

Preliminary report – September 2017

Draft Drury Structure Plan process



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1 Purpose

The council's strategic direction for growth in Auckland includes the urbanisation of the Future Urban Zone around Drury.

This report outlines the structure planning process to guide this urbanisation of Drury. It summarises draft findings of structure planning opportunities and constraints for Drury. It also summarises the main structure planning issues and concepts for Drury.

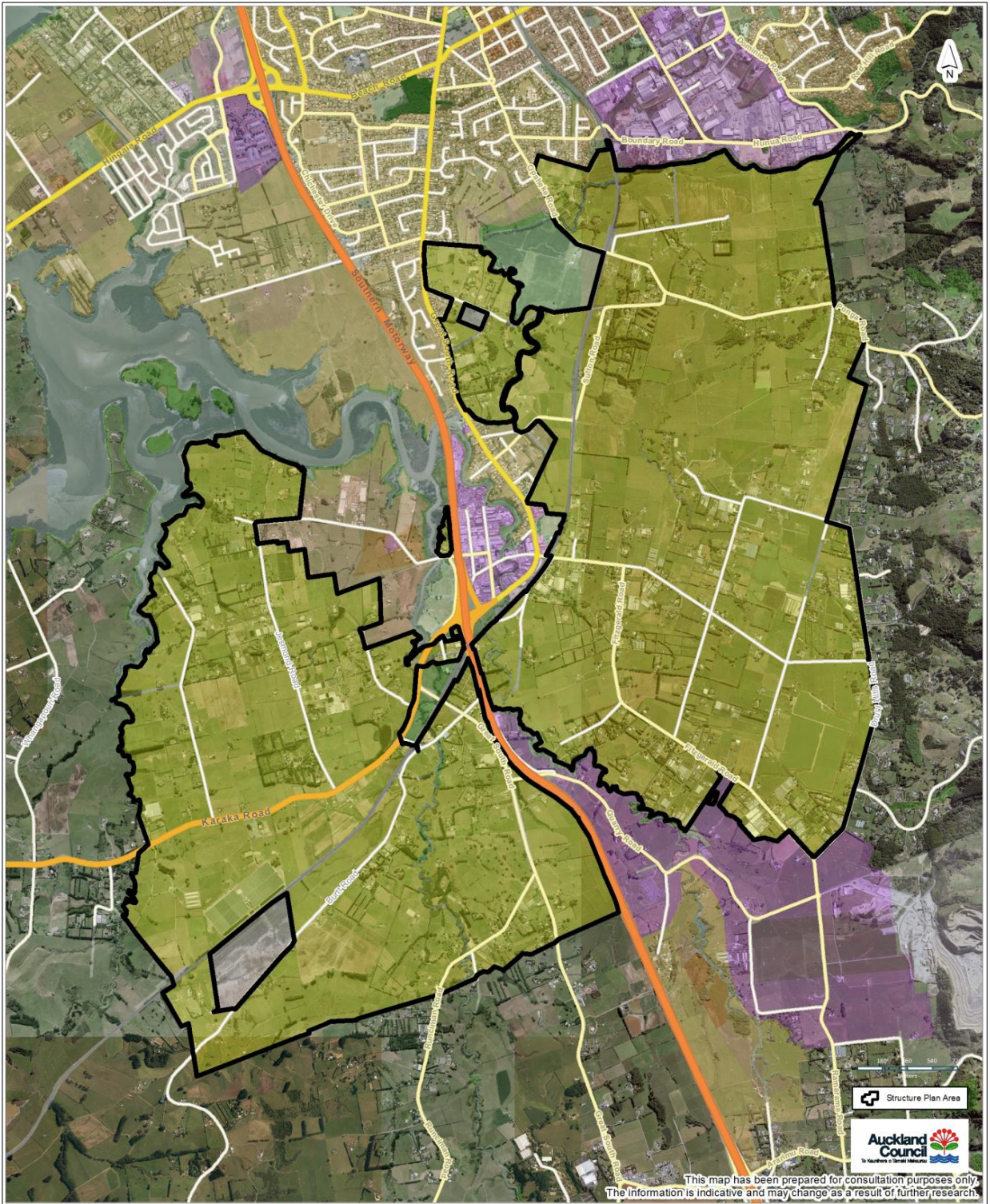
A structure plan guides the future urban development of an area. It is a non-statutory high-level plan that shows how an area of land can be urbanised, taking into account constraints and opportunities. It shows the arrangement of various land uses (centres, houses, businesses and parks) and infrastructure. It also shows how the area connects to adjacent urban areas and wider infrastructure networks. Important natural features and heritage values may also be identified..

Creating a structure plan for the Future Urban Zone in Drury (referred to as the Drury structure plan area in this report) will provide a draft vision for future urbanisation. The structure plan will then become the basis for the council-initiated plan changes to achieve operative urban zones.

2 The Drury structure plan area

The Drury structure planning process applies to the land area enclosed by a black line in Figure 1. The area is about 1907ha. It includes Opaheke in the north east, Drury in the south east, and part of Karaka referred to in this report as Drury West. It adjoins Drury Creek - Pahurehure Inlet and Manukau Harbour. It is bisected by State Highway 1, the North Island Main Trunk Line railway, and Transpower's transmission lines. Land use is predominantly rural including countryside living and some business uses. The existing Drury township is located near the centre of the area but is not part of the Drury structure planning area.

Figure 1 Drury structure planning area



3 Drury structure plan process and consultation

The Auckland Unitary Plan Operative in Part (AUPOP) sets out the requirements for a structure plan in the Regional Policy Statement and Appendix 1. The structure plan for Drury will become the basis for future council plan changes.

The process for preparing a structure plan is outlined in Figure 2 below and is summarised as follows.

What is happening now?

The council has commissioned a number of background technical reports to inform structure planning. These reports outline opportunities and constraints in the Drury structure plan area and are summarised in section 5 of this report.

The council wants to know your views on how Drury should be developed in an integrated way.

What can I do?

The first consultation period from 25 September 2017 to 20 October 2017 is for you to consider the information provided, and to provide feedback to help shape a draft structure plan.

Information on opportunities, constraints and planning issues and concepts will be posted on the council website www.shapeauckland.co.nz from 25 September 2017, including supporting technical documents. A technical research programme will continue in parallel to consultation and any new information will be posted on the council's website as it becomes available.

A number of drop-in sessions will also be held and information will also be available at the Pukekohe and Papakura libraries and service centres.

We would like to receive your response by Friday 20 October 2017.

What will happen later?

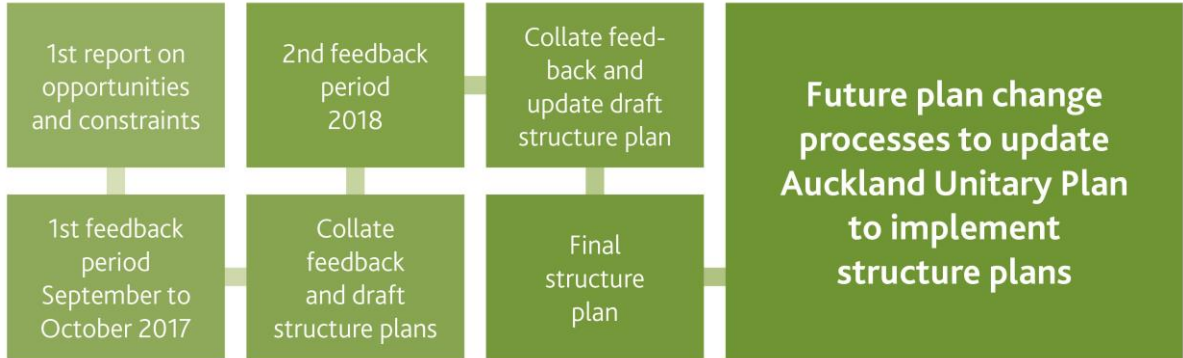
Both the feedback from this consultation and the additional research will be considered in formulating a draft structure plan document in early 2018.

A second consultation period on that draft will be scheduled in 2018.

The structure plan will then be completed and approved by the council. This marks the end of the structure plan process.

The council will subsequently initiate formal plan changes to give effect to the structure plan by creating operative urban zonings. This will include opportunities for public submissions.

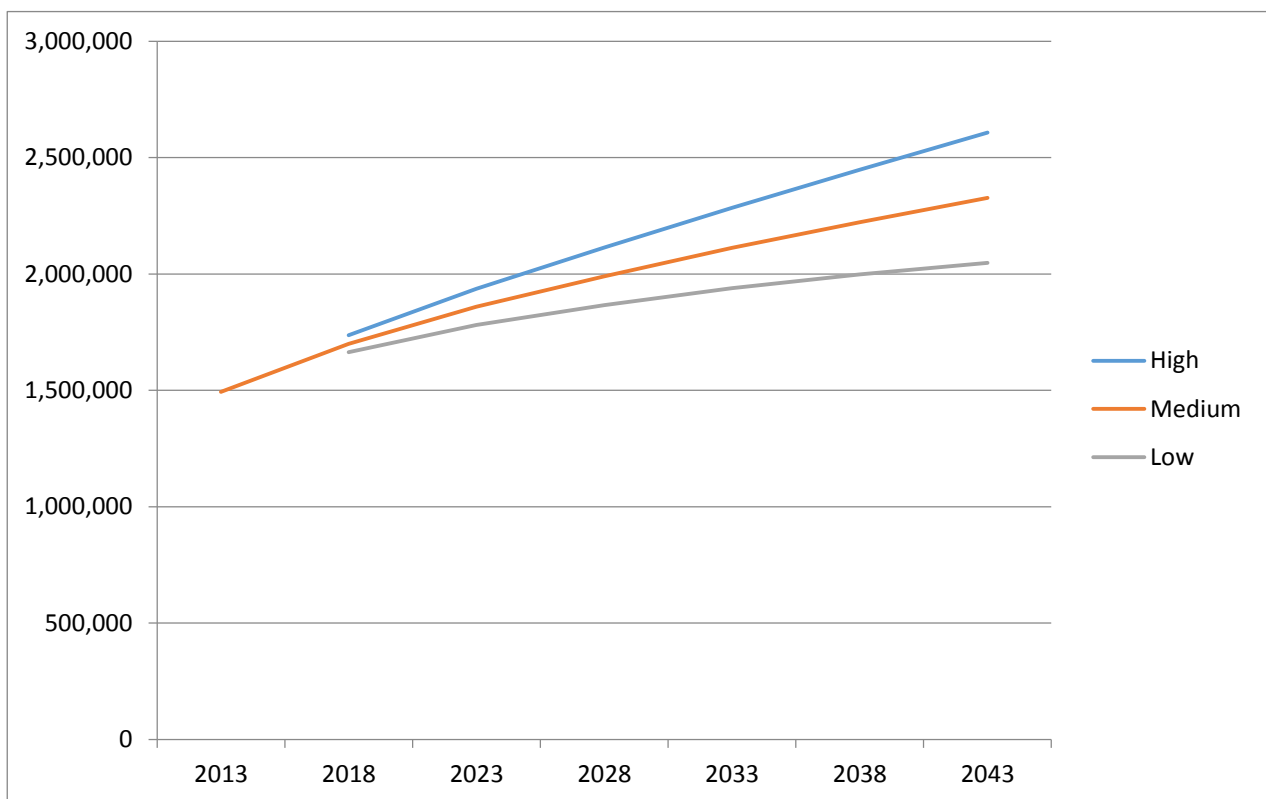
Figure 2 Structure planning process



4 Auckland's growth challenge

The population of Auckland was 1,493,200 people at the time of the 2013 census. By 2043 the population is projected to grow to between 2,047,600 (low) and 2,606,800 (high) people as illustrated in Figure 3.¹ The challenge for Auckland is how to accommodate this growth with housing, jobs, open space and infrastructure.

Figure 3 Auckland population projections



Source: Statistics NZ 2017

Approximately 400,000 new dwellings and 277,000 additional jobs will be needed to accommodate the growing Auckland population. As part of a quality compact approach to growth, the Auckland Plan anticipates that up to 160,000 dwellings and 1,400 hectares of business land will be required outside the existing urban area. In addition, up to 240,000 dwellings are anticipated within the existing urban area.

The development of Drury is part of the solution to the growth challenge. The area is identified within the Rural Urban Boundary and zoned future urban in the AUPOP. Land in the Future Urban Zone has been determined as suitable for future urban development, but

¹ Statistics NZ, 2017 Subnational population projections, 2013(base)-2043

appropriate urban zones are needed before urban development can occur. Structure planning is a prerequisite to determining appropriate urban zoning.

The council's Future Urban Land Supply Strategy July 2017 (FULSS, 2017) sets out a programme for sequencing future urban land over 30 years across Auckland. Figure 4 below sets out the FULSS 2017 dwelling estimates for development of south Auckland including Drury. It also sets out sequencing of development. In summary, the FULSS 2017 estimates approximately:

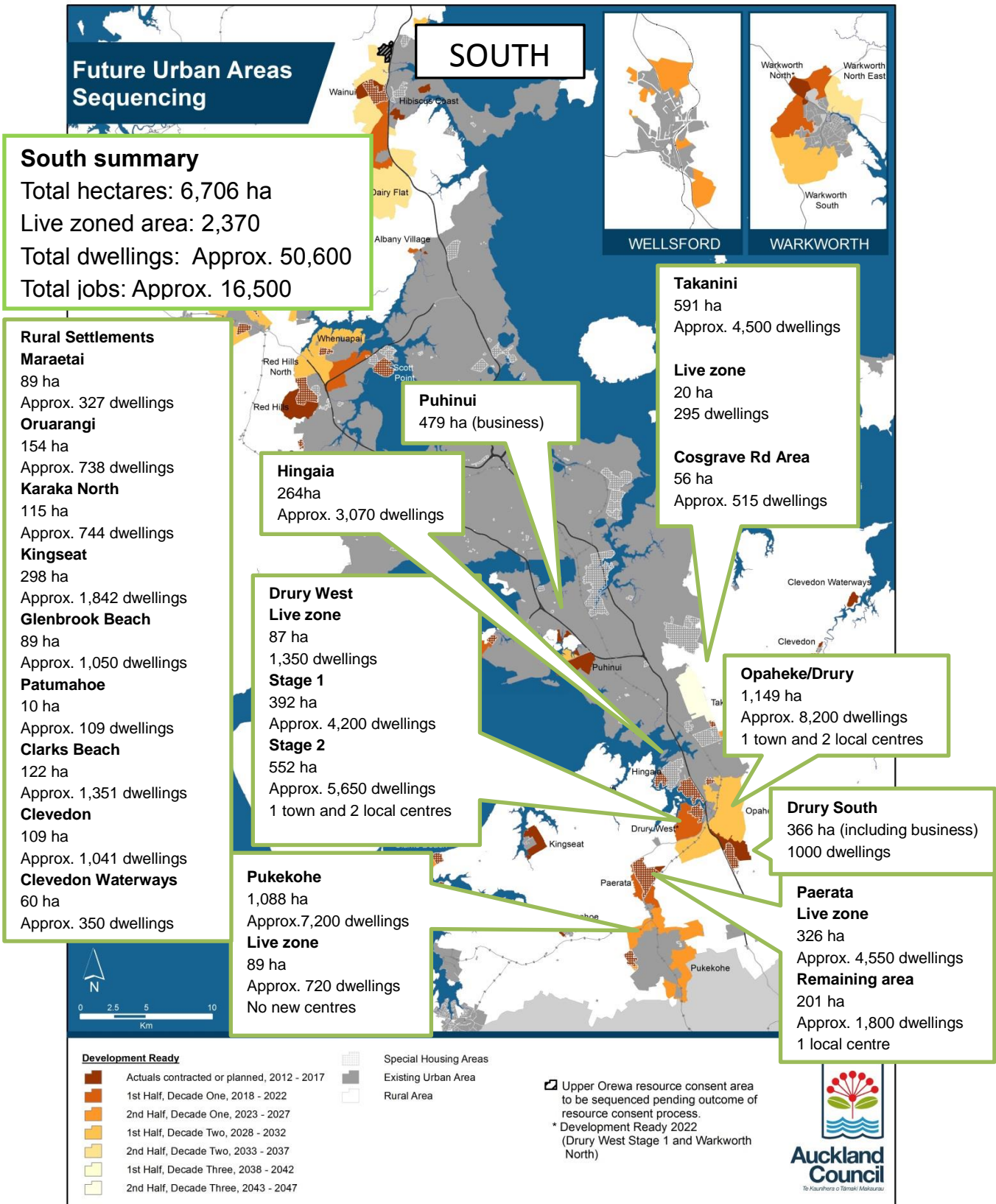
- 8200 dwellings in Opaheke/Drury (i.e. east of State Highway 1)
- 9850 dwellings in Drury West (i.e. west of State Highway 1)

The north-west sector of the Drury Future Urban Zone is scheduled to be development ready in 2018-2022.

