

Water & Wastewater Servicing Topic Report

Silverdale West Industrial Area Structure Plan

January 2019

Prepared by Andre Stuart, Alex Wong & Lindsay Wilson
Watercare Services Ltd

Table of Contents

1	Executive Summary	3
2	Introduction	4
3	Existing environment	5
4	Plans, projects and initiatives	7
5	Planning context.....	12
6	Constraints, opportunities, and information gaps	18

1 Executive Summary

There are existing local network assets in place to provide both water and wastewater services to the existing urban area in Silverdale, Orewa, and Whangaparoa Peninsula. Projects are underway to provide bulk water and wastewater services to the live zoned urban land in Wainui. There are currently no constructed assets in the Silverdale West Industrial structure plan area or the wider adjoining future urban zoned land.

Water

The current trunk water supply to the Hibiscus Coast area is via the Orewa 1 and 2 watermains, which are both routed along East Coast Road. Trunk water improvements are currently being undertaken to provide for growth in the Wainui urban zoned land.

To service land in the Structure Plan area, upgrades include:

- A new booster pump station located on the Orewa 2 watermain.
- A new connection from the Orewa 2 watermain across to the Silverdale West Industrial zone, and construction of part of the Orewa 3 watermain within the Structure Plan area (initially fed from Orewa 2).

The long term plan for servicing growth in the Hibiscus Coast including the Silverdale West Industrial area includes:

- A new Orewa 3 trunk watermain from Albany or Schnapper Rock reservoirs (south), which will pass through the Silverdale West Industrial zone on its way north to Orewa / Whangaparaoa Peninsula.
- New reservoir storage to supplement future localised growth and trunk operation.
- Abandonment of the existing Orewa 1 watermain.

Wastewater

The infrastructure being built for Wainui provides a connection point for the development in the Silverdale West Industrial area. This is a new tunnel under SH1 that connects into the Orewa Pump Station.

To service land in the Structure Plan area, North of Wilks Road, upgrades include:

- Two new pump stations and connecting pipelines to connect to the Wainui wastewater tunnel.

Further additional pump station and pipelines will be required to service the Structure plan area South of Wilks Road, which will interconnect with the conveyance route that will ultimately connect and discharge to the Wainui tunnel.

Staged upgrades of the main wastewater conveyance network from Orewa to the Army Bay WWTP will also be required to accommodate future growth demands, however, this is not needed for the staged release of the Structure Plan area.

The Army Bay Wastewater Treatment Plant (WWTP) is located on the eastern end of the Whangaparoa peninsula, near Shakespear Regional Park and the Naval base. A project to upgrade the outfall capacity at the Army Bay WWTP has just been completed. Watercare is currently in the process of applying for a new discharge consent for the Army Bay WWTP, which will provide for the existing urban area, Wainui, the structure plan area and the surrounding future urban zone in Dairy Flat.

2 Introduction

2.1 Purpose and scope of the report

This is one of a number of topic papers that have been prepared for the Silverdale West Industrial Area Structure Plan project.

This report outlines the existing environment with regards to water and wastewater servicing and summarises the opportunities, constraints, of the study area and gaps in information in respect to water and wastewater servicing.

2.2 Study Area

The structure planning process applies to the land area enclosed by a black line in Figure 1. The area is approximately 607ha.

This land is located to the west of the State Highway 1 motorway and to the east of Dairy Flat Highway. The area includes the Pine Valley East area in the north, the Silverdale West area in the centre and the Postman Road area to the south. The North Shore Airport is surrounded on three sides by the Postman Road part of the structure plan area.

The structure plan area is zoned Future Urban in the Auckland Unitary Plan Operative in Part (AUPOP). The land is also zoned Future Urban to the west of the Silverdale West area, to the east of the airport across the motorway, and to the south of the airport. To the west of the Postman Road area across the Dairy Flat Highway the land is zoned Mixed Rural and there is a small area of industrial land at the Dairy Flat Highway/Kahikatea Flat Road intersection. This reflects a legacy local service area. Immediately to the north of the structure plan area there is 300ha of urban zoned land at Wainui.

