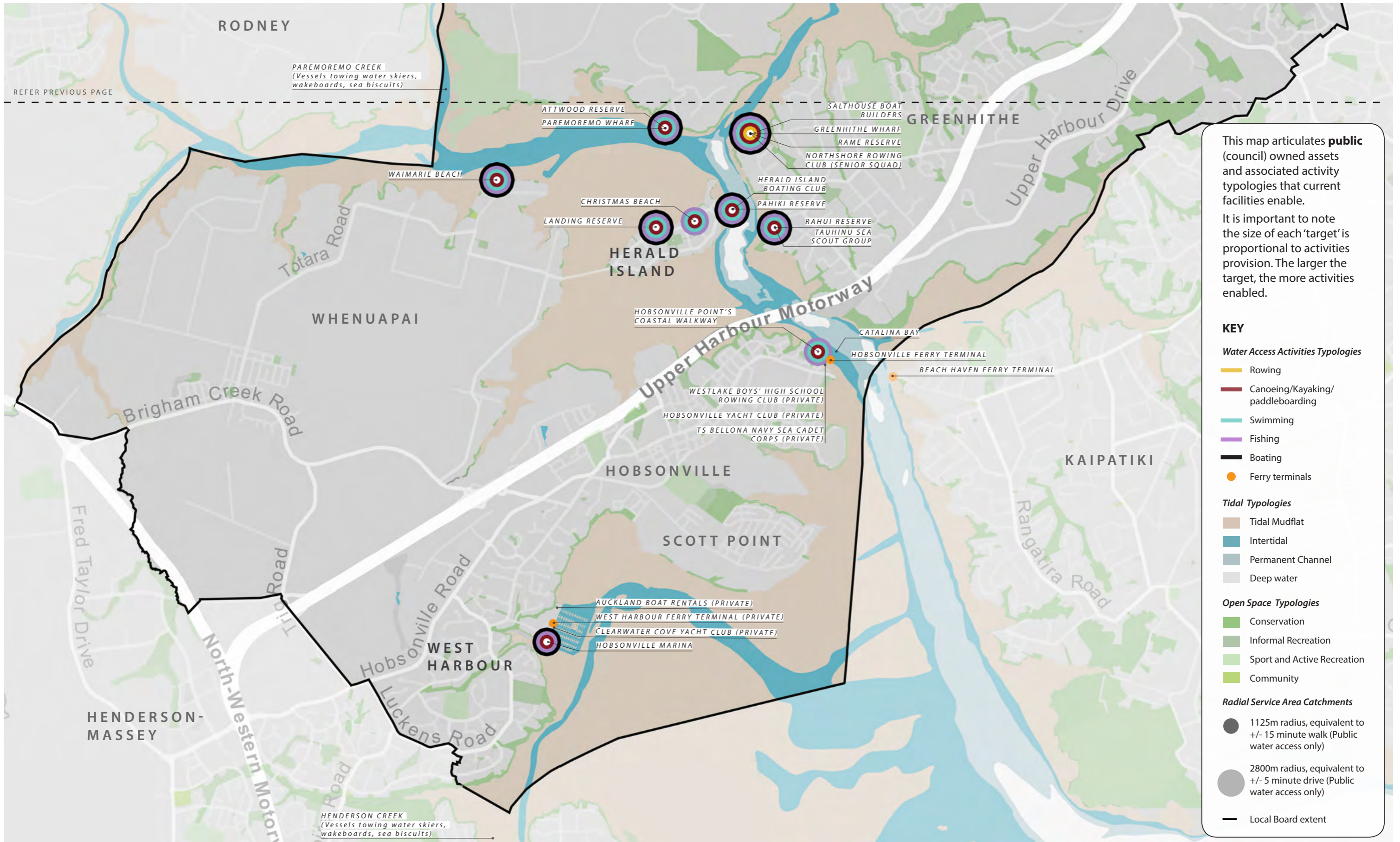
Radial Service Area Catchments

- 1125m radius, equivalent to +/- 15 minute walk (Public water access only)
- 2800m radius, equivalent to +/- 5 minute drive (Public water access only)
- Local Board extent



PAREMOREMO CREEK
(Vessels towing water skiers, wakeboards, sea biscuits)





DEVELOPMENT RECOMMENDATIONS

NETWORK DEVELOPMENT OPPORTUNITIES TABLE

Catchment Area <small>Refer Water Access Opportunities Map for locations</small>	Network Improvements and Opportunities						Comments and Recommendations
	Addresses Geographic Gap	Projected Population Growth	Proposed New Facility	Improvements to Existing Facility	Preventative Maintenance Required	Priority	
West Harbour							
Hobsonville Marina		●		●		LOW	<ul style="list-style-type: none"> The nature of any future expansion will need to be investigated in order to understand how this may improve capacity for the growing West Harbour and Hobsonville population. The presence of regulatory information restricting parking on Clearwater Road in the weekends suggests the facility is already under pressure and this should be considered in any planned redevelopment. A paddle craft locker could be considered in this location to improve frequency of use for those without regular access to transport. Low priority status is assigned as existing infrastructure is in good condition and appropriate given current spatial constraints.
Luckens Reserve	●	●	●			MED	<ul style="list-style-type: none"> Investigate locations at Luckens Reserve for a potential stop point for paddle oriented activities to address a geographic gap in access, complement Hobsonville Marina facilities and provide an option to separate paddle and motorised user groups. Given tidal restrictions, a short boardwalk / wharf structure would be considered an appropriate facility to improve access at high tide. Medium priority status is triggered by the absence of any facilities, associated geographic gap in provision and projected population growth pressures.
Hobsonville							
Catalina Bay	●	●		●		HIGH	<ul style="list-style-type: none"> The existing seaplane / boat ramp structure is nearing the end of its functional lifecycle and requires renewal to maintain craft launching access in this area. Given the complexities associated with establishing new structures in the coastal marine area, and the ramp provides low tide access to the water, it is recommended that this structure be retained and renewed. Ownership and management issues will need to be investigated further to establish the feasibility of this recommendation. It is noted that the existing boardwalk under council ownership does not provide fit for purpose land based launching access, and no other launching facilities currently exist in the Hobsonville area. Any potential new facility (including Marine Recreation Centre currently being considered) will require the investigation of supporting access facilities and status confirmation to ensure appropriate catchment coverage. Should the existing seaplane / boat ramp be disestablished, synergies between the Hobsonville Yacht Club, TS Bellona Navy Sea Cadet Corps, North Shore and Westlake Boys Rowing Club's should be investigated, or other potential options within the Hobsonville / Catalina Bay area considered to provide access at mid - high tide (minimum). High priority status is triggered by the significant geographic gap the absence of a facility in this location would create in tandem with projected population growth pressures.
Limeburner Bay	●	●	●			HIGH	<ul style="list-style-type: none"> Investigate locations at Limeburners Bay Reserve for a potential stop point for paddle oriented activities to complement Hobsonville Marina and address a geographic access gap in the Scott Point area. Given tidal restrictions, a short boardwalk / jetty structure would be considered an appropriate facility to improve access at high tide. There is also opportunity to acknowledge historical brickworks activities as part of establishing access. High priority status is triggered by the absence of any facilities, associated geographic gap in provision and projected population growth pressures.
Nimrod Inlet	●	●	●			HIGH	<ul style="list-style-type: none"> Investigate locations Nimrod Inlet / Esplanade reserve and associated open space for a potential stop point for paddle oriented activities Given tidal restrictions, a short boardwalk / jetty structure would be considered an appropriate facility to improve access at high tide. High priority status is triggered by the absence of any facilities, associated geographic gap in provision and projected population growth pressures.