The remainder of the Drury Future Urban Zone is scheduled to be development ready in 2028 – 2032.

Actual development yields and development sequencing may differ from these estimates.

Figure 4 Southern Future Urban Areas



5 Opportunities and constraints

5.1 Introduction

This section discusses existing or potential attributes in the structure plan area and surrounds that will affect its urban development potential. Rarely are these attributes purely an opportunity or purely a constraint. A coastline can provide substantial amenity value which is an opportunity, while at it may also have coastal hazards which are a constraint. Likewise the existing North Island Main Trunk Line and State Highway 1, which bisect the area, constrain east to west crossing points but also provide opportunities for enhanced public transport and road transport. Structure planning aims to make the most of opportunities and constraints.

Structure planning is informed by draft technical reports on opportunities and constraints. This section provides a summary of the opportunities and constraints present within Drury. Reference is made to technical reports for each discipline. The relevant reports may be revised and additional reports prepared as part of the process to finalise a draft structure plan. The main structure planning issues and concepts are addressed in section 6.

5.2 Transport

Since August 2015, Auckland Transport (AT), Auckland Council, and the NZ Transport Agency (NZTA) have been working together on the Auckland Transport Alignment Project (ATAP) to progress the development of transport networks to support Auckland's new housing and business areas over the next 30 years.

In September 2016, these agencies released the ATAP's recommended strategic approach for directing transport investment over the next 30 years in Auckland. Rather than addressing particular funding options, the approach focuses on achieving better use of the existing transport network, better targeting of investment, and influencing how and when people travel.

The ATAP recommends investment be made in short and medium term projects to assist growth over the next decade, while working to protect routes for longer term projects. Investment priorities identified in the ATAP to address urban development of Drury include the following:

- protect routes and acquire land for greenfield networks - 2018 – 2028
- Southern Motorway widening (Papakura to Drury South) - 2018-2028
- early rail development plan priorities (extension of RTN network (electrification) to Pukekohe)- 2018 – 2028
- Pukekohe Expressway (Drury South to Pukekohe) - 2028 – 2038

- Mill Road: Southern Extension (Alfriston to Drury South) - 2028 – 2038
- longer term rail development plan priorities (extension of 3rd main from Papakura to Pukekohe) - 2038 – 2048.

Delivery of these key project priorities for the Drury structure plan area will be primarily achieved by implementing the preferred southern transport network option identified in the Supporting Growth programme (released in December 2016).

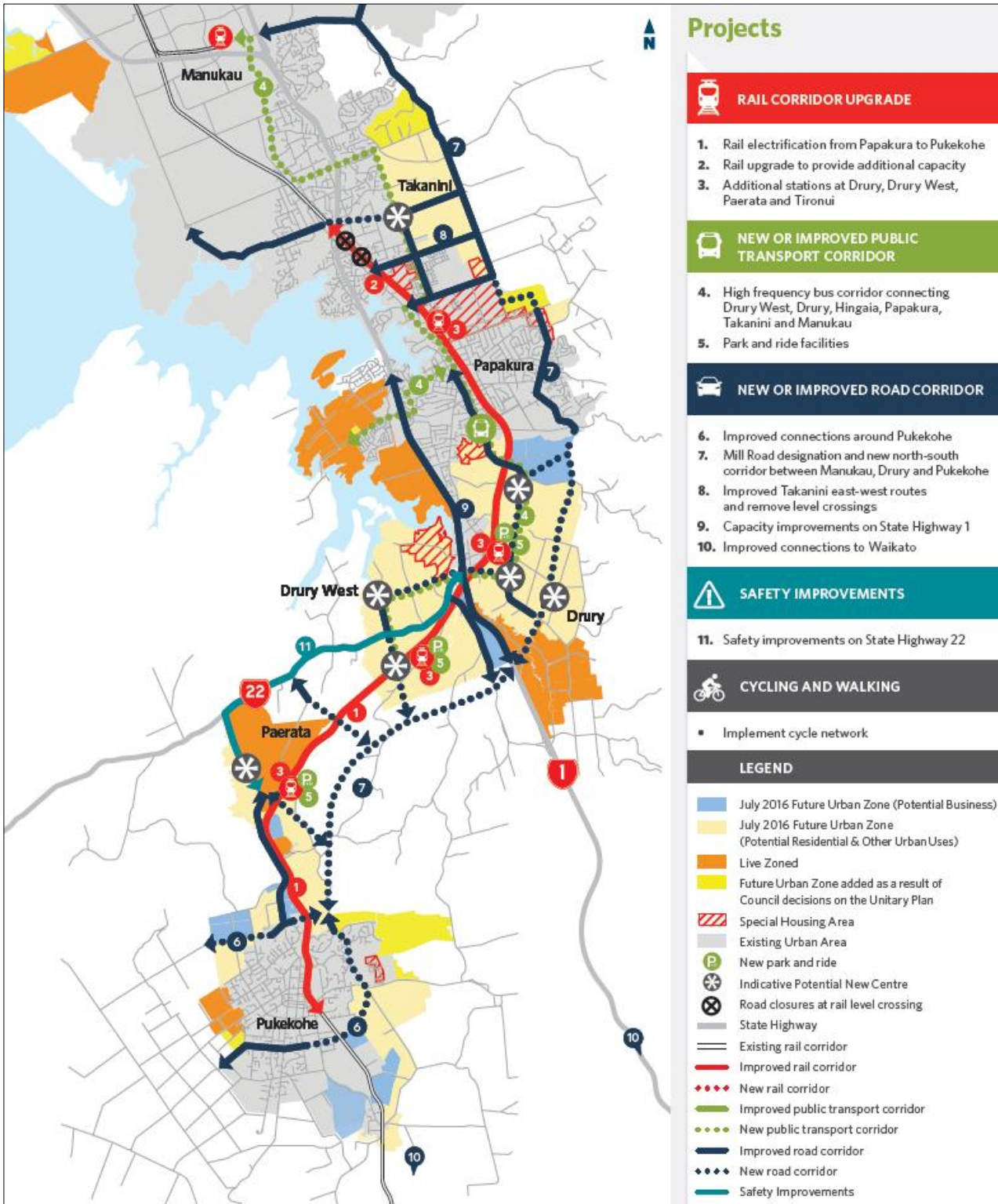
As was the case with ATAP, the Supporting Growth programme was undertaken jointly by the NZTA, AT and Auckland Council and among other matters, sought to determine the key strategic transport infrastructure required to implement the FULSS 2017 over the next 30 years. The transport aspirations for the southern growth areas are to:

- increase transport choice
- separate shorter distance trips from longer distance trips
- improve north - south movements
- improve the resilience of the network
- improve access to education, employment and recreation opportunities in the area.

The main features of the proposed transport network for Pukekohe, Drury and Takanini are outlined in Figure 5. The main features relevant to Drury are:

- rail electrification from Papakura to Pukekohe
- additional train stations at Drury and Drury West
- a high frequency bus corridor connecting Drury West, Hingaia and Papakura
- park and ride facilities
- a new Mill Road extension through Drury and arterial to Pukekohe
- capacity improvements to State Highway 1
- safety upgrades to State Highway 22
- implementing cycle networks.

Figure 5 Supporting Growth transport concept for South Auckland



This indicative transport network has been referred to in structure planning for Drury to date. More research is need to confirm the optimum transport infrastructure for Drury land uses. Auckland Transport will be preparing an integrated transport assessment (ITA) as part of this structure planning programme.

As announced recently by central government, Crown Infrastructure Partners (CIP) will set up special purpose companies to build and own new trunk infrastructure for housing developments in return for dedicated long term revenue streams from councils through targeted rates and volumetric charging for use of such infrastructure by new residents. The Government will co-invest up to \$600 million alongside the council and private investors in network infrastructure. This includes:

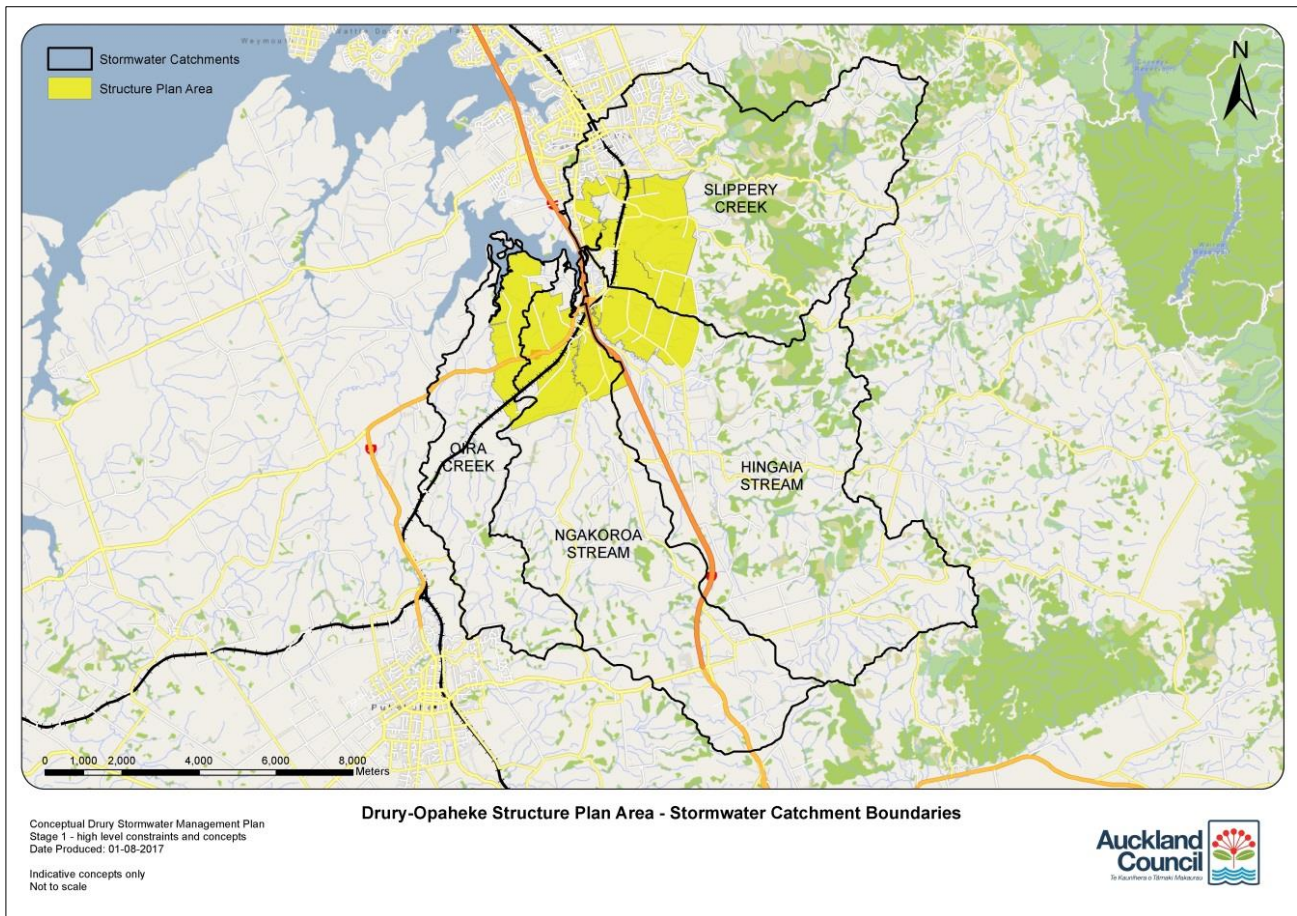
- rail stations at Paerata and Drury West (\$60 million)
- Bremner upgrade (\$38 million)
- Mill Road, Great South Road/Spine Road (\$97 million).

5.3 Stormwater and management of freshwater and marine environment

5.3.1 Stream catchments and natural systems

Drury's freshwater catchments and the receiving Manukau Harbour provide important values and natural systems in Drury. This includes interconnected streams, overland flows, floodplains, wetlands, aquifers and the tidal creeks, embayments, estuaries and the main basin of the Manukau Harbour. The complex, interconnected nature of these systems means that effects on them can be cumulative and that management can be difficult. Figure 6 shows the catchments in the Drury structure plan area.

Figure 6 Catchments and streams of the Drury structure plan area



Urban development provides opportunities to enhance and protect freshwater systems that have been affected by existing land uses, and provide additional recreational opportunities.

However, urban development in the Drury structure plan area could adversely affect the life-supporting quality of these systems. Also if urban development is placed in floodplains and erosion-prone areas, lives and property could be at risk.

The 1907ha size of the Drury Future Urban Zone means that the potential scale of cumulative effects of urbanisation could also be large. These effects on freshwater systems and the Manukau Harbour need to be carefully considered in structure planning of Drury. Key structure planning issues include:

- floodplain management
- sedimentation and contamination of the Manukau Harbour
- enhancement of streams and related ecosystems
- contamination of quality sensitive aquifers.