The wider Upper Orewa, Wainui, Silverdale and Dairy Flat Future Urban area is approximately 3,500ha extending from Upper Orewa in the north to Dairy Flat in the south.

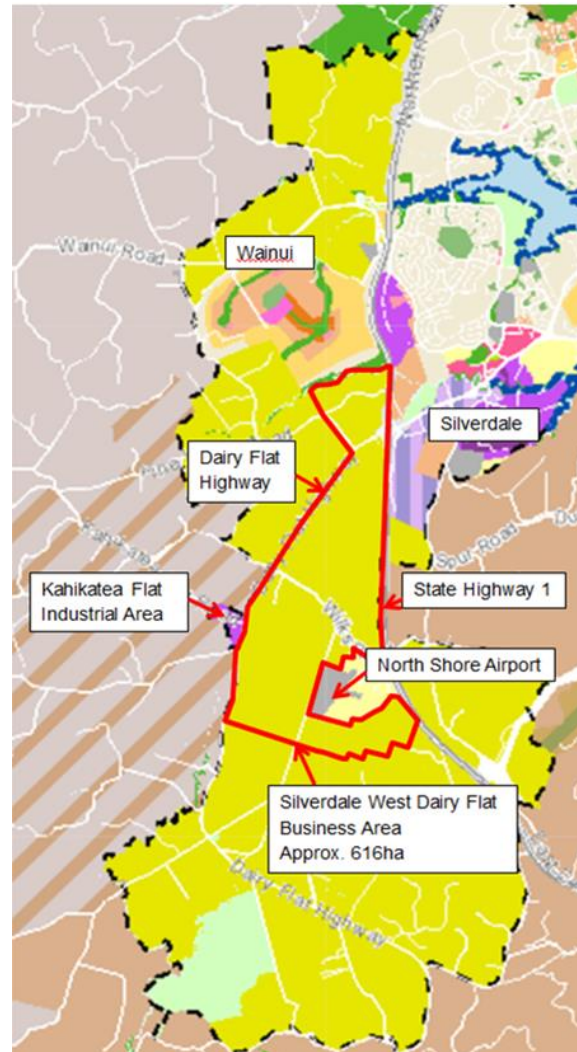


Figure 1: Silverdale West Dairy Flat Industrial Area Structure Plan study area (outlined in red)

3 Existing environment

There are existing local network assets in place to provide both water and wastewater service to the existing urban area in Silverdale, Orewa, and Whangaparaoa Peninsula. There are currently no constructed assets in the Silverdale West Dairy Flat Industrial structure plan area or the wider adjoining future urban zoned land.

3.1 Water

The Hibiscus Coast water supply zone encompasses the Waiwera, Hatfields Beach, Orewa, Silverdale and Whangaparaoa areas.

As illustrated in Figure 2, the Glenvar Reservoir (117m HGL) provides the driving point (grade) feeding north towards the Orewa and Whangaparaoa peninsula. Water is delivered via the Orewa 1 (310mm) and Orewa 2 (470mm) trunk watermains along East Coast Road

and are routed side by side with multiple cross connections for approximately 11km. There are five existing Bulk Supply Points (BSPs) on the Orewa 1 & 2 watermains supplying areas of the local network. When the trunk watermains reach Hibiscus Coast Road they split, north (Orewa 1) towards Maire Road Reservoir and east (Orewa 2) towards Scott Road Reservoir. The remaining local network is supplied via these two reservoirs with additional localised storage / pump stations / zones downstream.

To increase the capacity of the Orewa 1 watermain during peak demands and to provide security of supply, an existing booster pump station is situated on the Orewa 1 (4.2km along from the Glenvar reservoir) watermain.