NETWORK DEVELOPMENT OPPORTUNITIES TABLE

Catchment Area Refer Water Access Opportunities Map for locations	Network Improvements and Opportunities						Comments and Recommendations
	Addresses Geographic Gap	Projected Population Growth	Proposed New Facility	Improvements to Existing Facility	Preventative Maintenance Required	Priority	
Whenuapai							
Waimarie Beach		💧		💧		MED	<ul style="list-style-type: none"> Facility in good working order and provides appropriate high tide access given proximity to permanent channel. Retain and renew to ensure appropriate access in this catchment area. At renewal consider improving beach transition and widening the facility to improve functionality. Existing stair to open space should be repaired in the short term. Investigate opportunities to improve car and trailer parking access, use and capacity noting likely increase in use due to population growth. Medium priority status is triggered by the current absence of other facilities in the area and projected population growth pressures.
Riverlea Reserve	💧	💧	💧			HIGH	<ul style="list-style-type: none"> Riverlea Reserve is strategically positioned within the Whenuapai area to address a significant geographic gap and has the potential to provide water access for the full tide cycle. It is recommended that the feasibility of establishing ramp and / or wharf options are investigated. This should include also include an assessment of opportunities to widen Riverlea Road to improve functional access, and provide car and trailer parking. High priority status is triggered by the absence of any facilities, associated geographic gap in provision and projected population growth pressures.
Herald Island							
Christmas Beach				💧		LOW	<ul style="list-style-type: none"> Existing beach ramp surface in average working condition though appears structurally sound. The structure provides an appropriate level of access to this tidal beach. Renew at end of natural lifecycle to retain public access in this location. At renewal consider improving widening the facility to improve functionality. Low priority status is assigned as existing infrastructure is functional working condition and a significant percentage of Herald Island residents have their own private water access with associated reduction in perceived demand.
Landing Reserve				💧		LOW	<ul style="list-style-type: none"> Existing boat ramp and associated retaining in good condition. Renew at end of natural lifecycle to retain public access in this location. It is recommended that the existing unsealed carpark be sealed to improve functionality and durability, and that residential boundaries are addressed with a view to providing improved public amenity. Low priority status is assigned as existing infrastructure is in good condition and car parking provides functional access.
Pahiki Reserve					💧	LOW	<ul style="list-style-type: none"> Facilities in good working order with supporting public amenities. Renew at end of natural lifecycle to retain public access in this catchment area. Low priority status is assigned as existing infrastructure is in good condition and are appropriate given current spatial constraints.
Greenhithe							
Rame Reserve				💧		MED	<ul style="list-style-type: none"> Wharf and pontoon facilities are in good working condition and provide good baseline access for all typical activities with adjacent supporting amenities. It appears that wharf and pontoon structures have been upgraded as stipulated in the ARPASS (Auckland Regional Paddling and Rowing Facilities) Study prepared by Visitor Solutions. The boat ramp is in average condition and should be considered for renewal. Given there are social, spatial environmental and financial constraints that potentially limit this facility reaching its full potential, it is recommended that key stakeholders are engaged to discuss the feasibility of implementing outstanding items required to enable competition and improve functionality as outlined in the Visitor Solutions report. Options to improve public private relationship between boat builder and rowing club should also be investigated including the provision of reserve signage to improve legibility of public realm. Medium priority status is triggered due to the strategic location of this facility in the Greenhithe catchment and its potential to provide quality sub regional rowing / canoeing facilities.

NETWORK DEVELOPMENT OPPORTUNITIES TABLE

Catchment Area Refer Water Access Opportunities Map for locations	Network Improvements and Opportunities						Comments and Recommendations
	Addresses Geographic Gap	Projected Population Growth	Proposed New Facility	Improvements to Existing Facility	Preventative Maintenance Required	Priority	
Greenhithe							
Rahui Reserve				💧		LOW	<ul style="list-style-type: none"> Existing beach ramp surface in average working condition though appears structurally sound. The structure provides an appropriate level of access to this tidal beach. Renew at end of natural lifecycle to retain public access in this location. At renewal consider improving the provision of open space amenities including signage. Low priority status is assigned as existing infrastructure is in functional working condition and a significant percentage of Herald Island residents have their own private water access with associated reduction in perceived demand.
Schnapper Rock							
Wharepapa Reserve	💧		💧			MED	<ul style="list-style-type: none"> The listed asset in this location does not exist. Given tidal restrictions and proximity of permanent channel, a short boardwalk / jetty structure would be considered an appropriate facility to improve access at high tide. Medium priority status is triggered by the absence of any facilities in the Schnapper Rock catchment and associated geographic gap in provision.
Albany and Albany Heights							
Kell Park				💧	💧	LOW	<ul style="list-style-type: none"> Facilities in good working order and provide an acceptable level of provision given tidal restrictions and physical (access related) constraints. Renew at end of natural lifecycle to retain public access in this catchment area. At renewal consider providing a pontoon / floating deck structure to improve functionality at high tide. Low priority status is assigned as existing infrastructure is in good condition and appropriate given physical and spatial constraints.
Wharf Reserve				💧	💧	HIGH	<ul style="list-style-type: none"> Existing boat ramp in good condition but requires maintenance and review of surface to improve slip resistance and user safety Given the current facility provides access to the water for the full tide cycle, it is recommended that the feasibility of establishing ramp complementary wharf and / or pontoon options are investigated. This should include also include establishing whether vehicular launching of craft be permitted (as this is currently precluded by bollards) and an assessment of opportunities to improve functional access, and provide formal car and trailer parking. High priority status is triggered due to strategic location at the head of Lucas Creek and provision of access at all tides.
Paremoremo							
Attwood Reserve				💧	💧	MED	<ul style="list-style-type: none"> Existing boat ramp, wharf structure (particularly steps) and shelter requires preventative maintenance and review of surfaces / structures to improve slip resistance and user safety. Given the current facility provides access to the water for the full tide cycle, it is recommended that the feasibility of establishing a pontoon / floating deck structure is investigated to complement existing facilities and improve functionality and access for recreational paddling craft through the tides. Medium priority status is triggered due to strategic location, the absence of other facilities in the Paremoremo catchment and the provision of access at all tides.
Sanders Reserve	💧	💧	💧			HIGH	<ul style="list-style-type: none"> Access to Sanders Reserve is currently afforded at high tide via shingle beach and informal track to formalised reserve network. Investigate locations at Sanders Reserve for a potential stop point for paddle oriented activities . Given tidal restrictions and significant distance required to provide low tide access, a short boardwalk / wharf structure would be considered an appropriate facility to improve access at high tide. Consideration should also be given to providing wayfinding signage and connections to the existing track network track, as although separated, this would provide improved access to existing toilet facilities and related amenities. High priority status is triggered by the strategic location of the reserve, absence of existing facilities and associated geographic gap in provision.

NETWORK DEVELOPMENT OPPORTUNITIES PRIORITY MAP

This map identifies high, medium and low priorities public water access facilities for network improvements and opportunities.





Refer Network Development Opportunities Table in previous section for further information, commentary and recommendation on individual location

KEY





Priorities Typologies

-  High
-  Medium
-  Low



Tidal Typologies



-  Tidal Mudflat
-  Intertidal
-  Permanent Channel
-  Deep water

Open Space Typologies

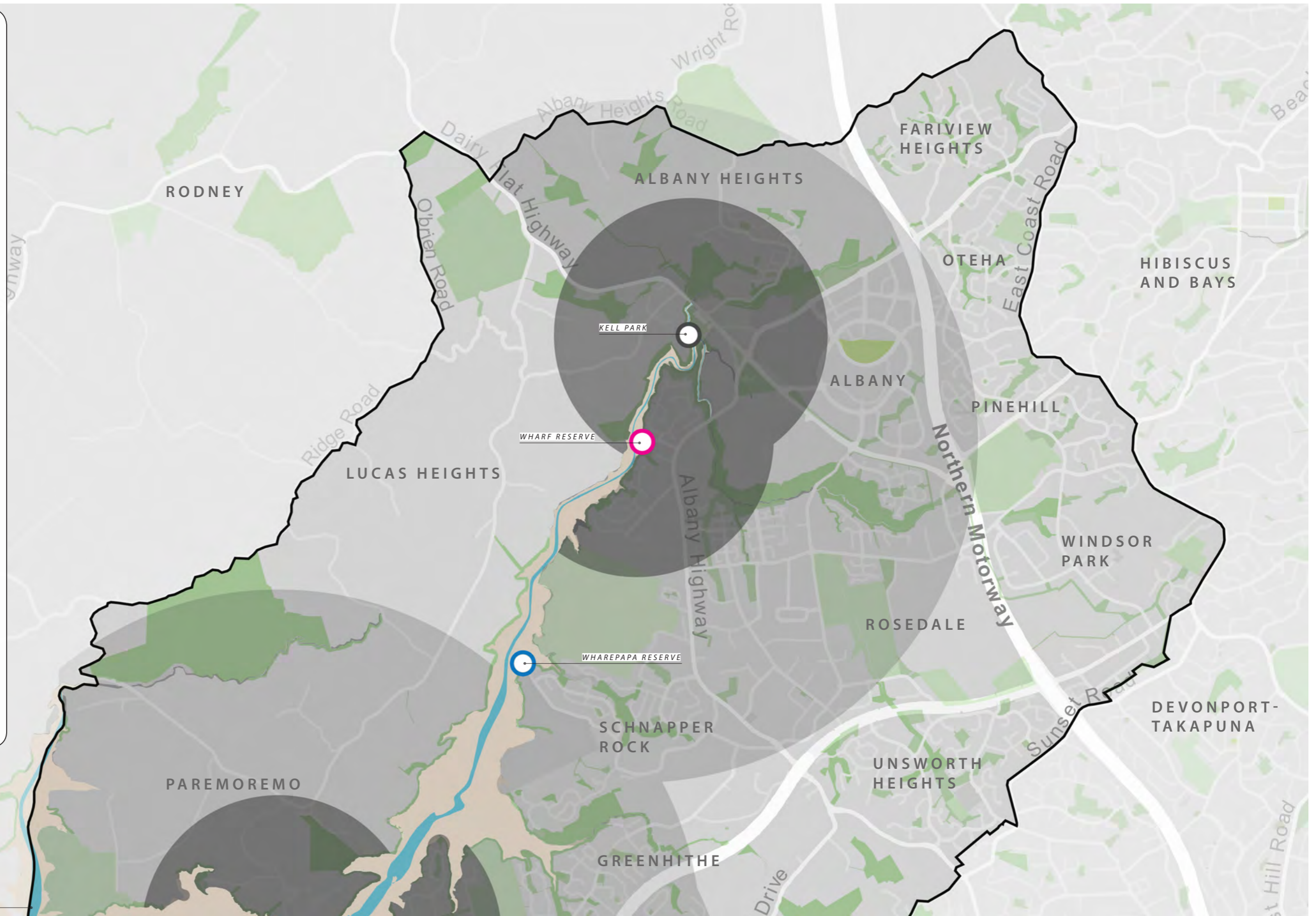
-  Conservation
-  Informal Recreation
-  Sport and Active Recreation
-  Community