Approximately one quarter of the Drury Future Urban Zone is subject to deep, high velocity and very extensive floodplains. Also, there are existing flooding issues in the Papakura

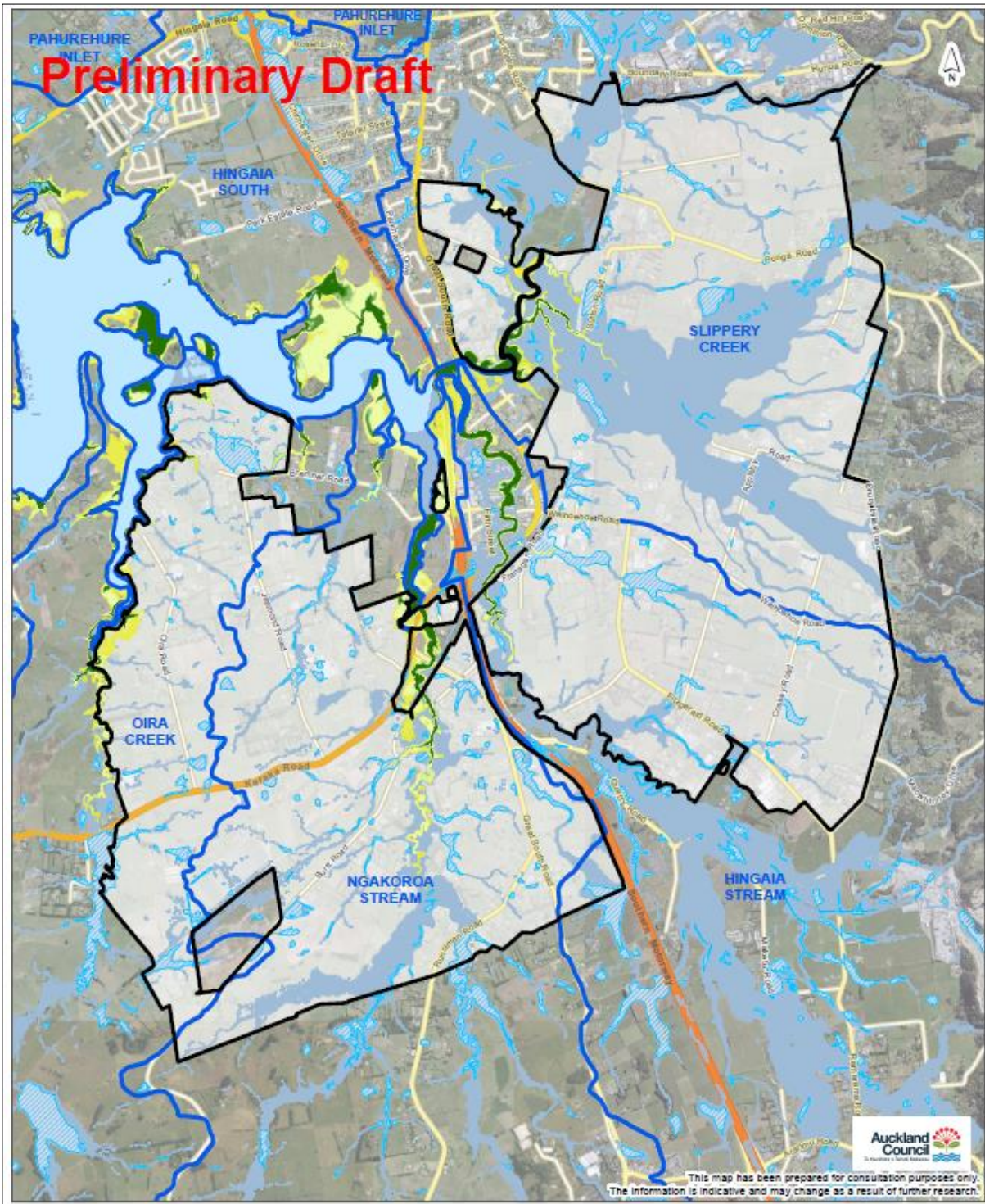
urban area upstream of Opaheke, and Drury Township in the downstream Drury area. The Drury-Opaheke stormwater catchments which drain to the Manukau Harbour are:

- Slippery Creek
- Hingaia Stream
- Ngakoroa Stream
- Oira Creek.

Some of these floodplains are interconnected. Consequently, piecemeal urban development in catchments could preclude other development and result in overall reduced development potential.

Figure 7 shows current flood hazard information held on the council's GIS system.

Figure 7 Flooding and coastal inundation



<h2 style="margin: 0;">Flooding and Coastal Inundation</h2> <h3 style="margin: 0;">Preliminary Draft</h3>		<ul style="list-style-type: none"> Structure Plan Area Flood Prone Areas Flood Plains Stormwater Catchment 	<p>Coastal Inundation</p> <ul style="list-style-type: none"> 5 year return 20 year return 50 year return 100 year return 	<ul style="list-style-type: none"> 50 year return 1m sea level rise 100 year return 1m sea level rise 50 year return 2m sea level rise 100 year return 2m sea level rise
<p>Scale @ A3 = 1:23,548</p> <p>0 170 340 510 680 Meters</p>		<p>Date Printed: 31/07/2017</p>		

5.3.2 Addressing key stormwater issues in the Drury structure plan area

Stormwater management is inextricably linked to natural systems and associated processes such as water bodies and creeks used as channels for conveyance of water and runoff from urban and rural development. Natural systems have shaped and continue to shape the landscape. How they are valued and utilised also needs to consider Mana Whenua values.

The Auckland Unitary Plan Operative in Part (AUPOP) recognises the relationship between land use and water. It seeks to improve the integrated management of both.

In greenfield developments the direction is to avoid as far as practicable, or otherwise minimise or mitigate, adverse effects of stormwater runoff on freshwater systems, freshwater and coastal water by taking an integrated approach to stormwater management as summarised below.

- Considering areas as a whole taking into account the location of other infrastructure, complementary land uses, physical constraints and the hydrology of the site.
- Using, and enhancing, natural hydrological features such as streams, floodplains and wetlands as part stormwater infrastructure where possible.
- Reducing stormwater flows and contaminants at source as much as possible. This will help to maintain groundwater and stream flows, reduces stream erosion, and reduces the amount of contaminants that may wash into sensitive receiving environments.
- Considering the nature and sensitivity of receiving environments to the adverse effects of development and looking for opportunities to minimise these. This includes opportunities to enhance existing degraded environments.

The table below highlights the key outcomes and methods proposed for stormwater management in the structure plan area.

Outcome	Method	Additional information and guidance.
Ecological values are maintained or enhanced. Stream health is maintained or	Integrated stormwater management approach	E1.3 (8)-(10) AUPOP
	At source (on-site) stormwater management and treatment.	E1.3 (8)-(10) AUPOP

Outcome	Method	Additional information and guidance.
enhanced through improved base flow.	Incorporate existing landforms (e.g. streams, floodplains, wetlands) and ecological corridors into stormwater infrastructure and urban design.	E1.3 (8)-(15) AUPOP
	Manage effects on pre development hydrology as directed in the Auckland Unitary Plan.	E1.3 (8)-(15) AUPOP
	Follow Water Sensitive Design guidance in designing stormwater management options.	Guidance for Water Sensitive Design (GD04), Auckland Design Manual.
Urban development is facilitated, key infrastructure protected, and people and the environment protected from significant flooding events.	<p>At risk development in the Opaheke floodplain is avoided.</p> <p>Existing pre development hydrology is maintained through mechanisms such as discharge to ground, use of permanent and intermittent streams for flood management.</p> <p>Future climate change impacts accounted for by taking the latest guidance into consideration when planning development and associated infrastructure, including stream and floodplain capacity and associated development setbacks.</p> <p>Undertaking works to improve drainage and flood control</p> <p>Control of nuisances and inappropriate interference of watercourses</p> <p>Development layout must consider overland flow paths</p> <p>The design and placement of new transport infrastructure, or upgrading of existing, needs to account for flooding events.</p> <p>Development of suitably detailed Flood Hazard Modelling to determine the</p>	The development of detailed Flood Hazard Modelling in accordance with the Auckland Council Flood Modelling Specification E36.3(4) and (17-28) AUPOP

Outcome	Method	Additional information and guidance.
	above, and test potential stormwater management options.	
Stormwater management is integrated with other land uses and values so that the amount of land available for development is maximised.	Complementary land uses such as passive recreation, stormwater conveyance, protection of habitats, and active transport networks, are identified through structure planning to maximise the value of the land.	
Sediment into sensitive receiving environments is minimised.	Existing streams are replanted where existing stream erosion is known.	E1.3(8)-(15) AUPOP
	Existing hydrology is maintained or improved to reduce the risk of instream erosion occurring.	
Contaminants into the sensitive receiving environments of the Drury Sands aquifer and Manukau Harbour are reduced.	Require treatment prior to discharge to ground in the Drury Sand quality sensitive aquifer area.	D2 and E1.3(15) AUPOP
	Retention of first flush stormwater similar to Stormwater Management Area Flow requirements across all development to both manage hydrology and reduce contaminants.	E1.3(8) - (15) AUPOP

More information can be found in the Water Sensitive Design Guidance Document (GD04) on the Auckland Design Manual website.

5.3.3 Implications for structure planning

There are a number of significant information gaps which need to be filled to inform structure planning.

The most significant of these is an understanding of how the existing floodplains within the Opaheke-Drury area interact with each other and detail on the flooding mechanisms. This information will inform:

- what flooding mitigation options in each catchment are best placed to deliver the largest amount of developable land, and the impact if catchments are developed in a piecemeal fashion;
- the economic feasibility of development in the Slippery Creek/Opaheke area; which has the largest flooding risk.

The study and tools developed will inform the large-scale flooding mechanisms (the whole of the catchment area); consider cumulative effects and the interactions between stormwater catchments. The complexity of the technical work required to establish suitably detailed stormwater models and develop flood management options, and assess the feasibility of avoidance or management approaches may take significant time in some catchments.

Hydraulic modelling is scheduled as follows:

- Oira & Ngakaroa – is now underway.
- Slippery Creek – is underway.
- Hingaia Stream – is complete.

Watercourse assessments to identify permanent and intermittent streams and identify issues such as in stream erosion, fish passage etc, have started for Oira Creek and Ngakaroa Streams. Slippery Creek and Hingaia Stream watercourse assessments are scheduled, but not yet underway.

Further work is required to determine how and where the maximum benefit of any management action (such as riparian planting and fencing for sediment reduction) taken on a macro-catchment scale could be realised.

Auckland Council Healthy Waters is undertaking research to address these information gaps. This includes:

- The preparation of stormwater management plans for the Drury stormwater catchments. Time frames for structure planning will not provide time for final solutions to be included in stormwater management plans. Further detailed technical work will be required either by the council or developers. Stormwater management plans will cover the existing constraints (floodplains and streams), identify treatment principles, and specific projects/infrastructure requirements.
- To define flood plains accurately and investigate works/options to reduce floodable area/increase yield desirable where feasible and without prohibiting development in

other areas. Various options will be considered. The complexity of the floodplain interactions in this area requires a comprehensive solution for the whole area (not piecemeal) to be developed.

- Define accurate stream extents (permanent, intermittent watercourses to be protected).
- Improve soil information (particularly permeability).
- Investigate receiving environment condition (sedimentation in the harbour), and develop appropriate management responses to address cumulative environmental effects.
- Develop further understanding of infrastructure required (e.g. culvert upgrades).
- Work with Auckland Transport, NZTA and KiwiRail to understand resilience requirements for transport infrastructure.

More information can be found in in the background report: Opaheke-Drury Stormwater Management Plan, Preliminary Plan, 2017.

5.4 Water and wastewater servicing

5.4.1 Water supply

There are no known constraints in the trunk water supply network. However, proposed growth requires at least one additional bulk supply point to be constructed in Drury. Local networks will be constructed off a new bulk supply point to service development as staging determines. Future servicing of Drury is summarised in Figure 8.

5.4.2 Wastewater servicing

Watercare is working with Auckland Council to determine the infrastructure solutions necessary to enable development of the southern growth areas. While there are already identified /potential upgrades, the increase in capacity will need to be placed in the context of future land use scenarios. Detailed planning is critical to ensure the sequencing of specific developments aligns with and enables, Watercare's programme of infrastructure delivery.

This is to be achieved with minimum environmental effects to the Manukau Harbour by strategically rerouting Mangere Wastewater Treatment Plant (WWTP) wastewater catchment to the Rosedale Wastewater Treatment Plant.

The following considerations are important to integrate servicing and land use planning outcomes:

- The need to understand topographical trends and prevailing drainage paths.
- Wastewater discharge consents are getting more difficult to obtain.
- Watercare has a discharge consent for Mangere, and Pukekohe WWTPs and for the wastewater networks.

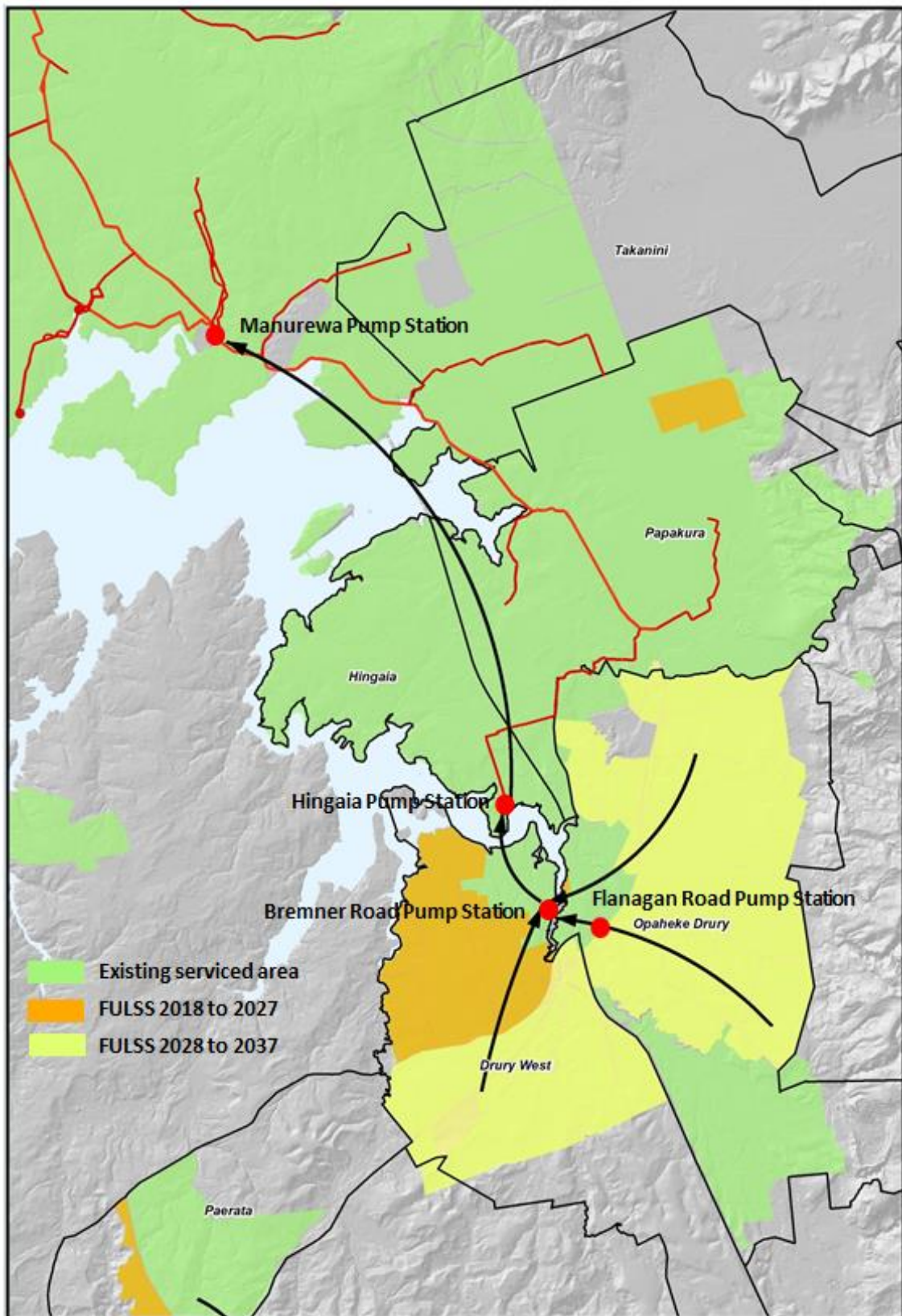
- Local network provision is the responsibility of the developer.
- While there is capacity programmed into the planned upgrades, they are not 'reserved' and are assigned on a 'first come, first serve' basis.