Trunk water improvements are currently being undertaken as outlined in Section 4.1.1 'Orewa 1 Northern Replacement', to provide for growth in the Wainui urban zoned land.

The plans to provide water services to the Structure Plan area are provided in Section 4.1.

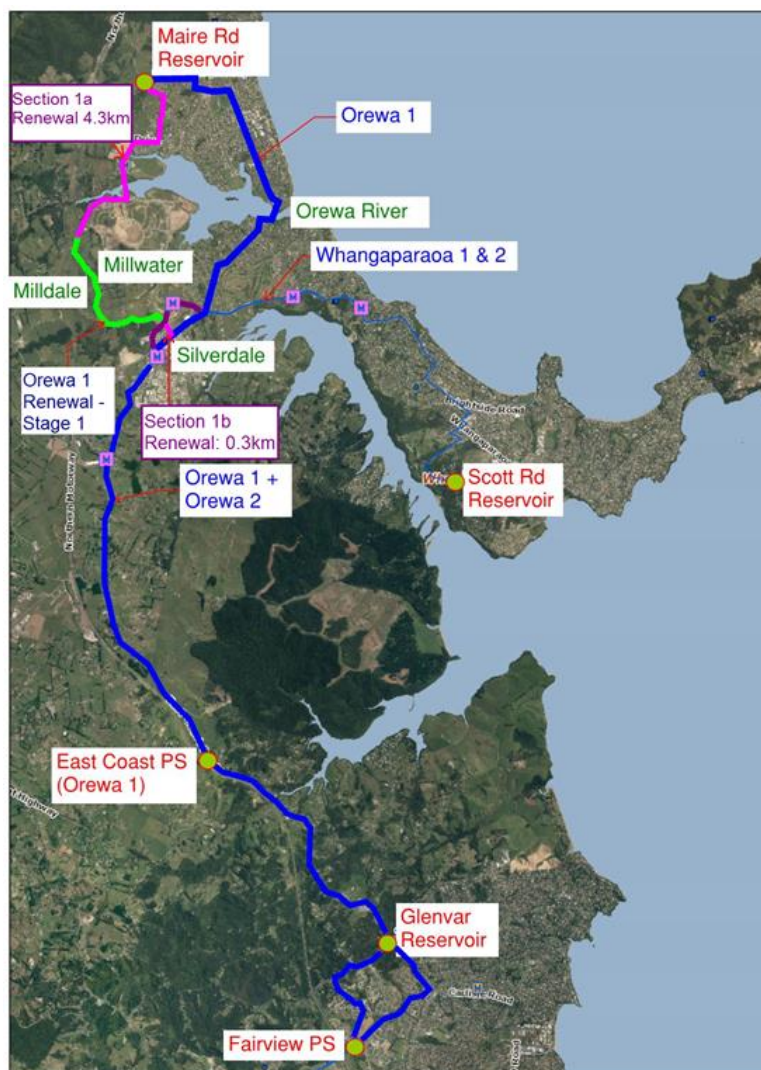


Figure 2: Northern Supply Area Trunk System

3.2 Wastewater

The Army Bay WWTP is located on the eastern end of the Whangaparoa peninsula, near Shakespear Regional Park and the Naval base. It was built in 1982 and upgraded in 1998 and 2005.

The wastewater trunk main spans approximately 16km from Orewa through to the Army Bay WWTP and serves as the main wastewater conveyance route. It consists of 3 main pump stations located in Orewa, Stanmore Bay and Hobbs Bay, each progressively increasing in capacity from 180L/s to 650 L/s, to cater for local catchments that progressively drain into the system. The connecting pipelines range from 450mm to 750mm in diameter linking the pump stations and ultimately conveying the flow to the Army Bay WWTP.

There is sufficient trunk wastewater capacity to provide for growth in the Wainui urban zoned land. The infrastructure being built for Wainui provides a connection point for the development in the Silverdale West Dairy Flat Industrial area. Staged upgrades of the wastewater network to the Army Bay WWTP will be required to accommodate future growth demands.