Radial Service Area Catchments

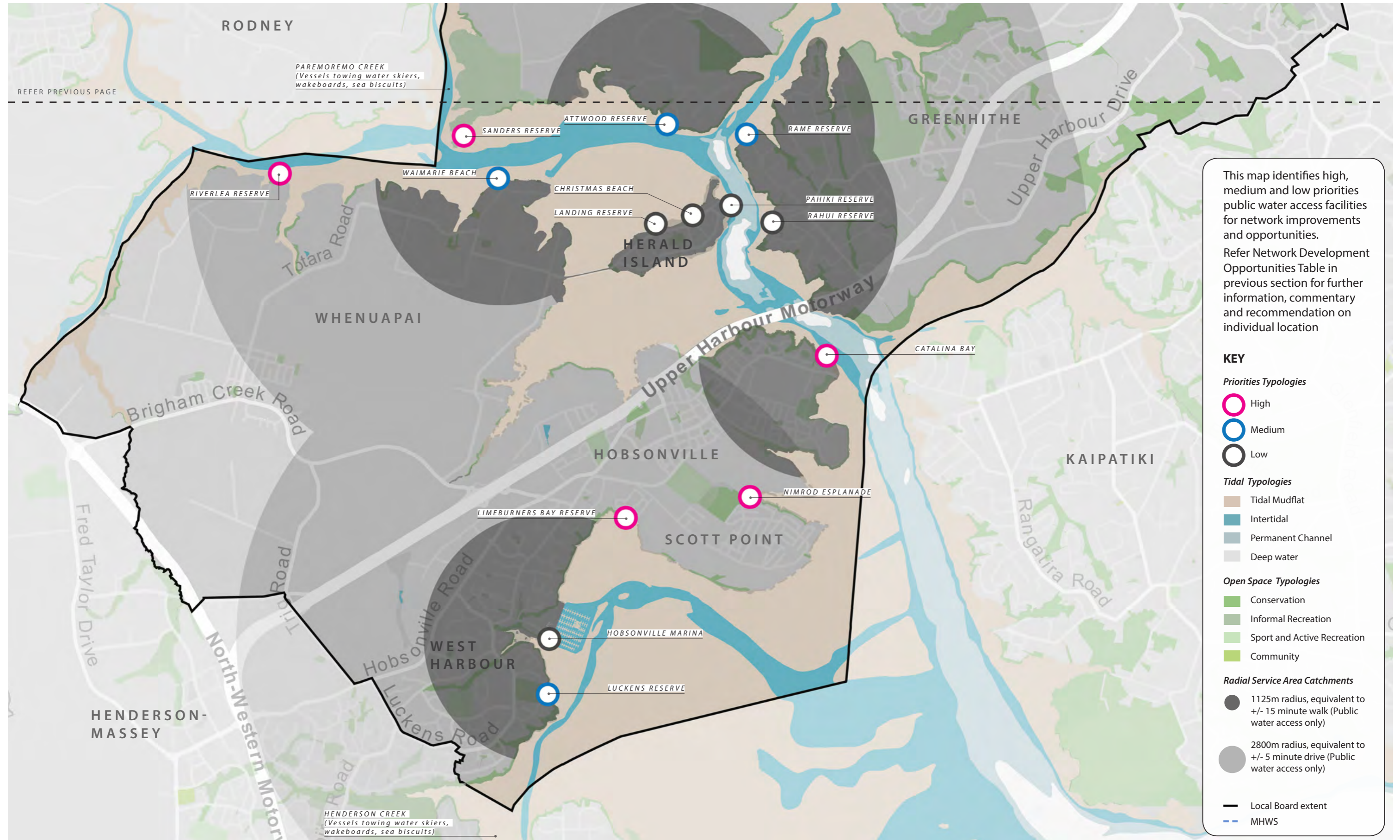
-  1125m radius, equivalent to +/- 15 minute walk (Public water access only)
-  2800m radius, equivalent to +/- 5 minute drive (Public water access only)

-  Local Board extent
-  MHWS

PAREMOREMO CREEK
(Vessels towing water skiers, wakeboards, sea biscuits)



NETWORK DEVELOPMENT OPPORTUNITIES PRIORITY MAP



APPENDIX A

DATA CAPTURE SPREADSHEET

DATA CAPTURE SPREADSHEET - PUBLIC FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Hobsonville Point's Coastal Walkway	Catalina Bay	Coastal permit held by Council	Public	Wharf	N/A	N/A	+ Boardwalk structure in good condition.	N/A		Y	Y	Y		Low	+ Access from Catalina Bay + Asset number not provided in (SAP spreadsheet)
Attwood Reserve	[Paremoremo] R138 Attwood Road	1000016133	Public	Wharf	N	Limited	+ Wharf structure appears sound. + Low tide access platform & associated stairs requires review and potential renewal + Incillary shed & other amenities require preventative maintenance to prevent deterioration.	2		Y	Y	Y	Y	Medium	+ Paremoremo Wharf (SAP Description) + Located in park extent + Kayak trail stop off point on proposed greenway plan + Shed/shelter with basic fish processing bench + Bins and Signage + Limited parking opportunity + Easy Road access + Consider improving low tide stair access structure
Attwood Reserve	[Paremoremo] R138 Attwood Road	1000016137	Public	Boat Ramps	N	Limited	+ Boat ramp structure appears sound. + Structure requires preventative maintenance to prevent deterioration and replacement of anti-slip surface.	3		Y			Y	Medium	+ Dinghy Ramp (SAP Description) + Located in park extent + Limited on street parking with little opportunity to improve provision due to spatial / physical constraints + Consider improving low tide access structure
Attwood Reserve	[Paremoremo] R138 Attwood Road	1000084546	Public	Boat Ramps	N/A	N/A	+ Concrete pavement in good working condition. Retain and renew at end of asset life cycle.	N/A						Medium	+ Misc Func surface, wooden track/path (SAP Description) + Concrete surface Not wooden as described in SAP + Located in park extent
Christmas Beach	[Herald Island] 86 The Terrace	1000015815	Public	Boat Ramps	Y	Limited	+ Beach ramp in average working condition. Retain and renew at end of asset life cycle.	3		Y	Y	Y		Low	+ Play ground in close proximity + Open park/grass area + Located in park extent + Seating and water tap + Easy road access + Limited road side parking + improve functionality by widening existing structure long term + Kayak trail stop off point on proposed greenway plan
Kell Park	[Albany] 257 Dairy Flat Highway	1000101178	Public	Wharf	Y	Yes	+ Boardwalk / wharf structure good working condition.	2		Y		Y		Low	+ Playground in close proximity + Wetland with boardwalk leading up to Wharf + Access to inlet platform via boardwalk and stairs + Parking considerable distance away from wharf structure + Stop off point only, with poor land based access for launching paddle craft + Water turbid and not inviting + Consider improving structure to improve high tide access
Landing Reserve	[Herald Island] The Terrace-Lot 56 (Adjacent)	1000015664	Public	Boat Ramps	Y	Yes	+ Existing boat ramp and associated retaining in good condition.	4		Y	Y	Y	Y	Low	+ Open lot area next to unit 56 + Unit 56 itself doesn't have boat ramps or wharf + Public access + Easy road access + Not full time access, gate close at 9pm (Winter) or 10pm (Summer) + Bus stop right outside + Open loose gravel area for parking could be considered for permanent durable surface + Residential boundary relationship / amenity poor
Marina Esplanade (Hobsonville Marina)	[West Harbour] Listed as 38 Seacrest Drive but is located at termination of Clearwater Cove	1000095536	Public	Boat Ramps	N	Yes	+ Existing boat ramp and pontoon and car parking facilities in good condition.	3		Y	Y	Y	Y	Low	+ Public access to boatramp + Located next to West harbour ferry terminal (Westpark Marina) + Kayak trail stop off point on proposed greenway plan + Facilities include Bensemann boating centre and Auckland boat rentals + Commercial area + Easy road access + Carpark (For trailer) with Clearwater Road parking restrictions in weekends + Wharf type structure between two boat ramps