There are existing constraints in parts of the trunk wastewater network. The Southern Interceptor is at capacity in wet weather, between Papakura and Manurewa. Current population growth patterns indicate that the interceptors from Manurewa to the Mangere Wastewater Treatment Plant have potential capacity to accommodate growth, as when is enabled by rerouting some West Auckland wastewater flows to the Rosedale Wastewater Treatment Plant.

Population growth in Drury requires upgrades to infrastructure. The developer of the Bremner Road Special Housing Area is designing a new wastewater pump station to be connected to the Hingaia pump station. The Hingaia pump station has some capacity for growth, estimated at about 1,400 dwellings worth, however this is rapidly getting used by development on the peninsula. Longer term, both these pump stations will need to be upgraded, and the duplicate interceptor to Manurewa will need to be optimised for the two pump stations.

Further information can be found in in the background report: Southern Growth Area – Drury Water and Wastewater Servicing Strategy: preliminary overview.

Figure 8 Future servicing of Drury'



5.4.3 Crown Infrastructure Partners initiative

As announced by central government, Crown Infrastructure Partners (CIP) will set up special purpose companies to build and own new trunk infrastructure for housing developments in return for dedicated long term revenue streams from the council through targeted rates and volumetric charging for use of such infrastructure by new residents. The government will co-invest alongside the council and private investors in network infrastructure. An estimated \$47 million will be invested in Drury waste water and water infrastructure. This investment will include: Drury West wastewater reticulation (\$20million), Drury South pump station (\$25 million), Bremner Road sewers (\$2 million) and Bremner Road pump station (\$20 million).

5.5 Geotechnical and coastal erosion

A review of geotechnical constraints for possible future urban development in the Drury structure plan area has been undertaken with respect to instability, soil compressibility, liquefaction and coastal erosion by Riley Consultants Ltd and Davis Coastal Ltd. This included a desktop review and assessment, site inspection and review of available geotechnical reports and subsurface information.

A map of low, medium and high development cost premium areas has been provided, based on maps prepared for the earlier Proposed Auckland Unitary Plan process. Some areas not included in the original study (the area between Takanini and Waihoehoe Road, a wedge along the southwest edge of the study area and the Slippery Creek catchment north east of Drury township), have been given a tentative medium development cost premium classification at this stage. The coastal foreshore was assessed as having a high development cost premium. Areas in the immediate vicinity of streams may also warrant a high development cost premium.

Geologically the Drury structure plan area is situated on a mixture of volcanic and alluvial materials. Aerial photographs do not indicate any obvious large-scale instability features. The lowest development cost premium areas are the basalt flows in the east of SH1 which can cater for a wide range of building types and heavy loading such as industrial yards. However, most of the rest of the Drury structure plan area has extensive areas of medium development cost premium due to weak strength soils and rock, lateral spreading or liquefaction potential in the event of earthquake. Riley considers that some of the area currently shown as “medium development cost” is likely to incorporate high settlement risks in the south east, but this is offset by the likely shallow depth of basalt at that location.

High development cost premium areas do not preclude development, but future development would be expected to require specific investigations, assessments, and designs. Ground improvement measures may be required. These could include retaining walls, rip-rap, earthworks, or drainage.

The coastal areas and some stream banks are at risk of erosion and “lateral spread”. The coastal cliffs are up to 8 metres above sea level. Part of the coast is sheltered by low lying islands and causeways with a resulting low historic rate of retreat, while the majority is protected by mangroves and has a medium rate of retreat. Two portions are on the outside of relatively broad bends and have a relatively high rate of erosion. Set backs of 25-80m from unsupported slopes (open soil faces) are described. The effects of sea-level rise have been evaluated on the basis of a 1 metre rise. Accordingly, future erosion rates could be up to seven times greater than historic rates.

Groundwater levels can also affect weak soils if the water table is changed by development and that could impact development methods.

The Drury Fault is a significant geological feature lying immediately to the East of the study area and roughly parallel to the Drury structure plan area boundary. The most recent of the technical reviews (Beca) considers this may be active though with a low level of activity. Site-specific seismic hazard and liquefaction analysis is recommended.

The review recommends further investigation to refine geotechnical hazard potentials including a more specific assessment of the rate of coastal retreat.

More information can be found in in the background report: Drury – Opaheke Structure Plan Background Investigations Geotechnical and Coastal Erosion Assessment, Riley Consultants, 2017.

5.6 Ecology

The Drury structure plan area is a highly modified landscape, with a town centre surrounded predominantly by arable horticultural, pastoral and rural lifestyle activity. Very little remnant native vegetation still exists, consisting mostly of small and isolated areas. Significant ecological areas as illustrated in Figure 9. Freshwater systems within the structure plan area, including both streams and wetlands, are highly modified from their original condition. The coastal marine area is largely unmodified. However, the terrestrial coastal edge has been mostly cleared of native vegetation.

There is an opportunity to protect and enhance biodiversity in the Drury structure plan area. An increase in the amount of native vegetation in the area is important to maintain and improve biodiversity. It is critical to buffer and connect existing forest fragments, and also to establish additional areas to provide habitat for native species.

Protection and enhancement of watercourses can improve water quality, habitat, and function. Opportunities exist for riparian margins to provide increased vegetation cover, connect and buffer existing ecological areas, provide corridors for the movement of native flora and fauna, and to restore ecological function. The terrestrial coastal edge environment also provides an important opportunity for restoration to buffer the ecologically valuable marine areas, reconnect land and sea ecosystems, and link other ecological areas such as riparian corridors to each other.

All areas of open space, streams, coastal edge, forest, street trees, residential gardens, storm water devices (rain gardens) and any area that could potentially support plants and animals in Drury would contribute and combine to become what is commonly referred to as a Green Network.

More information can be found in in the background report: Ecology Assessment Drury-Opapeke Structure Plan, 2017.

5.7 Natural character, landscape and visual

Drury is located between the upper, southern reaches of the Manukau Harbour to the north west, the Hunua foothills to the east and the Bombay Hills to the south. A preliminary review of landscape in the Drury structure plan area has been undertaken by Opus International Consultants Ltd.

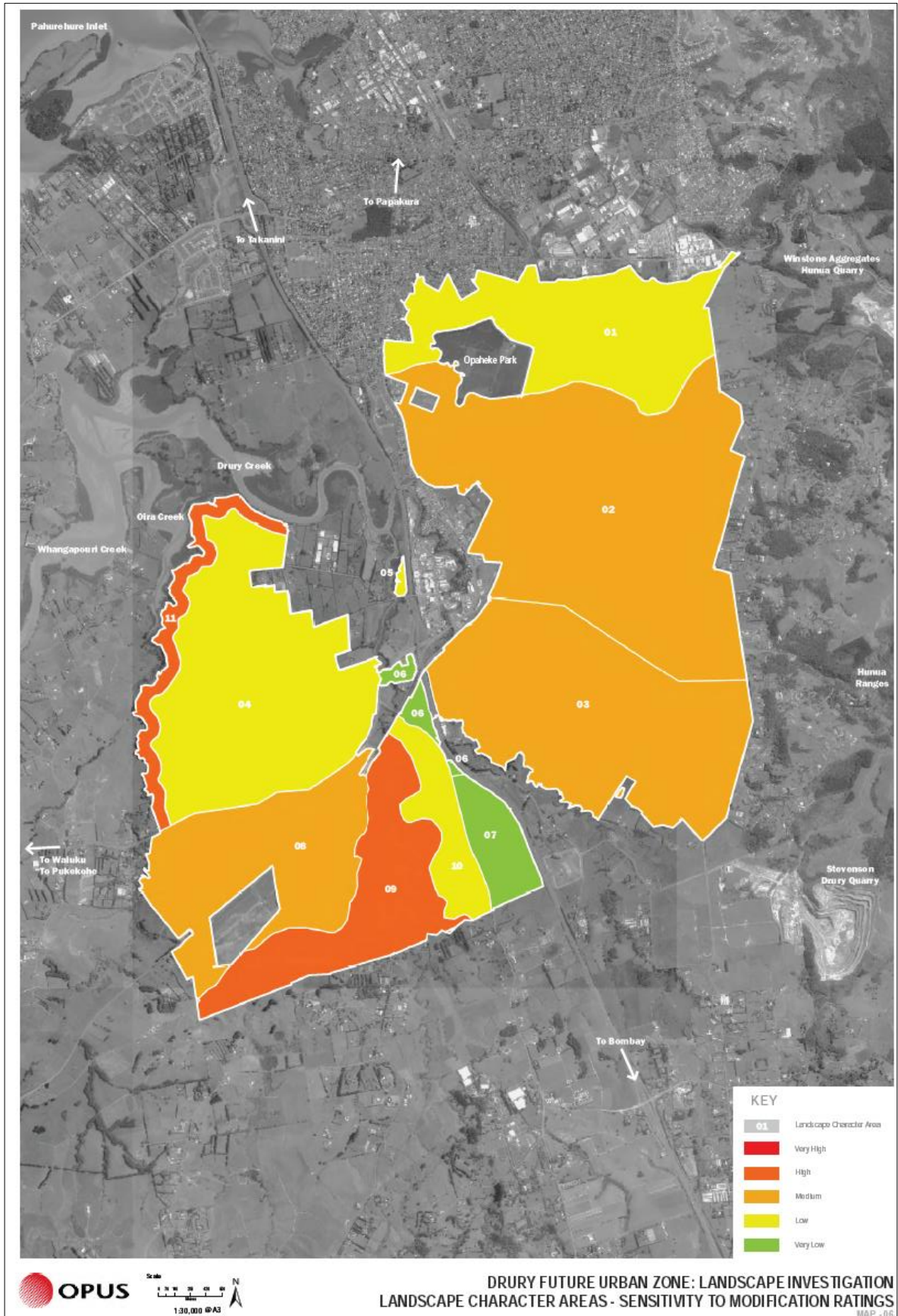
In Drury East, the landscape character is strongly influenced by the Hunua Ranges which rise up on the eastern side. The lower slopes of the Hunua Ranges create a buffer of intermediate land cover between the sparsely developed hills and the plains. In Drury West, between the Drury Creek and Burtt Road, the landscape is flat to gently undulating. It is expressive of the underlying land-shaping processes associated with the lower stream and gully catchments.

Along the northern and eastern coastal edges, the coastal margins with their associated mangroves and salt marshes give this area a distinctly coastal character. Islands within the inlet contribute to a high amenity landscape setting. However, the landscape character is highly compromised towards the east near the motorway onramp as it is dominated by roading and electricity transmission infrastructure.

The southern part of Drury West rises to higher hill and gully landforms with associated ridges, spurs and valley floors. The broad, flat valley of the Ngakarua stream and its second order streams in the headwaters strongly define the landscape character of the area. Two major ridgelines encircle the area. The south west end of one of these rises to the highest point within Drury West and features a visually prominent knoll.

The Opus report identifies landscape character areas and their sensitivity to modification ranked from very low to high as set out in Figure 10.

Figure 10 Drury landscape sensitivity to modification



More information can be found in in the background report: Drury Structure Plan Landscape and Visual Assessment Report Background Investigation for Auckland Council, August 2017

5.8 Heritage and archaeology

A historic heritage report has been prepared for the Drury structure plan area. It outlines:

- a historical overview of the area and heritage ‘themes’
- known historic heritage places that are protected or recorded
- issues and opportunities relating to management of historic heritage
- recommendations to identify recognise and celebrate historic heritage places.

This historic heritage topic report is largely a desk-top exercise. It is intended to provide an evidence base for the development of a draft Drury structure plan. The exploration of historical themes in the report provides an opportunity to recognise and celebrate the area’s heritage through future place-shaping and interpretation of historic heritage places. The themes are:

- theme 1 – geology and topography
- theme 2 – Maori settlement and early place names
- theme 3 – early European settler families and place names
- theme 4 – the village of Drury
- theme 5 – the land wars
- theme 6 – transport
- theme 7 – extractive industries
- theme 8 – rural agriculture and development in the early 20th century
- theme 9 – World War II sites.

Key recommendations include:

- continue a programme to identify specific places of interest for further research and evaluation, targeted to reflect development programmes
- determine whether potential places of interest may be of sufficient value for scheduling or any other formal protection
- develop a character and context analysis to inform structure planning, design principles and guidance for future development
- enhance remotely accessible information through updates to the Cultural Heritage Inventory and NZ Archaeological Association Archsite database.

A high-level analysis of issues and opportunities that relate to historic heritage is has been undertaken. These will be considered in structure planning.

More information can be found in in the background report: Historic Heritage Topic Report Drury Structure Plan, 2017.

5.9 Cultural values

There are 10 local Mana Whenua groups/tribal authorities who have interests in area of the Drury structure plan area. They are Ngāi Tai Ki Tāmaki; Ngati Tamaoho; Te Akitai Waiohua; Te Ahiwaru Waiohua; Ngati Te Ata; Ngati Paoa; Ngāti Maru; Ngāti Whanaunga; Ngāti Tamaterā; Waikato-Tainui. Relevant Mana Whenua areas are represented in Figure 11.

These tribal areas define where an iwi has an association with place through whakapapa, and areas which the iwi and respective hapu have a right to as Mana Whenua through whakapapa, occupation and use, and therefore hold obligations and responsibilities as kaitiaki.