The plans to provide wastewater services to the Structure Plan area are provided in Section 4.2.

4 Plans, projects and initiatives

4.1 Water

There are several identified limitations in the existing trunk water supply network, they are:

- Ageing trunk water infrastructure requiring renewal in the medium term
- Limited current system capacity to accommodate growth
- Significant projected growth to the west of SH1, away from existing infrastructure

To service land in the Structure Plan area, the following upgrades are required, as shown in Figure 3:

- A new booster pump station located on the Orewa 2 watermain.
- A new connection from the Orewa 2 watermain across to the Silverdale West Industrial zone, and construction of part of the Orewa 3 watermain within the Structure Plan area (initially fed from Orewa 2).

The long term plan for servicing growth in the Hibiscus Coast including the Silverdale West Industrial area includes:

- A new Orewa 3 trunk watermain from Albany or Schnapper Rock reservoirs (south) which will pass through the Silverdale West Industrial zone on its way north to Orewa / Whangaparaoa Peninsula.
- New reservoir storage to supplement future localised growth and trunk operation.
- Abandonment of the existing Orewa 1 watermain.

Local networks will be constructed by developers and supplied from new bulk supply points to service development as staging is determined. A concept for future servicing of the Silverdale West Dairy Flat Industrial Area is summarised in Figure 3 below.