DATA CAPTURE SPREADSHEET - PUBLIC FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Pahiki Reserve	[Herald Island] 03 Twin Wharf Road	1000028776	Public	Wharf	N	Yes	+ Wharf in good working order	3		Y	Y	Y	Y	Low	+ Pontoon and wharf structures + Kayak trail stop off point on proposed greenway plan + Public toilet facilities + Seating + Shelter + Locker (appears private associated with boating club) + Herald Island Boating Club members only wharf and pontoon next to public wharf + Easy road access + Limited carparking
Rahui Reserve	[Greenhithe] 17 Rahui Road	1000016187	Public	Boat Ramps	Y	Yes	+ Ramp access in average working condition	2		Y	Y	Y	Y	Low	+ Dinghy (SAP Description) + Tauhunu Sea Scout Group Building adjacent + Public Toilet facilities + Easy road access
Rahui Reserve	[Greenhithe] 17 Rahui Road	1000084525	Public	Boat Ramps	Y	Yes	+ As above	N/A						Low	+ Misc Func Surf Concrete cast in situ (SAP Description) + Limited on street parking with little opportunity to improve provision due to spatial / physical constraints
Rame Reserve	[Greenhithe] 101 Rame Road	1000016202	Public	Boat Ramps	N	Yes	+ Refer below	3		Y			Y	Medium	+ Better distinction between private and public boundary
Rame Reserve	[Greenhithe] 101 Rame Road	1000028776	Public	Wharf	N	Yes	+ Wharf and pontoon facilities are in good working condition	2	Y	Y	Y	Y	Y	Medium	+ Greenhithe Wharf + Salthouse boatbuilders building in adjacent lot + Better public access legibility required + Current North Shore Rowing Club (Senior squad) train and store boats at Greenhithe base on Rame rd (Oratau reserve) + Storage facility + Easy road access + Pontoon + Carparking + Toilet facility + Dinghy lockers (maintained by Panuku development Auckland's marinas team).
Rame Reserve	[Greenhithe] 101 Rame Road	1000084462	Public	Boat Ramps	N/A	N/A	+ Boat ramp is in average condition and should be considered for renewal.	N/A						Medium	+ Misc Func Surface Concrete cast in (SAP Description)
Waimarie Beach	[Whenuapai] Waimarie Road	1000015324	Public	Boat Ramps	Y	Limited	+ All structures are in good working condition apart from timber stair access to small open space area that requires renewal	1		Y	Y	Y	Y	Medium	+ Kayak trail stop off point on proposed greenway plan + Easy Road access + No dedicated parking with little opportunity to improve provision due to spatial / physical constraints + Consider options for improving access and parking long term.
Wharepapa Reserve	[Schnapper Rock] 286 Schnapper Rock Road	1000084530	Public	Boat Ramps	Y	Limited	+ 'Ramp' access effectively a glorified earthworks cut with limited aggregate topping in poor condition	5				Y		Medium	+ Cliff base-Rock-Schnapper Rk Rd_PVT (Sap Description). No physical structure + Informal access track + Playground nearby + Open park/lawn area + Located in park extent + Limited on street parking with little opportunity to improve provision due to spatial / physical constraints + Road access but not directly to the 'ramp'. Bollards preclude vehicular launching access
Wharepapa Reserve	[Schnapper Rock] 286 Schnapper Rock Road	1000084531	Public	Boat Ramps	N/A	N/A	+ As above	N/A						Medium	+ Misc Func Surface Unsurfaced Track (SAP Description)
Wharf Reserve - Albany	[Albany] 29 Wharf Road	1000016225	Public	Boat Ramps	N	Limited	+ Existing boat ramp in good condition but requires maintenance and review of surface to improve slip resistance	2		Y			Y	High	+ Open park/lawn area + Bins and Signage + Easy road access + Limited on road parking (Cul de sac) + Water turbid and not inviting + It appears bollards have been installed to prevent motorised boat launch/vehicular access to launching ramp + Consider improving structure to accommodate wider user groups + Kayak trail stop off point on proposed greenway plan