Mana Whenua and Mataawaka (Māori who are not Mana Whenua) have contributed to Auckland Council strategy, projects, plans and initiatives. Structure planning of Drury will be informed by these previous contributions. It will also consider iwi planning documents (also known as iwi management plans, hapū environmental management plans, or by similar names). These documents articulate what a number of iwi and hapu in Auckland see as specific resource management issues, objectives, policies, and methods. Further guidance comes from strategic documents such as the The Māori Plan for Tamaki Makaurau (IMSB, 2012).

Mana Whenua cultural values encompass social, cultural, environmental, and economic matters which may be historical, present and in the future (forward-thinking). Realising the economic, social and cultural development aspirations and opportunities for Māori is critical to their future.

The importance of whakapapa and connection, which comes from an ancestral past and carries people into the future, is reflected in the values care for the environment as integral to human life. Māori values include: rangatiratanga (chiefly authority), kaitiakitanga (guardianship), wairuatanga (spirituality), manaakitanga (hospitality), kotahitanga (unity), whanaungatanga (relationships) and matauranga (knowledge). These values are addressed in a design context in the Auckland Design Manual (Te Aranga Principles) and also have relevance for the structure planning process.

Cultural landscapes provide the context for specific sites and places of significance to Mana Whenua, and articulate the narrative behind historical settlement and environmental management patterns in Auckland.

Within tribal rohe there may be cultural landscapes that have been occupied over many centuries. This is not well reflected in the place names, landmarks, and recorded archaeological sites across the wider southern area, due to a complex history marked by raupatu (land confiscations). There are significant opportunities for recognition of cultural landscapes, be it important Wāhi (locations, locality, place), Wāhi tapu (the sacred, features and areas), Wāhi nohoanga (encampments) Wāhi pakanga (significant battle sites), as well as a network of kainga (open settlements), gardens on fertile soils, pa,

walking tracks, and resource gathering areas (waterways, the Manukau Harbour and the Waikato River), transport/portage routes (to waka) and viewpoints.

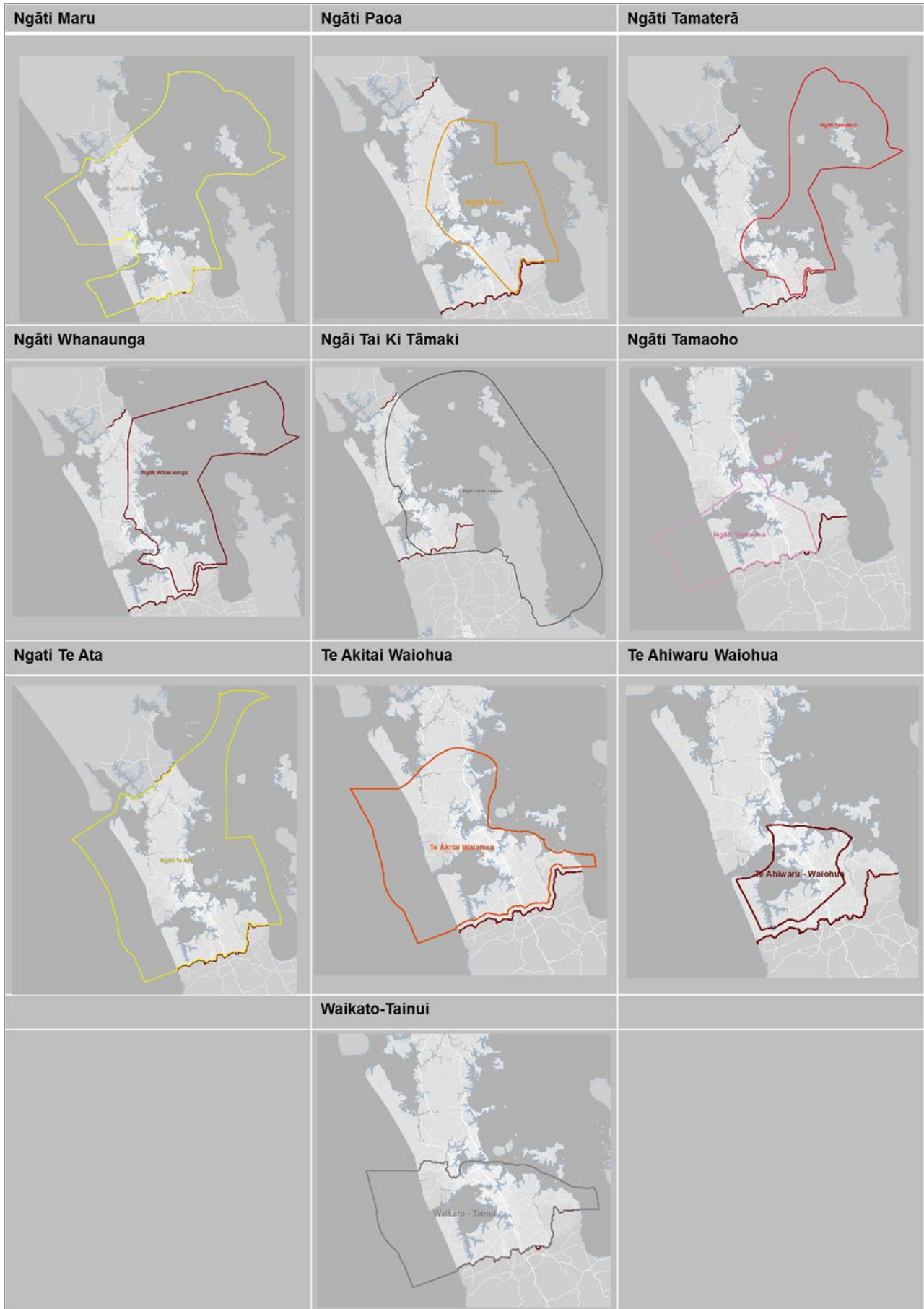
Mana Whenua as kaitiaki have responsibilities to protect the mauri or life force of all things in a way which ensures that the quality of tribal taonga passed on to future generations is protected and enhanced.

The council understands the importance of involving iwi in the development of the Drury structure plan and integration of the protection and enhancement of air (hau), land (whenua), water (wai), biodiversity, and wahi tapu and taonga in the Drury structure plan area.

Structure planning can consider issues, opportunities, aspirations and visions identified by Māori and include these where possible the structure plan process to reflect cultural values and perspectives (Māori worldview). Realising economic, social and cultural development aspirations and opportunities for Māori is critical to the future outcomes of structure planning in Drury.

Structure planning will identify, investigate and address the potential effects of urbanisation and development on natural and physical resources, as identified by Māori. Careful consideration is required to determine whether these effects have been understood in full, and appropriately addressed (i.e. to avoid, remedy or mitigate effects of urban land use and development) in structure planning for Drury.

Figure 11 Local Mana Whenua groups/tribal authorities area maps



5.10 Land contamination

The health and wellbeing of future communities is important. As with any redevelopment of rural land, previous land uses can leave contaminated soils behind. This land may require remediation before development into residential and commercial uses. To address this, structure planning for Drury will take into account available information on land contamination risks. A preliminary desktop study of potential historic land use contamination is being undertaken for the council. The reporting of this study will be made available and will inform structure planning of Drury, including consideration of any further research requirements. Local knowledge can be a useful source of information on potentially contaminated sites and feedback on this is welcome.

5.11 Open space and recreation

A preliminary report on open space and recreation needs for the Drury structure plan area has been prepared. This is summarised below.

The Parks and Open Spaces Strategic Action Plan (POSSAP) target over next 10 years is to “Maintain and extend an integrated network of quality open spaces across the region that meets community needs and provides a diverse range of recreational opportunities by 2040”. There are many benefits arising from urban parks including improving biodiversity, increasing property values, influencing physical activity and reducing obesity levels as well as local air cooling. Parks and open space contribute to Auckland’s quality of life to the vision for Auckland being the most liveable city in the world.

The large extent of the Future Urban Zone highlights the extent and rate of forecast growth occurring across the area. This emphasises the need to ensure a broader open space network planning approach is taken into account and is the reason why open space within a six kilometre radius surrounding Drury & Opaheke Future Urban Zone also forms part of the assessment.

The existing park network extent needs to be considered in determining the additional park space required. Within the township of Drury there are 8 units of open space infrastructure totalling almost 6ha. This includes the 2.8ha DoC owned Drury Domain sports-park, home to the Drury Rugby Club. There are also 7 units of esplanade reserve.

An initial estimate of neighbourhood park and suburb park open space required for Drury is presented in the following table.

	Drury West Stage 1 (2018- 2022, 392ha, 4,200 dwellings)	Drury West Stage 2 (2028- 2032, 552ha, 5,650 dwellings)	Opaheke- Drury East (2028-2032, 1,121ha, 7,900 dwellings)	Drury & Opaheke FUZ total open space
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Neighbourhood Parks ranging in size from 0.3 – 0.5ha	9 additional neighbourhood parks	10 additional neighbourhood parks	21 additional neighbourhood parks	40 additional neighbourhood parks 0.3 – 0.5ha = 12 – 20ha
Suburb Parks (3 – 5ha for both sports and informal recreation uses and up to 10ha for organised sport)	1 additional suburb park is required	2 additional suburb parks are required	4 additional suburb parks are required	7 additional suburb parks 3 – 5ha = 21 – 35ha
Total Hectares Required 33 to 55 ha				

In keeping with the council's philosophy of developing integrated parks and open space networks, it is envisaged that future park and open space provision will be based on the geographic and natural features of the area and the existing and proposed road network. It will also be informed by existing and proposed public transport infrastructure and routes. Where possible, parks will be formed as nodes along coastal and riverine esplanade reserves, riparian and ecological corridors and roads containing integrated walkways/cycleways.

A broad overall approach to open space planning also includes taking into account:

1. Improving the quality and connections of existing open space.
2. Increasing the quantity of new open space within new areas and ensuring connections are developed to the existing network.
3. That the location of parks should be along the existing green corridors, to provide the backbone of a connected open space network. The location of each park should be influenced by the criteria outlined in Council's Open Space Provision Policy 2016.

More information can be found in in the background report: Drury & Opaheke Area Future Urban zone Parks and Open Space Report.

5.12 Community facilities

Community facilities are an important part of realising the vision for Auckland to become the world's most liveable city. Community facilities contribute to building strong, healthy and vibrant communities by providing for a wide range of social, cultural, art and recreational activities. Drury structure planning provides an opportunity to put the Auckland Council Community Facilities Network Plan (the network plan) into action at the beginning of the planning process. It is intended network plan provides a guide for community facility investment over the next 20 years. It should address the provision of: cultural facilities, community centres, libraries, pools and leisure facilities.

The existing council community facility network in Opaheke-Drury consists of a rural library and rural hall. Their close location to the town centre and access off Great South Road follow guidelines for community facility locations set out in the network plan. The area is serviced by the larger catchment of community facilities five kilometres away in Papakura consisting of a theatre, library, art gallery, pool, leisure centre, community centre and halls.

Opaheke-Drury is forecast to see substantial population growth in the next 30 years. Additional investigations will need to be conducted to identify how the existing network can support this group.

5.13 Business land demand

A specialist business land analysis report has been commissioned but is not yet available. The analysis is expected to quantify how much business land and what type of business land will be sustainable within the Drury structure plan area, together with an indication of the expected uptake of that land. The analysis will estimate land requirements for retail, commercial activities, light industry and heavy industry (if required).

6 Drury structure planning issues and concepts

6.1 Statutory and non-statutory requirements for structure planning

This section summarises the most relevant statutory and non-statutory plans and strategies that must be considered in the development of the draft structure plan. This section is not intended to be a full summary of all applicable legislation.

6.1.1 The Auckland Plan

Adopted in 2012, the Auckland Plan sets the overall strategy for achieving Auckland's vision of becoming "The world's most liveable city". Key to the plan is the development strategy for accommodating future growth until 2040, with up to 40 per cent of growth in greenfield areas, satellites, rural and coastal towns.

6.1.2 Future Urban Land Supply Strategy

The purpose of the Future Urban Land Supply Strategy (FULSS 2017) is to identify the sequencing and timing of future urban land for development over a 30-year timeframe. This is to integrate supply of greenfield land for development and provision of infrastructure. The FULSS 2017 is discussed further in section 4 of this document.

6.1.3 Long-term Plan

The council's Long-term Plan 2015-2025 was adopted in June 2015. It outlines a 10-year budget for the council's investment in Auckland. Large-scale greenfield development in the south is anticipated in the Long-term Plan (2015-2025), including large infrastructure projects that will have a direct impact on structure planning of Drury.

Funding for any additional projects identified through the structure planning process to support urban growth will be considered in the next Long-term Plan (2018-2028), future annual plans and other mechanisms.

6.1.4 National Policy Statement on Urban Development Capacity 2016 (NPS-UDC)

The NPS-UDC directs local authorities to provide sufficient development capacity in their resource management plans for housing and business growth to meet demand. Development capacity refers to the amount of development allowed by zoning and regulations in plans that is supported by infrastructure. The Drury structure planning process will assist the council in giving effect to the NPS-UDC by providing the analytical foundation to support future plan changes to provide urban zones and related infrastructure.

6.1.5 National Policy Statement for Freshwater Management 2014

The National Policy Statement for Freshwater Management (Freshwater NPS) provides direction for the council on the management of freshwater. The council must give effect to

the Freshwater NPS through the provisions of AUPOP – notably through RPS B7.4 and the Auckland-wide provisions. Some of these provisions are relevant to structure planning.

6.1.6 National Policy Statement on Electricity Transmission 2008

The National Grid Corridor traverses the Drury structure plan area. The overarching objective of the National Policy Statement on Electricity Transmission (NPSET) is to recognise the national significance of the electricity transmission network by enabling its operation, maintenance, and upgrade and establishing new transmission resources to meet future needs.

The council gives effect to the NPSET through the National Grid Corridor overlay provisions in the AUPOP. Land use activities in the vicinity of the National Grid Corridor will need to be considered carefully through the draft structure plan.

6.1.7 New Zealand Coastal Policy Statement 2010

The north-west part of the structure plan area is bounded by the coastal waters of the Manukau Harbour. Therefore the New Zealand Coastal Policy Statement 2010 particularly relevant as the area is within the coastal environment. Development within a coastal environment contains unique challenges such as competition for space, the dynamic influence of the coast, risks from hazards, effects on natural character and landscapes, relationship of tangata whenua with the coast, effects on coastal biodiversity heritage and public access.

6.1.8 National Environmental Standards for Air Quality

The National Environmental Standards for Air Quality are regulations made under the Resource Management Act 1991 which aim to set a guaranteed minimum level of health protection for all New Zealanders. This standard has some relevance to the location of industrial zones in relation to other zones.

6.1.9 National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011

Under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health any sites where activities on the Hazardous Activities and Industries List have occurred must be identified. This NES provides a nationally consistent set of controls and soil contaminant standards to ensure land affected by contaminants in soil is appropriately identified and assessed before it is subdivided or developed.

6.1.10 Auckland Unitary Plan Operative in Part

The Auckland Unitary Plan (AUPOP) contains new land use policy, rules and zoning for Auckland. It also includes along overlays which identify important natural and historic values and characteristics which must be taken into account when making decisions about land use during structure planning.