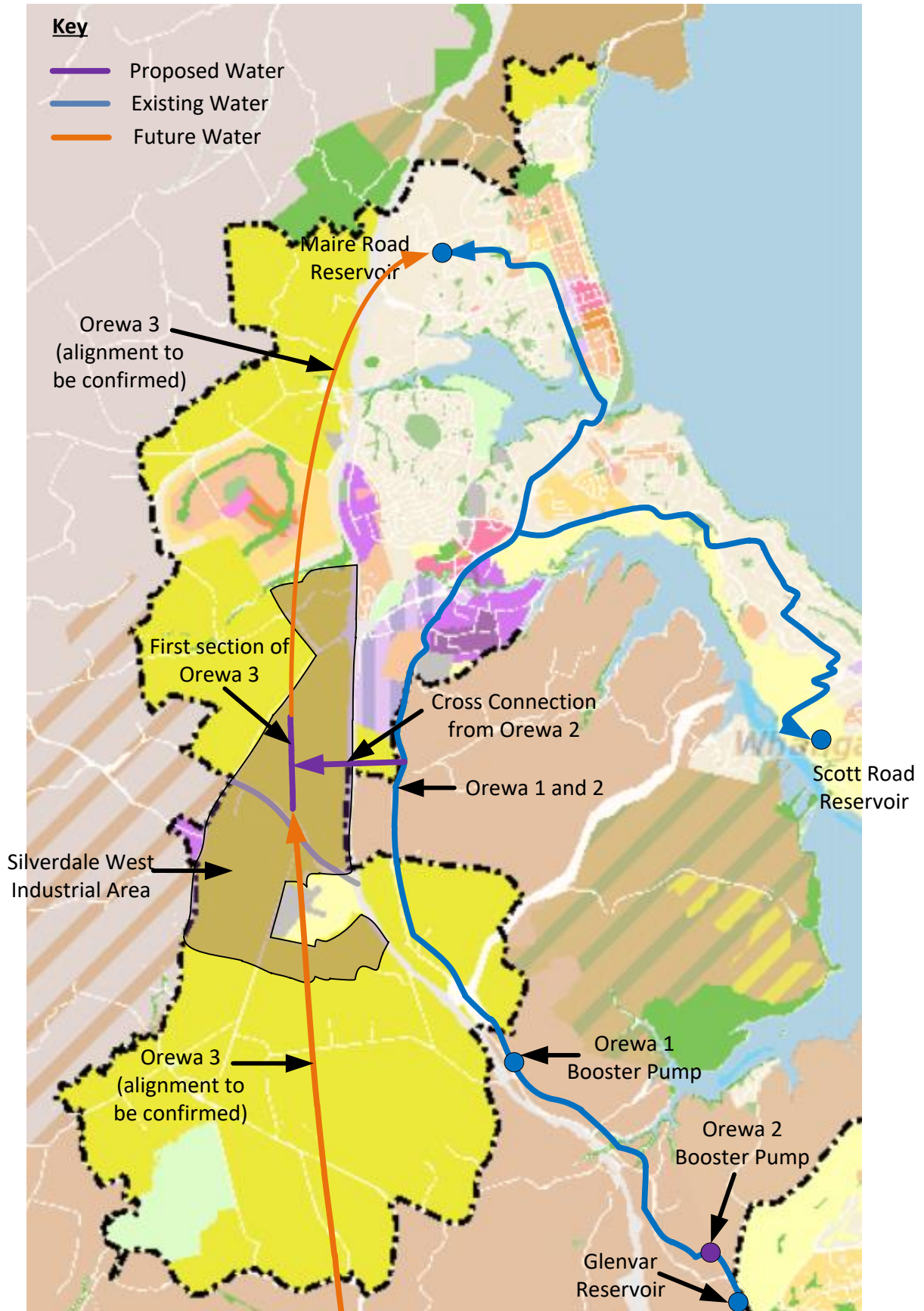


Figure 3: Water servicing

4.1.1 Orewa 1 Northern Replacement

The existing Orewa 1 consists of 18.5 km (300mm) pipe and was constructed in 1993. Supply to the region was supplemented with construction of the Orewa 2 in 2006. There are multiple cross-connections with the Orewa 2 along the common East Coast Road alignment south of Silverdale, and this provides some redundancy in the event of a failure.

The northern extent of the existing Orewa 1 pipeline will be upgraded to a 470mm pipeline to service growth in the Millwater and Milldale (part of the Wainui urban zoned land) developments. This section is currently under design and contains sections which have already been installed during earlier property development works.

For the Milldale development, the first 1,200 dwellings will be supplied via the local network. Additional dwellings, including the transfer of the 1,200, would then be supplied from a new BSP located on the Orewa 1 northern replacement watermain via a new BSP.

4.2 Wastewater

The connection point for wastewater from the Structure Plan area will be via the new Wainui wastewater tunnel, which is currently under construction. The upgrades are shown in Figure 4 on the following page.

A series of local network pump stations and gravity wastewater pipelines, consisting of two new pump stations and approximately 5.1km of pipeline connecting to the Wainui tunnel, will be required to service the land in the Structure plan area, North of Wilks Road.

A further additional pump station and approximately 4.5km of pipeline, connecting to the new conveyance route that delivers wastewater flow from the Structure Plan to the Wainui tunnel, will be needed to service the land South of Wilks Road.

To service growth across the region, progressive upgrades to the existing trunk wastewater network will be phased with growth. In particular, substantial upgrades to the Orewa, Stanmore Bay, and Hobbs Bay pumping stations, plus the Army Bay WWTP will be required, the timing of each upgrade will be triggered by the rate of development. However, this should not be a constraint on the proposed staged release of land in the Structure Plan area.

Local networks will be constructed by developers to service development as staging is determined.