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Hobsonville	Catalina Bay	Coastal permit held by HLC	Private	Boat Ramps	N	Yes	+ Boat ramp structure appears sound. + Retain and renew at end of asset life cycle	N/A	Y	Y	Y	Y	Y	High	+ Easy road access + Westlake Boys High School Rowing Club storage facility located nearby + Hobsonville Yacht Club building located nearby + TS Bellona Navy Sea cadet Corps gather at Hobsonville Yacht Club building + Hobsonville Ferry terminal + Public parking available + Located in Catalina Bay
25 Waimarie Road Esplanade Res	25a Waimarie Rd (Coast)	1000013998	Private	Wharf											+ Located in park extent. Unit 25A geomaps asset + Proposed green route pass through here + Not publicly accessible
Brighams Creek Esplanade	10 Bristol Road (Coast)	1000015796	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Brighams Esplanade	10 Bristol Road - Part Lot 4 DP 100663	1000015771	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Bristol Road Esplanade Reserve	24 Bristol Rd	1000015792	Private	Boat Ramps											+ Wharf not captured in data spreadsheet but showing on geomaps asset + Located in park extent (unit 36 geomaps) + Not publicly accessible + Proposed green route will pass through here + Located in park extent
Christmas Beach	88 The Terrace (Adjacent)	1000015721	Private	Boat Ramps											+ Private ownership but located in the esplanade, potential for public access/use + Proposed green route will pass through here + Located in park extent
Christmas Beach	90 The Terrace (Adjacent)	1000015726	Private	Boat Ramps											+ Private ownership but located in the esplanade, potential for public access/use + Proposed green route will pass through here + Located in park extent
Christmas Beach	90 The Terrace (Behind)	1000028588	Private	Wharf											+ Jetty like structure + Located in park extent + Council signage on wharf structure + Private ownership but located in the esplanade, potential for public access/use + Proposed green route will pass through here + Located in park extent
Christmas Beach	92 The Terrace (Adjacent)	1000019321	Private	Boat Ramps											+ Kayak tail stop off point in greenway plan + Private ownership but located in the esplanade, potential for public access/use + Proposed green route will pass through here + Located in park extent
Churchouse Esplanade Reserve	73-75 Churchouse Rd (Coast)	1000016157	Private	Wharf											+ Located in park extent + Forest ecological extent + Not publicly accessible
Ferry Parade Plt Reserve	67 Ferry Parade (Coast)	1000014003	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	101 Ferry Parade (Coast)	1000028736	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	103 Ferry Parade (Coast)	1000028741	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	105 Ferry Parade (Coast)	1000028746	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	109 Ferry Parade (Adjacent)	1000018683	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	109 Ferry Parade - Lot 256 DP 31409	1000015800	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	111 Ferry Parade (Coast)	1000028761	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Ferry Parade Plt Reserve	117 Ferry Parade (Coast)	1000028766	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	121 Ferry Parade (Coast)	1000028771	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	49 Ferry Parade (Coast)	1000028659	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	49 Ferry Parade (Coast)	1000028664	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	51 Ferry Parade - Lot 254 DP 31409	1000018377	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	53 Ferry Parade (Coast)	1000028669	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	55 Ferry Parade (Coast)	1000028674	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	59 Ferry Parade - Lot 254 DP 31409 (Coast)	1000028649	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	63 Ferry Parade (Coast)	1000028679	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	65 Ferry Parade (Coast)	1000028684	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	71 Ferry Parade (Coast)	1000028689	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	75 Ferry Parade (Adjacent)	1000018691	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	77 Ferry Parade (Coast)	1000015644	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	83 Ferry Parade (Coast)	1000028704	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	89 Ferry Parade (Coast)	1000028709	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	91 Ferry Parade (Coast)	1000028714	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	93 Ferry Parade (Coast)	1000028719	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	95 Ferry Parade (Coast)	1000028726	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	97 Ferry Parade (Coast)	1000017283	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	99 Ferry Parade (Coast)	1000028731	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Ferry Parade Plt Reserve	83 Ferry Parade - Lot 255 DP 31409	1000018382	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	105 Kauri Rd (Adjacent)	1000026858	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	107 Kauri Rd (Adjacent)	1000026863	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	107 Kauri Rd (Adjacent)	1000026868	Private	Wharf											+ Located in park extent + Not publicly accessible + Mooring + Proposed green route will pass through here
Kauri Esplanade	159 Kauri Rd (Coast)	1000015736	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Kauri Esplanade	161 Kauri Rd (Coast)	1000042086	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	187 Kauri Rd (Adjacent)	1000018576	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	188 Kauri Rd (Coast)	1000016040	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	190 Kauri Rd (Adjacent)	1000018601	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	190 Kauri Rd (Adjacent)	1000018606	Private	Wharf											+ Located in park extent + Not publicly accessible + Mooring + Proposed green route will pass through here
Kauri Esplanade	190 Kauri Rd (Coast)	1000015731	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	194 Kauri Rd (Adjacent)	1000018586	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	194 Kauri Rd (Coast)	1000018596	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	207 Kauri Rd (Adjacent)	1000018581	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	207 Kauri Rd (Adjacent)	1000043360	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kauri Esplanade	207 Kauri Rd (Coast)	1000045501	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingfisher Esplanade Reserve	11 Kingfisher Grove	1000082929	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingfisher Esplanade Reserve	17 Kingfisher Grove	1000082928	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingfisher Esplanade Reserve	22 Kingfisher Road	1000082927	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409(Adjacent)	1000022366	Private	Wharf											+ Lot 9 have 2 Boat ramp and 1 Wharf + Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000016933	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000018696	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000018701	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000026889	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000026894	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	09 Ferry Parade - Lot 252 DP 31409	1000026899	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	19 Ferry Parade (Adjacent)	1000018666	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kingsway Reserve	21 Ferry Parade (Coast)	1000028633	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kowhai Beach Reserve	27 Ferry Parade (Coast)	1000028639	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Kowhai Beach Reserve	37 Ferry Parade (Adjacent)	1000047159	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Landing Reserve	06 The Terrace (Adjacent)	1000019245	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	08 The Terrace (Adjacent)	1000018736	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	08 The Terrace (Adjacent)	1000020939	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	12 The Terrace (Adjacent)	1000029621	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	14 The Terrace (Adjacent)	1000018672	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	14 The Terrace (Adjacent)	1000022356	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	16 The Terrace (Adjacent)	1000018678	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	20 The Terrace (Adjacent)	1000018731	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	24 The Terrace (Adjacent)	1000018726	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	26 The Terrace (Adjacent)	1000018721	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	26 The Terrace (Adjacent)	1000022286	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	28 The Terrace (Adjacent)	1000022361	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	30 The Terrace (Adjacent)	1000029838	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	32 The Terrace (Adjacent)	1000025059	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	32 The Terrace (Adjacent)	1000025064	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	36 & 38 The Terrace (Adjacent)	1000025069	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	40 The Terrace (Adjacent)	1000046543	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	42 The Terrace (Adjacent)	1000018711	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	44 The Terrace (Adjacent)	1000018688	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	44 The Terrace (Adjacent)	1000026904	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	46 The Terrace (Adjacent)	1000018716	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	60 The Terrace (Adjacent)	1000040518	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	62 The Terrace (Adjacent)	1000017059	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	64 The Terrace (Adjacent)	1000022281	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	68 The Terrace (Adjacent)	1000022371	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Landing Reserve	68 The Terrace (Adjacent)	1000029636	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	70 The Terrace (Adjacent)	1000017054	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	72 The Terrace (Adjacent)	1000018706	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	76 The Terrace (Adjacent)	1000040514	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	78 The Terrace (Adjacent)	1000019326	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	78 The Terrace (Adjacent)	1000029631	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	80 The Terrace (Adjacent)	1000040510	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	80 The Terrace (Behind)	1000028563	Private	Wharf											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	82 The Terrace (Adjacent)	1000040506	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Landing Reserve	84 The Terrace (Adjacent)	1000029626	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Pahiki Reserve	03 Twin Wharf Road	1000028781	Private	Wharf											+ Pahiki Reserve-Res & Wharf Trust (SAP Description) + Herald Island boating club (sailing?) + Public toilet + Locker + Public Shelter + Public car parking
Pahiki Reserve	03 Twin Wharf Road	1000028816	Private	Wharf											+ Pahiki Reserve-Res & Wharf Trust (SAP Description) + Same as above
Paremoremo Creek Esplanade Reserve	75 Iona Avenue	1000016172	Private	Boat Ramps											+ Dinghy Ramp (SAP description) + Located in park extent + Not shown on Geo maps assets
Pohutukawa Esplanade - 1	38 Pohutukawa Rd (Coast)	1000015369	Private	Wharf											+ Not publicly accessible + Proposed green route will pass through here
Pohutukawa Esplanade - 1	Pohutukawa Road	1000014189	Private	Boat Ramps											+ Not publicly accessible + Proposed green route will pass through here
Pohutukawa Esplanade - 1	18 Pohutukawa Road - Part Lot 3 DP 8224	1000018656	Private	Boat Ramps											+ Not publicly accessible + Proposed green route will pass through here
Pohutukawa Esplanade - 1	18 Pohutukawa Road - Part Lot 3 DP 8224	1000018661	Private	Boat Ramps											+ Not publicly accessible + Proposed green route will pass through here
Pohutukawa Esplanade - 1	38 Pohutukawa Road - Part Lot 6 DP 8224	1000022351	Private	Boat Ramps											+ Not publicly accessible + Proposed green route will pass through here
Rurawaru Esplanade	Mckean Road	1000012896	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Scott Esplanade	12 Scott Rd (Adjacent)	1000029421	Private	Wharf											+ Located in park extent + Not publicly accessible + Boat ramp shown on geomaps asset not wharf + Proposed green route will pass through here
Scott Esplanade	18 Scott Road - Lot 4 DP 89750	1000026842	Private	Boat Ramps											+ Boatramp not showing on Geomaps Aerial (Underwater?)
Scott Esplanade	8a Scott Road - Lot 3 DP 128652	1000029432	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Scott Esplanade	16a Scott Road - Lot 4 DP 89750	1000029437	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here
Scott Esplanade	12 Scott Road - Lot 3 DP 91914	1000039012	Private	Boat Ramps											+ Located in park extent + Not publicly accessible + Proposed green route will pass through here

DATA CAPTURE SPREADSHEET - PRIVATE FACILITY

Name	Location/Address	Asset/Equipment ID	Ownership	Structure Type	Tidal Access Restriction	Parking	Condition commentary	Condition rating	Rowing	Canoeing/ Kayaking/ Paddle board	Swimming	Fishing	Boating	Priority	Desktop and Site Review Comments
Totara Esplanade	93 Totara Rd (Coast)	1000015781	Private	Wharf											+ Located in park extent + Not publicly accessible + 2 boat ramp and 2 wharf
Totara Esplanade	93 Totara Road - Lot 2 DP 50045	1000015776	Private	Boat Ramps											+ Located in park extent + Not publicly accessible
Totara Esplanade	93 Totara Road - Lot 2 DP 50045	1000015786	Private	Boat Ramps											+ Located in park extent + Not publicly accessible
Wharf Road Esplanade	06 Twin Wharf Rd (Behind)	1000028593	Private	Wharf											+ Not publicly accessible
Wharf Road Esplanade	14 Twin Wharf Rd (Behind)	1000028598	Private	Wharf											+ Not publicly accessible
Wharf Road Esplanade	14 Twin Wharf Rd (Coast)	1000015805	Private	Wharf											+ Not publicly accessible

APPENDIX B

POPULATION DENSITY AND GROWTH MAPS

POPULATION GROWTH MAP

This map articulates the projected cumulative change in population density from 2016 - 2046 to illustrate key growth areas within the Upper Harbour Local Board area relative to play provision.