The Regional Policy Statement (RPS) is part of the AUPOP. It sets out the overall strategic framework for Auckland. Sections B1 to B10 of the RPS all have varying degrees of relevance to structure planning. In particular, section B2. Tāhuhu whakaruruhau ā-taone

- Urban growth and form sets out objectives and policies for urban form and growth. These require the rezoning future urban zoned land to urban zones to be in accordance with the Appendix 1 structure plan guidelines. Appendix 1 lists information required and desired general outcomes for structure planning.

Other parts of the AUPOP contain objectives, policies and rules about natural resources, heritage, hazards, infrastructure and other matters that are relevant to structure planning.

6.2 Land use issues and structure planning concepts

There are a variety of matters to consider in determining suitable urban land uses for Drury. This exercise is at an early stage. Maps showing potential land use zoning options have not been developed yet. Some of the key planning issues and concepts that will be considered in preparing draft land use maps for a draft Drury structure plan are summarised below. This is not an exclusive list of all relevant structure planning concepts but it illustrates some that have the most influence over future urban land uses and zones. Feedback on these is welcomed.

6.2.1 Transport, movement networks and centres

The core network

The core of the new Drury transport network will be an evolution of the adopted Supporting Growth concept. This combines existing transport with new infrastructure as illustrated in Figure 5. The infrastructure proposed in this figure may change as a result of further research.

At the heart is a well-connected Rapid Transport Network with electric trains extended to Pukekohe and extra rail capacity. New stations at Drury and Drury West improve access to trains. Park and rides are proposed near train stations. A high frequency bus corridor connecting Hingaia, Papakura, Drury and Drury West could integrate with train stations.

Another key focus is the upgrade of the Mill Road corridor from Manukau and Flat Bush to Papakura and Drury. This will help improve safety, provide greater access to new growth areas and provide an additional north-south route. Eventually it will link to State Highway 1 and to a new expressway between Drury, Paerata and Pukekohe. Additional improvements to state highways 1 and 22 will also be undertaken.

Movement networks

Movement networks include walking, cycling, public transport and road travel.

It is important that movement networks integrate walking, cycling, public transport and road travel with land use. The aim is for choice and convenience in travel:

- within neighbourhoods

- to local destinations
- to destinations elsewhere in Auckland.

This includes reducing the need to travel across Auckland for work and leisure by providing for employment and recreation in Drury as well as housing. Structure planning for Drury can address this by applying the following key land use and transport network integration concepts:

- Aim for a high percentage of walking, cycling and public transport relative to car use.
- There can be up to two new train stations in Drury which:
 - must be at least 2km apart
 - should not be in major flood areas
 - should be associated with high-density town centres and park and rides.
- Local and neighbourhood centres should be located along the high frequency bus network.
- All centres and other business zones must have appropriate access to the road network and other parts of the movement network.
- Walking and cycling networks need to provide a high degree of connectivity via roads and parks.
- Residential and business intensification needs to be provided near rail stations and bus routes.
- Transport infrastructure needs to be cost effective to build and operate.

It is important to plan land uses and transport networks in a way that makes it relatively easy to walk or cycle to destinations and public transport. This can reduce costs associated with car ownership and operation, and the cost of road infrastructure and congestion. To achieve this: housing, businesses, community facilities, local parks and schools, should be grouped together within a distance that most people find comfortable to walk or bike. The following table illustrates walkability metrics that guide transport network and land use intensification planning.

Figure 12 Land use and transport metrics

Land use & transport catchment metrics

Transport & Land-Use	Walking Catchment Distance	Time to Destination
Frequent bus service	400-600m	Walking 5-10 mins.
Train or Rapid Bus Service	600-1200m	Walking less than 20 mins.
Neighbourhood Centre Shops	400-600m	Walking 5-10 mins.
Local Park	400m	Walking 5-10 mins.
Medical services	400-600m	Walking 5-10 mins.
Primary School / Kindergarten / Day Care Centre	400m	Walking less than 10 mins.
Distance to bike route with regional connection	400-600m	Biking less than 2 minutes
Intermediate/High School, Town Centre	600-1200m	Walking less than 20 mins.
Town Centre	600-1000m	Walking less than 20 mins.



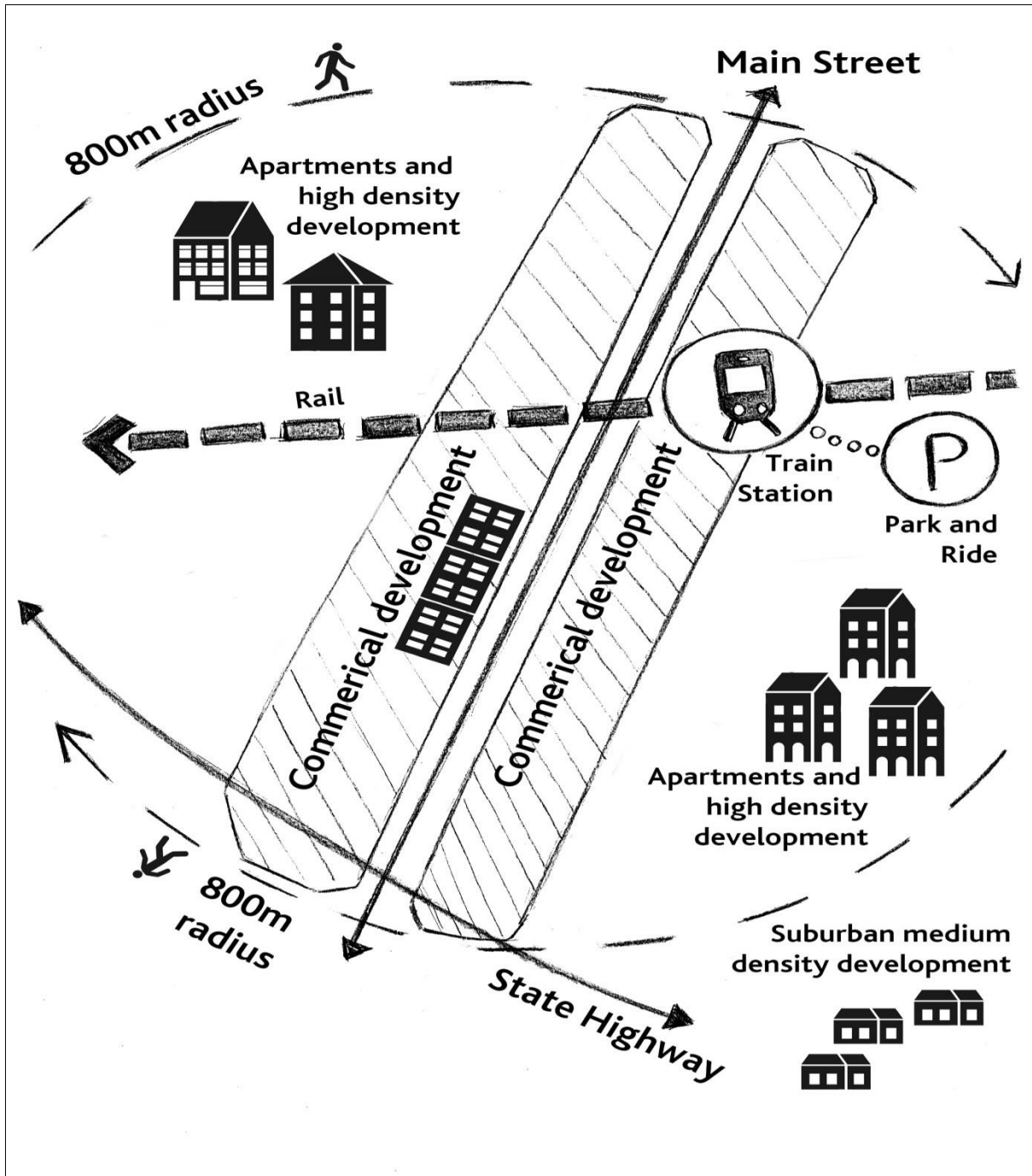



Figure 13 (below) is a conceptual illustration of a hypothetical town centre in Drury using some of the above concepts and metrics. This features:

- a centrally located rail station
- access to the highway network
- a high-frequency bus network
- high-density residential and commercial development within a walkable catchment.

Figure 13 Conceptual illustration of a hypothetical town centre in Drury



It is not always appropriate or possible to place all residential or business areas within walking distance of centres and public transport. For example, low density residential areas and light industry areas may be further away. Therefore cars and road freight will still be an important part of transport and land use integration. Park and rides will need to be provided to facilitate access to the public transport system for those living or working further away.

Transport connections to the north, south and west

The transport network in Drury is also an important conduit from Auckland to the south and west of Drury. In particular there is substantial growth in the number of people living in north Waikato and traveling to and from Auckland. This needs to be considered as part of transport networks running through Drury.

Future work

The above matters will be considered as the structure planning of Drury progresses. An Integrated Transport Assessment (ITA) will be prepared to inform this. In addition, structure planning of land use needs to give effect to relevant parts of the Auckland Regional Policy Statement and Appendix 1 of the Auckland Unitary Plan.

6.2.2 Providing for residential and employment growth in Drury

Residential growth in Drury

Estimates provided in Auckland Council's Future Urban Land Supply Strategy July 2017 (FULSS 2017) indicate that the Future Urban Zone around Drury could be developed to provide about 18,000 new homes. This could result in a population of about 50,000 people. Structure planning for the area will also enable further refinement of the possible number of homes and the estimated population.

The actual number of homes can depend on the:

- area of land set aside for constraints such as flooding
- amount of land needed for roads and parks
- amount of land needed for non-residential zones such as industry
- residential zoning density, i.e. low, medium and high density.

Market conditions when development occurs are also a key factor impacting the density of residential areas and the number of homes built.

The type of urban residential zones applied has a significant effect on the number of houses and therefore the total potential population in Drury. If Drury was, for example, predominantly zoned for low density residential living, the number of new homes could be about 17,000 – 21,000. By comparison, if Drury was predominantly zoned for medium density residential living, the number of new homes could be about 25,000 – 34,000. These estimates take into account that some land may be undevelopable and also allows for roads, parks and non-residential land uses.

Low density housing is characterised by predominantly single detached houses on sections of around 400m² – 600m². There could be some more intense housing formats. Low density houses are typically one to three storeys.

Medium density housing is characterised by a variety of different housing types, including single detached houses, duplexes, terraced houses, and low-rise apartments. Medium density houses are typically two to three storeys.

High density housing is characterised by terraced housing and apartments. Heights could vary but are likely to be higher than medium density development, e.g. five storeys. Figure 16 illustrates apartments.

Appendix 1 contains illustrations of low, medium and high density housing and more information on the AUPOP residential zones that can be applied.

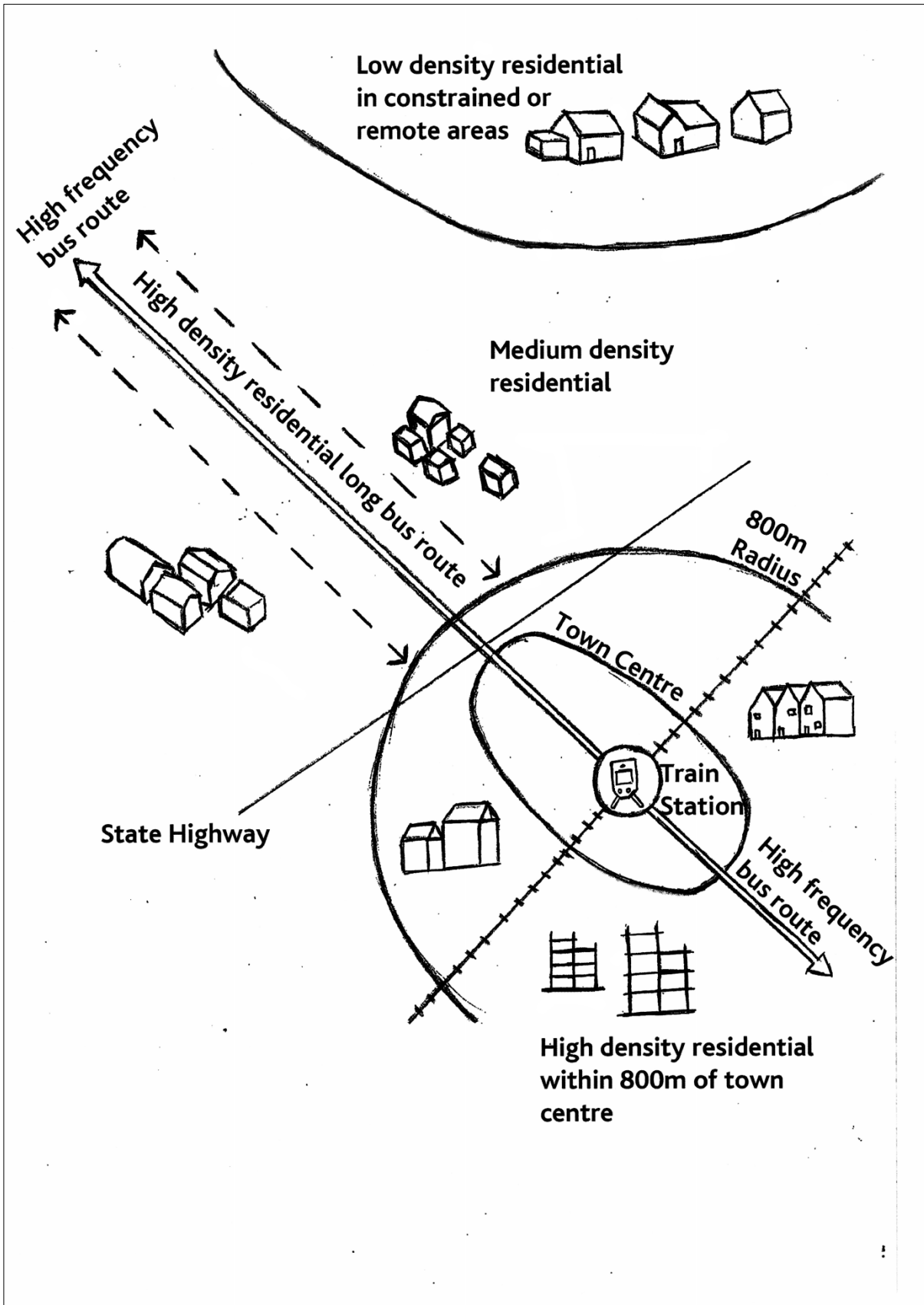
The Auckland Unitary Plan requires “a mix of residential intensities sufficient to support the vitality of centres and communities and to provide housing and transport choice.”

Therefore structure planning for Drury will likely provide for a range of residential zones that, in turn, can provide for a range of housing and transport choices. One possible scenario might involve:

- Higher residential density located in town centres, within a walkable distance to train stations and within a walkable distance to high frequency bus routes.
- Medium residential density located in general suburban areas.
- Lower residential density located in places removed from the public transport network or areas with environmental constraints.