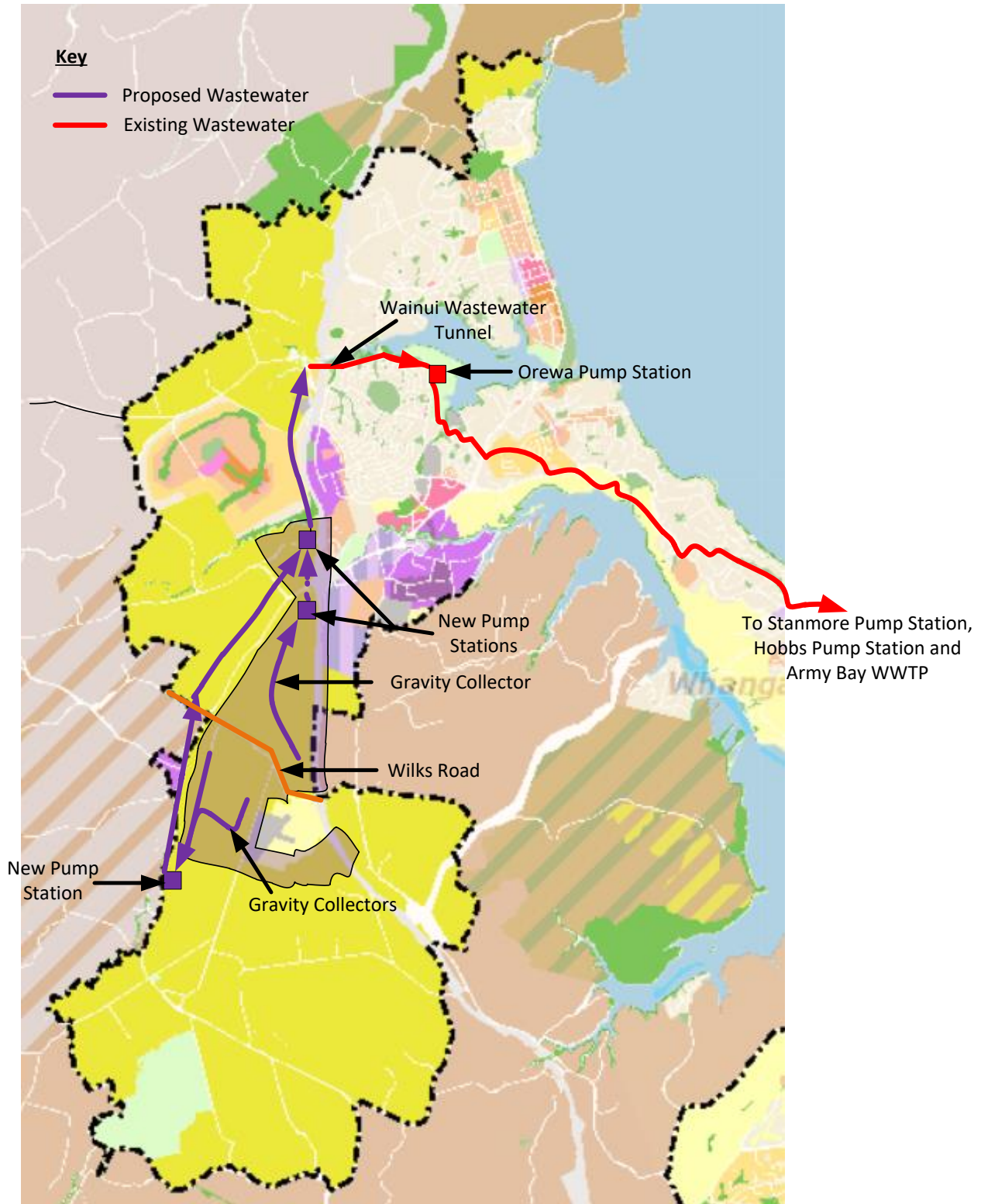


Figure 4: Wastewater servicing

4.2.1 Army Bay Wastewater Treatment Plant Outfall

A project to construct a new outfall at the Army Bay Wastewater Treatment Plant has recently been completed. This project provides the required capacity to discharge treated wastewater effluent for a population of 135,000. The outfall has been constructed in such a way that it can be easily expanded to cater for a population of 185,000.