KEY

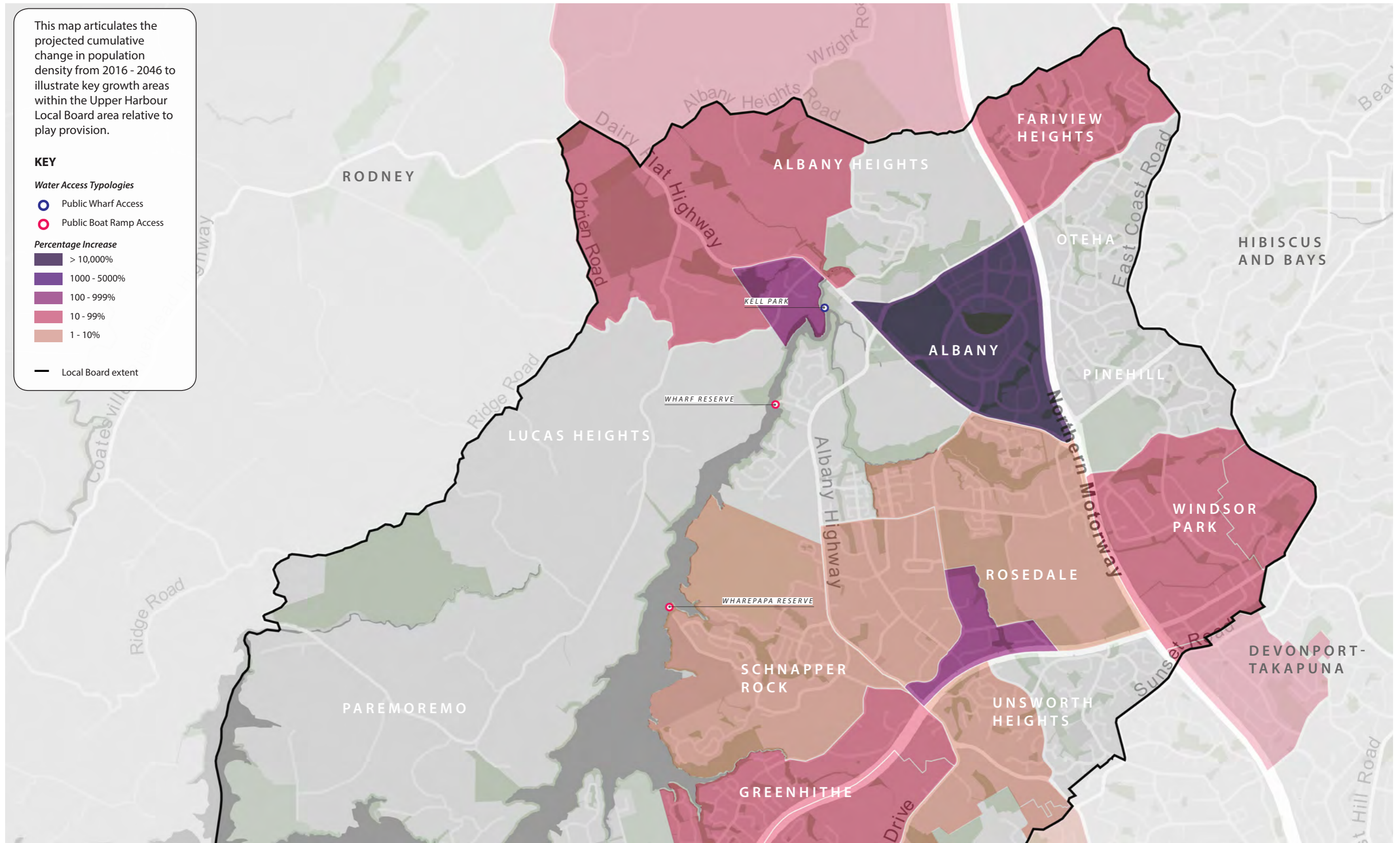
Water Access Typologies

- Public Wharf Access
- Public Boat Ramp Access

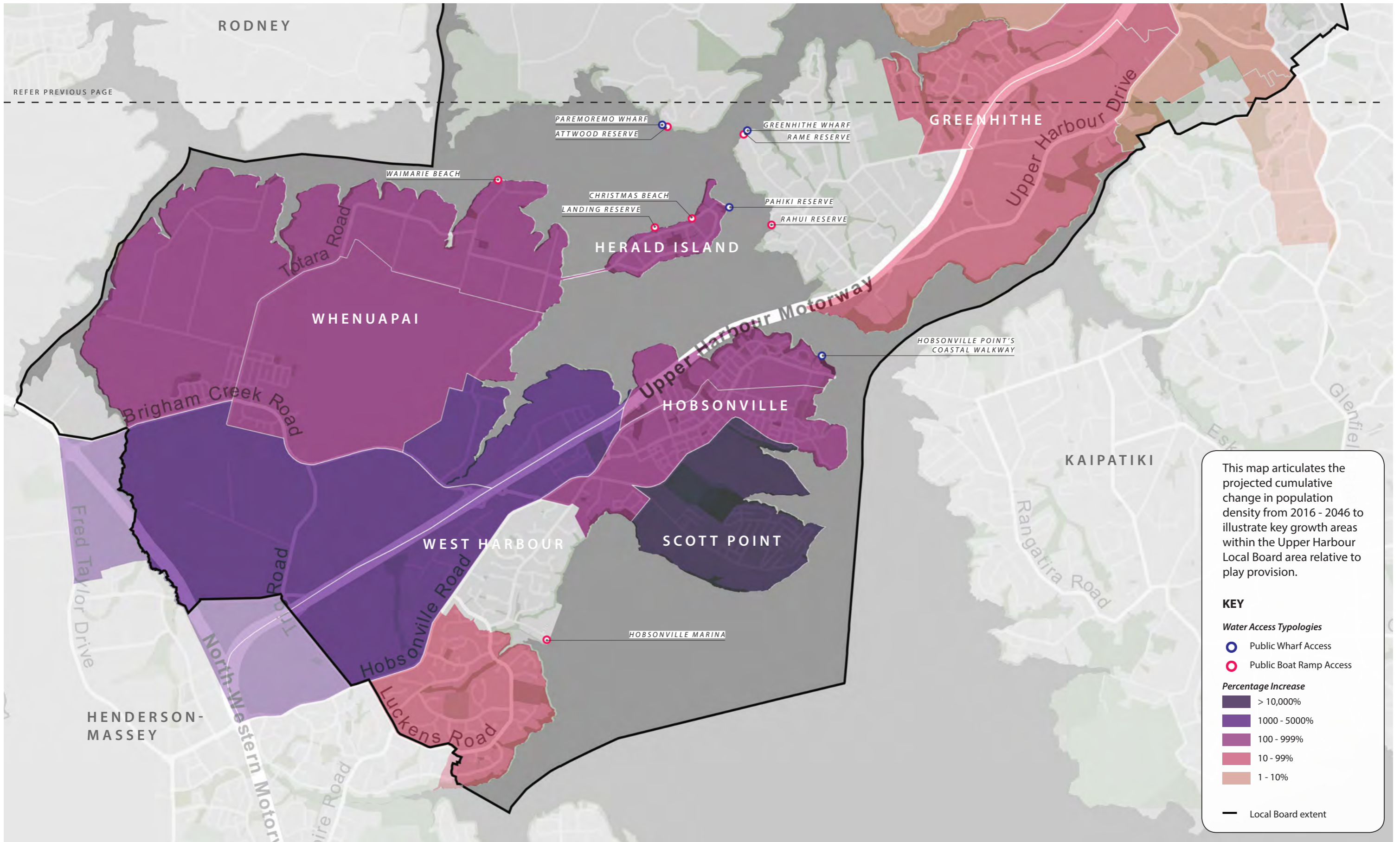
Percentage Increase

- > 10,000%
- 1000 - 5000%
- 100 - 999%
- 10 - 99%
- 1 - 10%

— Local Board extent



REFER PREVIOUS PAGE



This map articulates the projected cumulative change in population density from 2016 - 2046 to illustrate key growth areas within the Upper Harbour Local Board area relative to play provision.