Figure 15 illustrates this concept.

Figure 15 Residential density variations.



Business and employment in Drury

Business and employment can occur within various land use zones, such as:

- town centre zones
- other business zones, such as the Light Industry Zone which need not be located in town centres.
- business activities that occur in non-business zoned areas, e.g. home occupations.

Research undertaken in 2016² indicates that there is expected to be growth all three sectors in Auckland. Therefore all three types of business activity need to be provided for in the large 1907ha Drury structure plan area.

Preliminary work undertaken to support the FULSS 2017 indicates that two town centres may be able to be developed. One could be located in east Drury near the existing township with another centre in west Drury. Additional local or neighbourhood centres may also be required. The number of centres, their locations, relative size and their functions will be examined as part of structure planning.

Preliminary work also indicates that additional light industry zoning could be provided. Possible locations for light industry zoning include: between SH 1 and Great South Road (south of SH22 in West Drury) and adjacent to the existing industrial area on Boundary Road and Hunua Road. Other locations may also be appropriate. The location and area required will be examined as part of structure planning.

6.2.3 Stormwater and flood hazards

Structure planning for the Drury Future Urban Zone needs to address the effects of development on freshwater streams and catchments to:

- minimise flood risk to people and property
- maintain the health and environmental value of our aquatic habitats
- improve water quality in streams and in the Manukau Harbour
- provide opportunities to restore and enhance freshwater systems
- provide for Mana Whenua and other values associated with freshwater systems and the harbour.

Flooding

Floods endanger people's lives. They can also severely damage public and private property. There are obligations in the RMA and in the Auckland Unitary Plan to reduce the risk associated with flooding to acceptable levels. Structure planning of urban land uses and infrastructure needs to identify measures to manage natural hazards.

It also needs to integrate green networks (such as freshwater and coastal water systems, and ecological corridors) with open space and pedestrian and cycle networks. Natural

² PAUP Business Land, Land Demand by Activity and PAUP Supply, March 2016.

character values should be maintained and there are opportunities for environmental restoration.

Flooding can arise from: overland flow, stream flooding and coastal inundation. Climate change will increase both aspects of flooding in coming decades.

The Drury Future Urban Zone contains significant flood hazard areas with an estimated 450 hectares of 1907 hectare are subject to flooding. Most of this is located in West Drury but parts of east Drury flood too. Figure 16 shows a photograph of recent flooding in the structure plan area. Further research may determine that the extent of flooding is larger.

Figure 16 Flooding in the Hingaia Stream catchment 2017



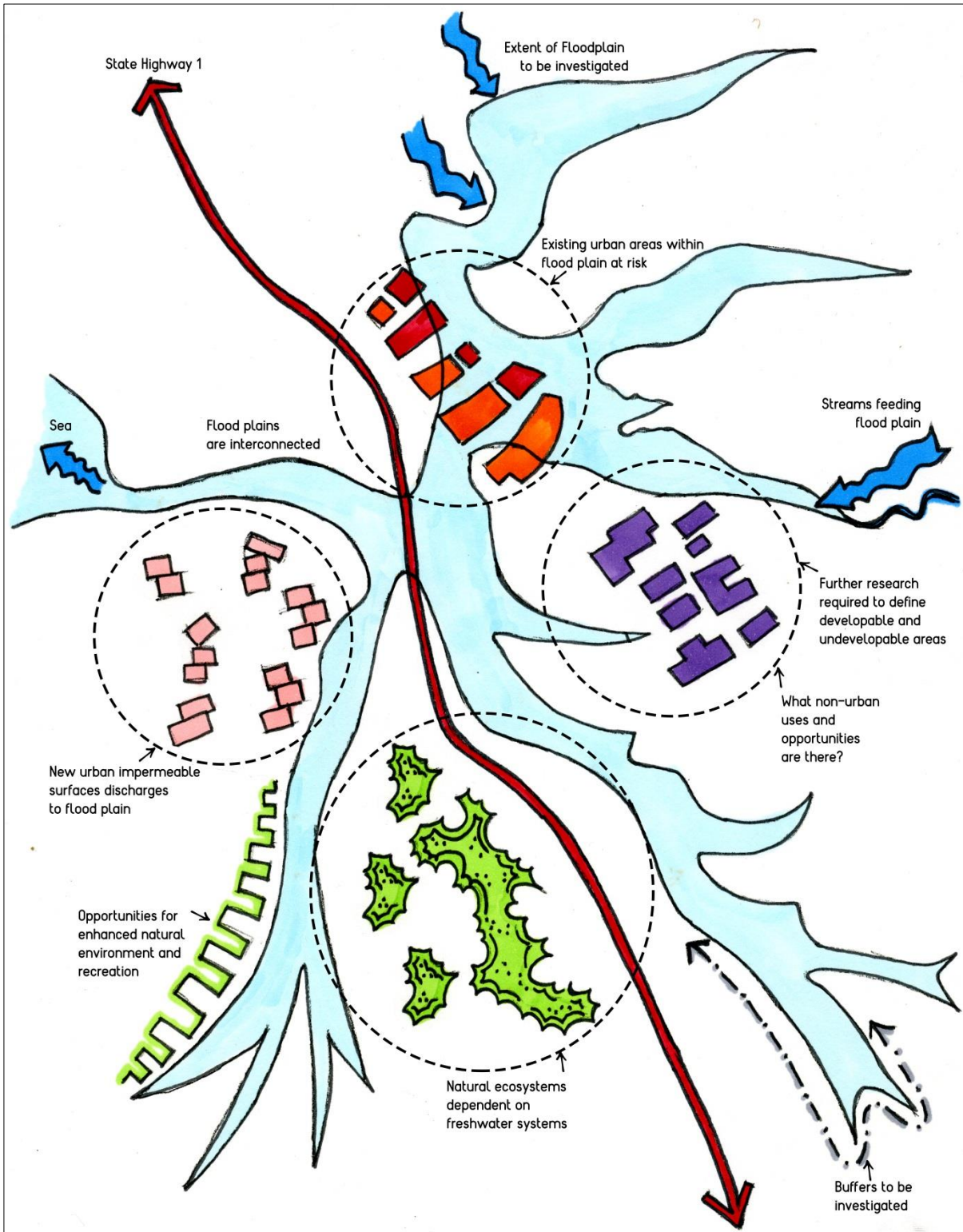
The council's GIS system shows representations of the extent of flooding for a 1 in 100 year rainfall event. This is illustrated in Figure 7. However in parts of Drury, this information is not yet accurate enough to define a flood plain for urban structure planning.

The Slippery Creek floodplain consists of an interconnected set of three flood plain catchments. Development in one of these catchments can affect flood levels elsewhere. Therefore localised solutions to flooding may have adverse effects elsewhere. Consequently this floodplain needs to be managed as a whole.

The council's Healthy Waters Department is undertaking further research on Drury catchments to inform the structure planning process.

Figure 17 illustrates some of the stormwater issues to be addressed in research and structure planning.

Figure 17 Diagram of stormwater issues to be addressed in structure planning



Other stormwater issues in the Drury Future Urban Zone.

The effects of sediment run-off on the Manukau Harbour need to be considered. Stormwater from the Drury Future Urban catchments drain into the Manukau Harbour through Drury Creek and Pahurehure Inlet. The Manukau Harbour is a low energy environment meaning that sediment that arrives there isn't removed and redistributed by waves or other water movement. This means that sediment builds up and smothers existing habitat.

The area around Drury Creek is a Significant Ecological Area – Marine 1 (SEA) (Refer to Figure 9). This recognises that it has rare sea grass habitat and is a feeding ground for rare wading birds. The marine SEA is sensitive to high levels of sediment and stormwater contaminants. The effects of stormwater runoff on this marine SEA need to be considered.

There are Quality Sensitive and High Use aquifers areas in parts of the Drury structure plan area. Any effects of urban development on these aquifers need to be considered.

Stormwater infrastructure also needs to consider issues such as the stability of the soil (geotechnical information), transport networks, ecological corridors and open space for the public.

Water Sensitive Design

Water sensitive Design will be applied to address the above issues. Water sensitive design principles include:

- Integrated planning that considers the location of roads, reserves and parks and stormwater infrastructure to protect streams and minimise the effects on receiving environments like the Manukau Harbour.
- Protecting and enhancing the natural values of existing stream systems.
- Addressing stormwater effects (runoff and contaminants) as close to the source as possible.
- Using natural hydrological features (e.g. streams, floodplains and wetlands) and green infrastructure as part of the stormwater infrastructure where possible.

By retaining stormwater runoff at source and using streams as part of the stormwater infrastructure we can reduce the amount of stormwater and reduce stream erosion as well as keep a more constant level of water in streams and aquifers – which is great for stream health. Using natural features such as streams as part of stormwater infrastructure is often complementary with areas that have ecological value or could be used for public open space.

Figure 18 below is from the guideline document “GD04” and illustrates the Water Sensitive Design approach to management of urban development.

Figure 18 Water Sensitive Design approach applied to urban development.

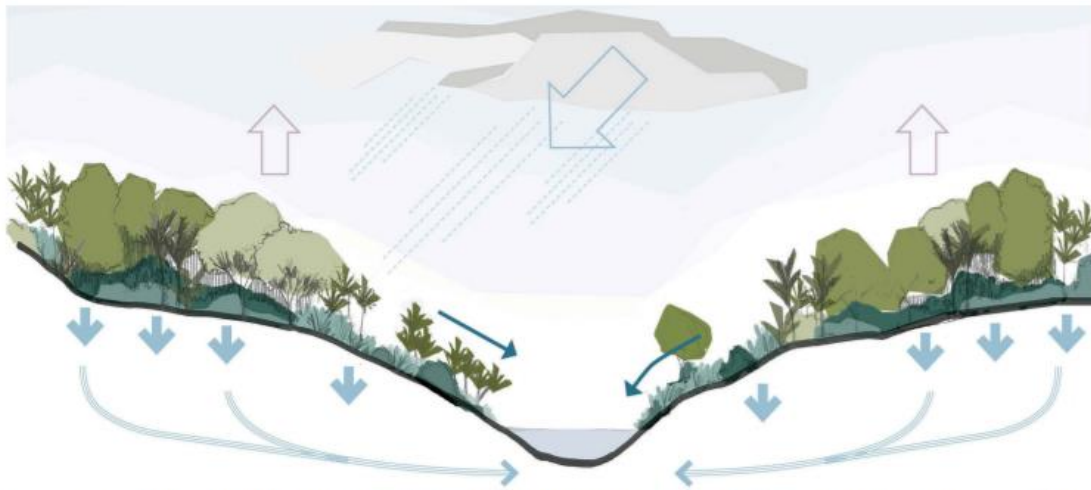


Figure 4: The water cycle interacts with plant and soil systems that capture, infiltrate and transpire rainwater and stormwater runoff.

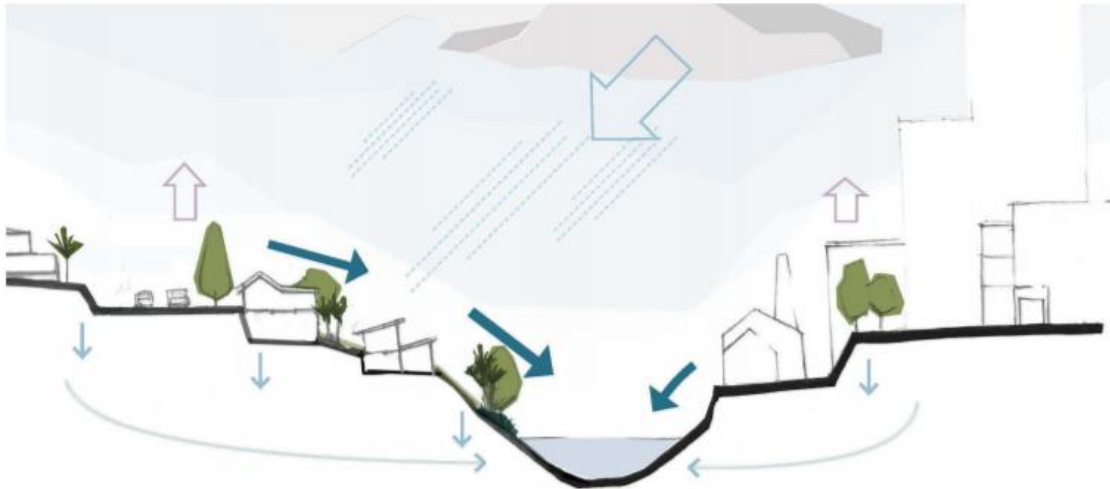


Figure 5: A developed catchment has increased overland and reticulated flows directed rapidly to receiving environments, bypassing natural systems and processes.

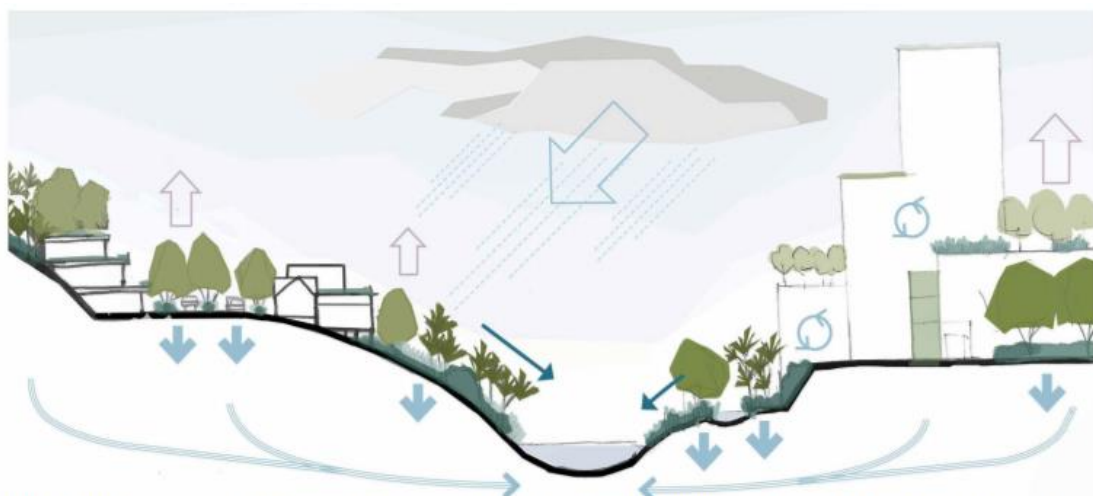


Figure 6: A WSD approach protects natural systems and directs runoff to landscape areas that have been designed to utilise natural processes to treat and retain runoff.

KEY:

 precipitation
  evapotranspiration
  shallow infiltration
  deep infiltration
  surface runoff

6.2.4 Parks and open space

Parks and open space requirements will be considered in Drury structure planning. Important concepts and principles for parks and open space provision in Drury are outlined below.

The Parks and Open Spaces Strategic Action Plan (POSSAP) target over next 10 years is to “Maintain and extend an integrated network of quality open spaces across the region that meets community needs and provides a diverse range of recreational opportunities by 2040”. Parks and open space contribute to Auckland’s quality of life and the vision for Auckland being the most liveable city in the world.

The five open space zones used to manage activities include:

- Open Space – Conservation Zone;
- Open Space – Informal Recreation Zone;
- Open Space – Sports and Active Recreation Zone;
- Open Space – Civic Spaces Zone; and
- Open Space – Community Zone.

The following Auckland Unitary Plan policies apply generally to open space areas.

1. Design, develop, manage and maintain open spaces to:
 - (a) provide for the needs of the wider community as well as the needs of the community in which they are located;
 - (b) achieve the objectives for the open space zone;
 - (c) use resources efficiently and where appropriate be adaptable and multifunctional;
 - (d) provide for people of differing ages and abilities;
 - (e) be safe and attractive to users; and
 - (f) where appropriate for the zone, reflect the natural, heritage and landscape values of the area.
2. Develop open spaces which reflect Mana Whenua values where appropriate, including through:
 - (a) restoring and enhancing ecosystems and indigenous biodiversity, particularly taonga species;
 - (b) providing natural resources for customary use; and
 - (c) providing opportunities for residents and visitors to experience Māori cultural heritage, while protecting Māori cultural heritage and sites and
 - (d) features of significance to Mana Whenua.
3. Enable the provision of infrastructure necessary to service open spaces and recreation facilities.

4. Enable the construction operation, maintenance, repair and minor upgrading of infrastructure located on open spaces.

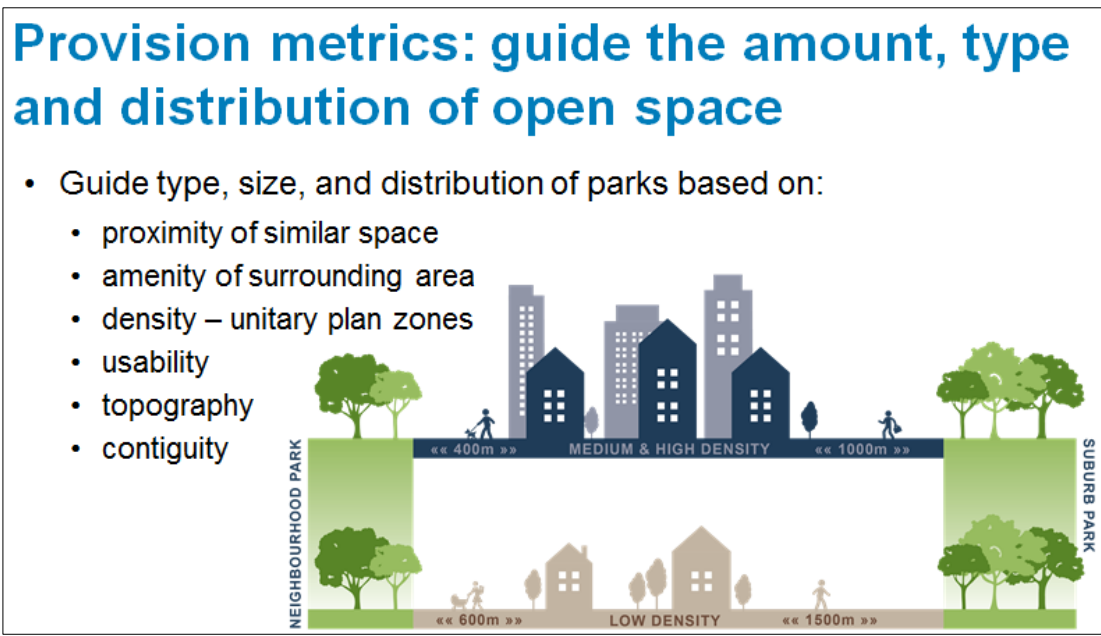
Figures 19 and 20 summaries the council’s approach to provision of open space.

Figure19 Open space network principles from the Open Space Provision Policy 2016

Network principles: guide how open space should be located and configured



Figure 20 Open space provision metrics.



The six primary types of open space used to achieve recreational and social outcomes are:

- pocket parks (0.1 to 0.15ha)
- neighbourhood parks (0.3 – 0.5ha)
- suburb parks (3 – 10ha)
- destination parks (30ha or larger)
- civic spaces (less than 0.1 to 0.4ha)
- connections and linkages.

Figures 21 and 22 show an existing: civic space in Newmarket and an existing open space connection (esplanade reserve) in Millwater.

Figure 21 Lumsden Green civic space (sourced from Open Space Provision Policy 2016)



Figure 22 Open space connection at Millwater (sourced from Open Space Provision Policy 2016)



Preliminary Drury structure planning research indicates that 40 additional neighbourhood parks and 7 additional suburb parks may be required. Further park requirements will be determined through structure planning.

In keeping with the council's philosophy of developing integrated parks and open space networks, it is envisaged that future parks and open space provision will be based on the geographic and natural features of the area and the existing and proposed road network. It will also be informed by public transport infrastructure and routes. Where possible, parks will be formed as nodes along coastal and riverine esplanade reserves, ecological corridors and roads containing integrated walkways and cycleways.

A broad overall approach to open space planning also includes taking into account:

- Improving the quality and connections of existing open space.
- Increasing the quantity of new open space within new areas and ensuring connections are developed to the existing network.
- That the location of parks should be along the existing green corridors, to provide the backbone of a connected open space network.
- The location of each park should be influenced by the criteria outlined in Council's Open Space Provision Policy 2016.

6.2.5 Coastal values, constraints and opportunities

The Drury structure plan area includes coastline in north-west Drury. This coastline adjoins the southern Manukau Harbour at Oira Creek, Drury Creek and Ngakoroa Creek. Overall there is about 3.2 km of coastline within the Drury structure plan area. Figure 22 is a 2010 aerial photo of coastline in Drury structure plan area.

Figure 23 Aerial photograph of the coastal edge in the north west of the Drury structure plan area.

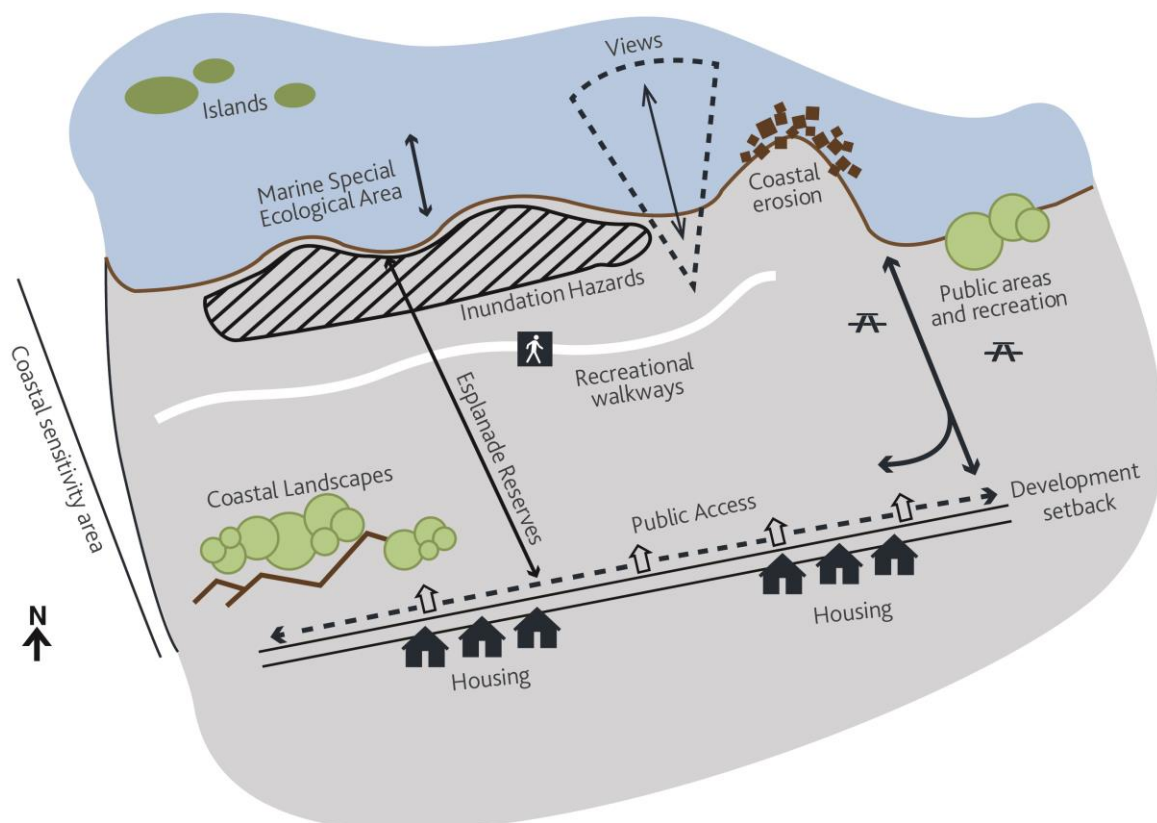


There are a variety of values, constraints and opportunities on the coastal edge. Structure planning of the coastal edge needs to consider:

- public access to and along the shore
- the natural character of the coastline
- marine significant ecological areas
- views of the sea and from the sea
- recreation opportunities
- heritage and cultural values
- restoration opportunities
- coastal erosion hazards
- coastal inundation hazards
- the effect of stormwater runoff on the quality of the harbour
- the development value and opportunity of coastal land.

These are illustrated conceptually below in Figure 24. Overall these values and opportunities can be considered as a coastal sensitivity area with decreasing sensitivity as the distance from the shore edge increases.

Figure 24 Conceptual diagram of coastal values, constraints and opportunities.



All these values and constraints need to be integrated in structure planning of the coastal edge of Drury. The end result is likely to combine coastal esplanade reserves and planning controls to manage effects on values while recognising opportunities.

6.3 The vision

A proposed vision and objectives has been developed for Drury structure planning. This is set out below organised in themes.

6.3.1 Vision for Drury

Drury is a sustainable, liveable, compact and accessible place with residential options close to a variety of employment opportunities. It is well connected to the wider Auckland region through the rail and road networks. It also respects cultural and heritage values.

6.3.2 Key themes and objectives

Theme 1 – community focus

Objectives

Drury has a strong community focus with accessible local, neighbourhood centres and providing business and employment opportunities for residents.

Employment areas and community facilities are located within short to medium distances from residential areas as well as elsewhere in Auckland.

Social infrastructure (such as education, healthcare, retirement village facilities) provision is enabled.

Theme 2 – quality built environment

Objectives

A range of housing choices within Drury area recognising the diverse needs of communities and the changing demographics.

Drury has a compact urban form with increased residential densities close to centres and public transport services.

Integrated open space and parks in urban residential areas, linked by transport networks (roads, cycleways, footpaths).

Public spaces including parks and roads have good landscaping.

Drury is a place that respects and celebrates its relationship with mana whenua and protects its historic heritage and character (need to works on this one a bit more).

Theme 3 – a well-connected Drury

Objectives

The transport network responds to anticipated economic growth by providing efficient, resilient and safe connections to employment areas and centres within Drury and the wider Auckland region.

Frequent, reliable and attractive public transport options provided by enhancing network connections to support the growth of centres and high density residential development along key transport routes.

Safe, well connected cycle and pedestrian network to provide high amenity linkages between localised activities and surrounding areas.

Theme 4 - integration with infrastructure delivery

Objective

Land development and infrastructure delivery is sequenced to match funding and provide networks that are cost effective to install and maintain.

Theme 5 – natural hazards

Objective

The location and form of development minimises natural hazards.

Theme 6 – the natural environment

Objectives

Freshwater quality within the catchment is improved

The quality of the marine receiving environment is maintained or improved.

The freshwater management functions of riparian margins are improved.

Protect and improve biodiversity.

Feedback on the above vision and objectives is welcome.

Residential Zones

- Large Lot
- Rural and Coastal Settlement
- Single House
- Mixed Housing Urban
- Mixed Housing Suburban
- Terraced Housing and Apartment Buildings

THE AUCKLAND
UNITARY PLAN



Terraced Housing and Apartment Buildings

- Objectives seek to achieve an *urban* residential character, enabling terrace housing or apartment building development of five – seven storeys.
- Applied to areas that are highly accessible adjacent to metropolitan, town and local centres and transport links
- All dwellings require resource consent
- No parking required
- Height 16m (or as specified)
- No density limit



Terrace housing

THE AUCKLAND

UNITARY PLAN



Apartments



Mixed Housing Urban zone



Low rise terrace housing



Low rise apartments



Detached dwelling

- Objectives seek to achieve an *urban* residential character of up to three storeys.
- Applied to areas with good access to transport and services, close to higher density residential, business zones and transport links.
- Height 11m (+ 1m @ 15 degrees)
- 1-2 dwellings is permitted, 3 or more requires resource consent
- No density limit (300m² min site area for vacant lot subdivision)

Mixed Housing Suburban zone

- Objectives seek to achieve a *suburban* residential character of up to two storeys.
- Most widespread residential zone that provides a transition between the Mixed Housing Urban and Single House zone.
- Height 8m (+ 1m @ 15 degrees)
- 1-2 dwellings is permitted, 3 or more requires resource consent
- No density limit (400m² min site areas for vacant lot subdivision)



Attached/duplex dwellings



Detached dwelling



Low rise terrace housing

Single House zone

- Objectives seek to maintain and enhance the amenity values of established residential neighbourhoods
- Objectives seek to ensure that development is in keeping with the neighbourhood's existing or planned suburban built character of predominantly one to two storey buildings.
- Provide for minor dwellings and conversion of existing dwellings into two.
- Height 8m (+ 1m @ 15 degrees)
- Density limit one dwelling per site (600m² min site area for vacant lot subdivision)



Large Lot zone

- Applied in areas with physical constraints, ecological features, landscape qualities or infrastructure constraints
- Height 8m + 1m @ 15°
- 20% building coverage or 400m² whichever is lesser
- 35% impervious surface areas or 1400m² whichever is lesser
- Density control of one dwelling per site - 4000m² min site area for vacant lot subdivision



Density & Minimum Site Size for Subdivision

- In the Mixed Housing and Terrace Housing and Apartment Building zones the minimum site size for subdivision encourages land use consent prior to subdivision
- In the Mixed Housing and Terrace Housing and Apartment Building zones the number of dwellings that can be built will depend on the bulk and location controls (Height, Height in Relation to Boundary, Coverage, Yards), vehicle access controls and site characteristics
- All subdivision must comply with general standards that address site size and shape, providing legal and physical access, servicing, overland flow paths and protecting existing vegetation

	Large Lot	Rural and Coastal	Single House	Mixed Housing Suburban	Mixed Housing Urban	Terraced Housing & Apart. Bldgs
Density	One dwelling per site	One dwelling per site	One dwelling per site	No density	No density	No density
Vacant lot subdivision	4000m ²	2500m ²	600m ²	400m ²	300m ²	1200m ²

🗨️ **Have your say** in shaping Auckland's future together.

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