KEY

Water Access Typologies

- Public Wharf Access
- Public Boat Ramp Access

Percentage Increase

- > 10,000%
- 1000 - 5000%
- 100 - 999%
- 10 - 99%
- 1 - 10%

Local Board extent



EXISTING POPULATION DENSITY MAP

This map uses 2016 population projection data to articulate water access locations relative to existing population density.

KEY

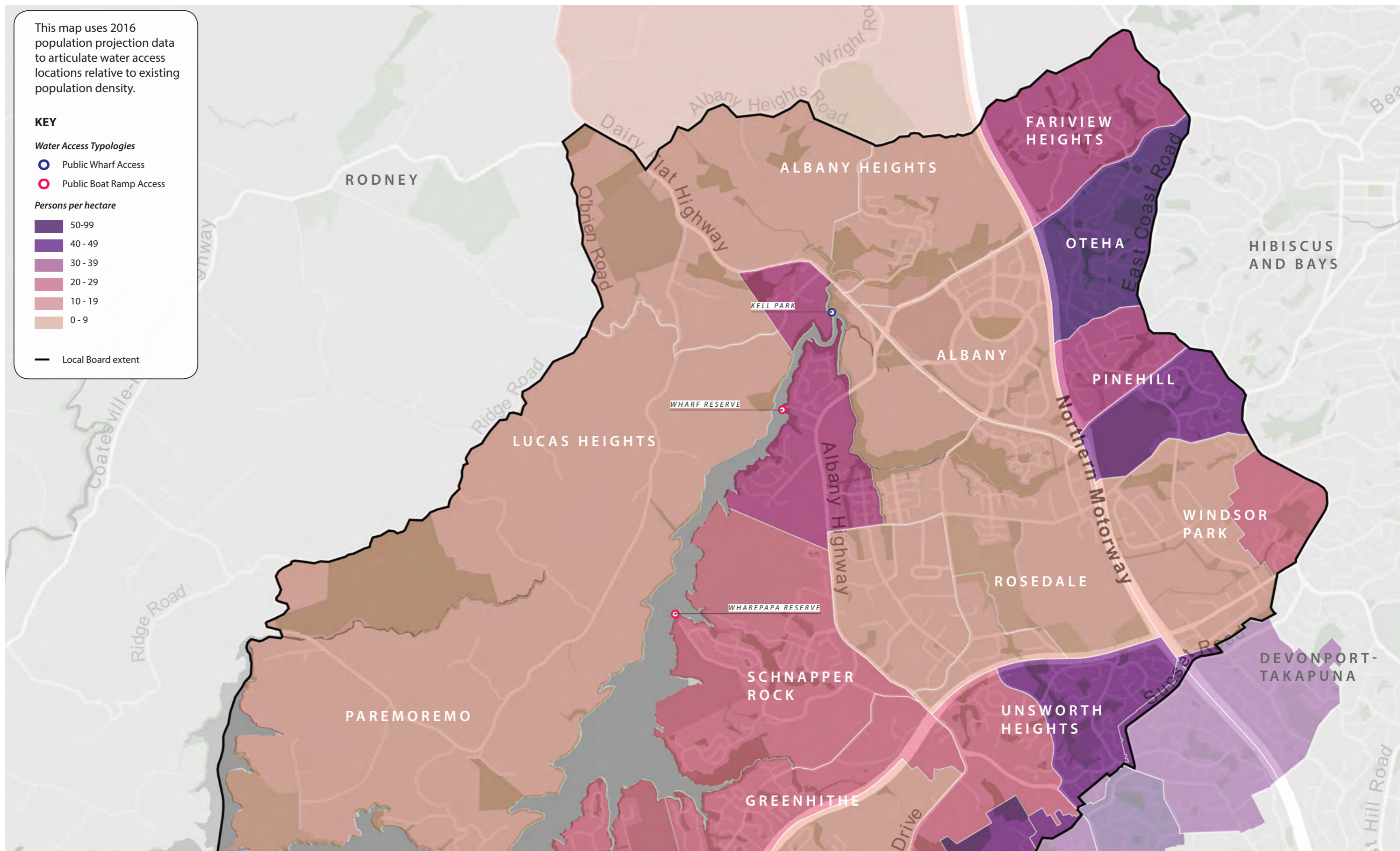
Water Access Typologies

- Public Wharf Access
- Public Boat Ramp Access

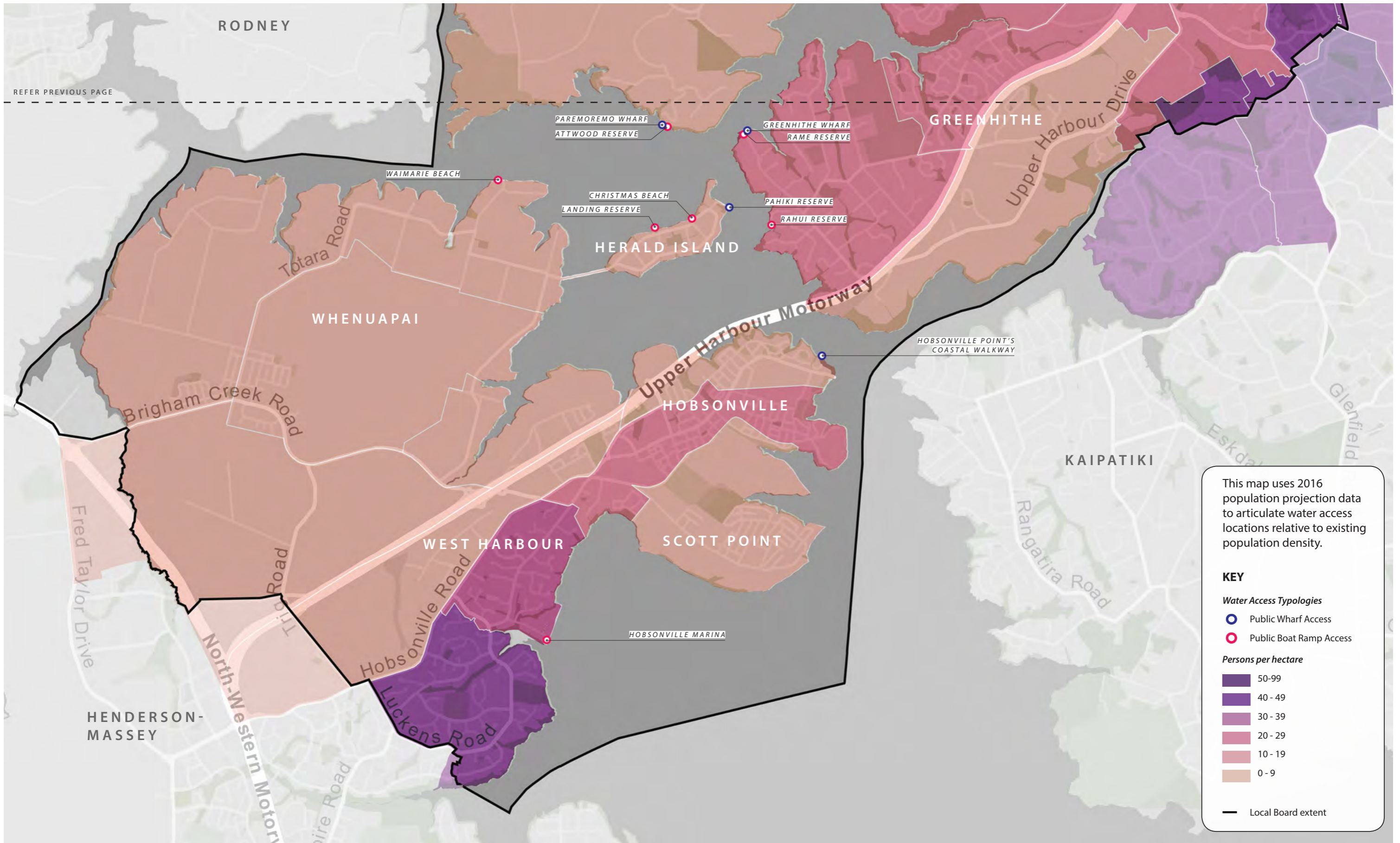
Persons per hectare

- 50-99
- 40-49
- 30-39
- 20-29
- 10-19
- 0-9

— Local Board extent



REFER PREVIOUS PAGE



This map uses 2016 population projection data to articulate water access locations relative to existing population density.

KEY

Water Access Typologies

- Public Wharf Access (Blue circle)
- Public Boat Ramp Access (Red circle)

Persons per hectare

- 50-99 (Dark purple)
- 40-49 (Purple)
- 30-39 (Dark pink)
- 20-29 (Pink)
- 10-19 (Light pink)
- 0-9 (Light orange)

Local Board extent (Black line)



FUTURE POPULATION DENSITY MAP

This map uses 2046 population projection data to articulate water access locations relative to future population density.

KEY

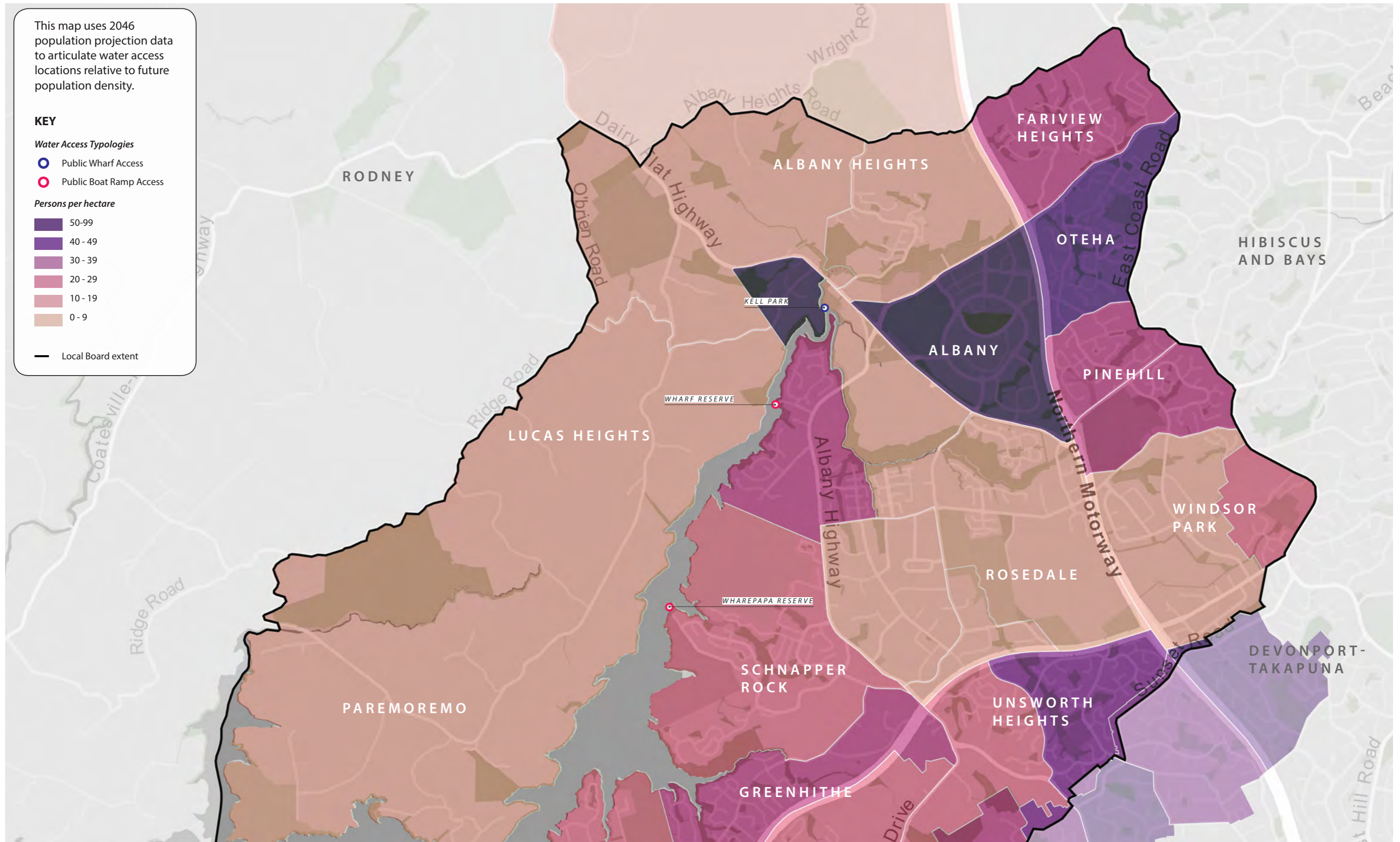
Water Access Typologies

- Public Wharf Access
- Public Boat Ramp Access

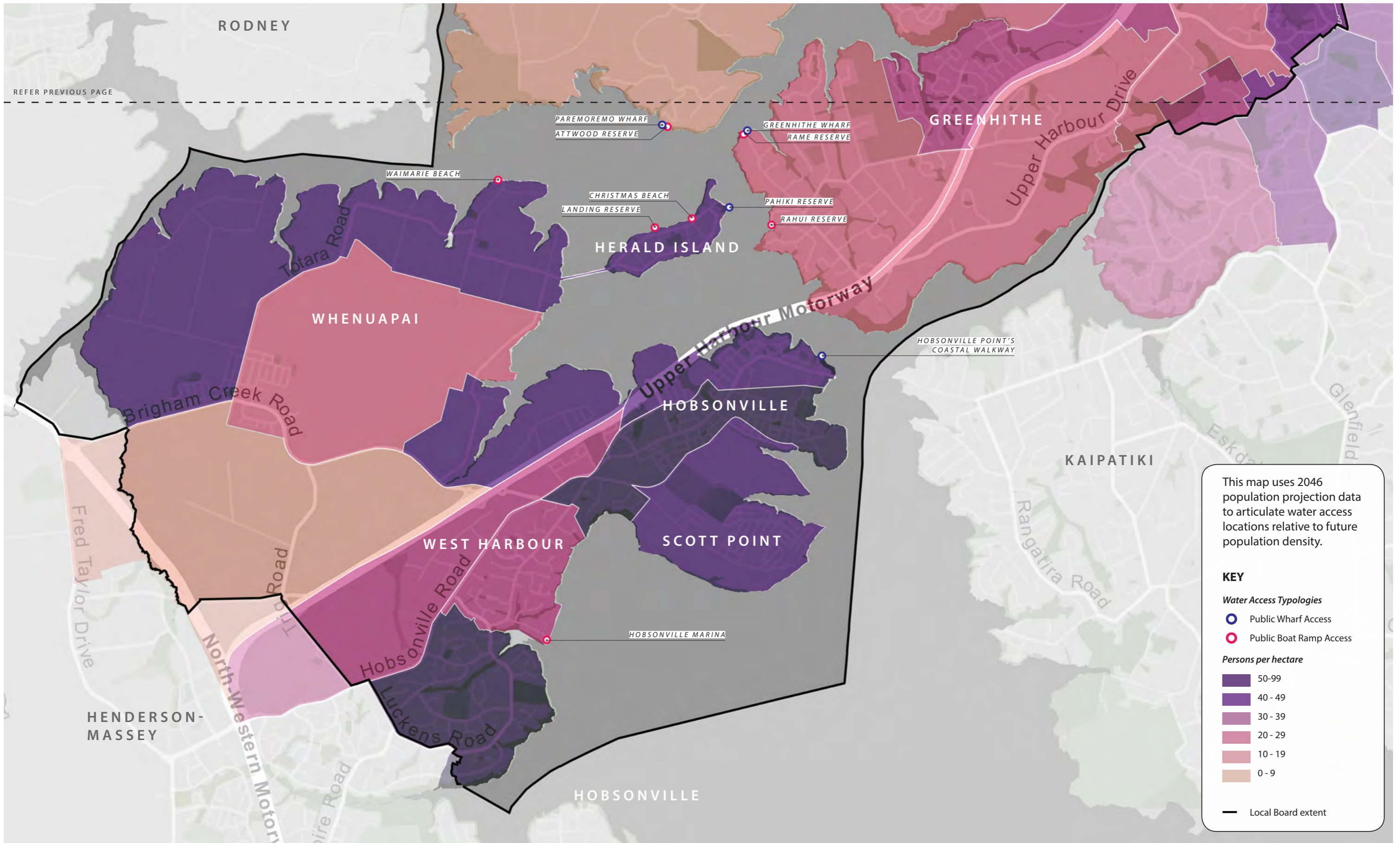
Persons per hectare

- 50-99
- 40-49
- 30-39
- 20-29
- 10-19
- 0-9

— Local Board extent



REFER PREVIOUS PAGE



APPENDIX C

BIBLIOGRAPHY

BIBLIOGRAPHY

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