Watercare is currently in the process of applying for a new discharge consent for the Army Bay WWTP. The discharge consent has identified Army Bay WWTP as the preferred solution to providing wastewater treatment to the existing urban area, Wainui and the surrounding future urban zone in Dairy Flat, including the Silverdale West Industrial area. The discharge consent when granted will determine the technology requirements for future upgrades and expansion of the WWTP will be progressively carried out to meet population growth.

4.2.2 Wainui Wastewater Tunnel

To service the live zoned land in Wainui and the wider future urban zone land north of Wilks Road in Dairy Flat, a 1,050mm diameter gravity wastewater tunnel, 1,140m in length, is currently being constructed. The tunnel will extend from the western side of the Northern Motorway, east, roughly following Orewa River towards Arran Drive, where it connects into the existing Orewa West sewer line.

4.2.3 Wastewater network model

Watercare is carrying out a wastewater network modelling study which will be used to confirm the requirements for network improvements and upgrades. This will align the network and treatment plant performance and include improvements to the operation of the network (including Real Time Control) to ensure that the system works optimally.

5 Planning context

5.1 National Policy Statement/s

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

Auckland is defined as high growth area (by MFE guidance), and accordingly there are a number of objectives which must be implemented to give effect to the NPS-UDC. In particular, Objective OD1 of the NPS-UDC requires the integration of urban growth and infrastructure. Objective D1 is delivered in part by Policy A3 which applies to any urban environment that is expected to experience growth.

Policy A3: When making planning decisions that affect the way and the rate at which development capacity is provided, decision-makers shall provide for the social, economic, cultural and environmental wellbeing of people and communities and future generations, whilst having particular regard to:

a) Providing for choices that will meet the needs of people and communities and future generations for a range of dwelling types and locations, working environments and places to locate businesses;

b) Promoting the efficient use of urban land and development infrastructure and other infrastructure; and

c) Limiting as much as possible adverse impacts on the competitive operation of land and development markets.

The key messages from the NPS-UDC is to provide a range of housing choice, efficient use of land and infrastructure and provide for current and future people and communities.

5.1.2 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.

Wastewater

(10) Manage the adverse effects of wastewater discharges to freshwater and coastal water by all of the following:

(a) ensuring that new development is supported by wastewater infrastructure with sufficient capacity to serve the development;

(b) progressively reducing existing network overflows and associated adverse effects by all of the following:

(i) making receiving environments that are sensitive to the adverse effects of wastewater discharges a priority;

(ii) adopting the best practicable option for preventing or minimising the adverse effects of discharges from wastewater networks including works to reduce overflow frequencies and volumes;

(iii) ensuring plans are in place for the effective operation and maintenance of the wastewater network and to minimise dry weather overflow discharges;

(iv) ensuring processes are in place to mitigate the adverse effects of overflows on public health and safety and the environment where the overflows occur;

(c) adopting the best practicable option for minimising the adverse effects of discharges from wastewater treatment plants; and

(d) ensuring on-site wastewater systems avoid significant adverse effects on freshwater and coastal water.

Freshwater and geothermal water quantity, allocation and use

(11) Promote the efficient allocation of freshwater and geothermal water by all of the following:

(a) establishing clear limits for water allocation;

(b) avoiding over-allocation of water, including phasing out any existing overallocation;

(c) safeguarding spring flows, surface waterbody base flows, ecosystem processes, life-supporting capacity, the recharge of adjacent aquifers, and geothermal temperature and amenity; and

(d) providing for the reasonable requirements of domestic and municipal water supplies.

(12) Promote the efficient use of freshwater and geothermal water.

(13) Promote the taking of groundwater rather than the taking of water from rivers and streams in areas where groundwater is available for allocation.

(14) Enable the harvesting and storage of freshwater and rainwater to meet increasing demand for water and to manage water scarcity conditions, including those made worse by climate change.

5.2 Auckland Plan (2050)

The Auckland Plan 2050 (“Auckland Plan”) is a long-term spatial plan to ensure Auckland grows in a way that will meet the opportunities and challenges of the future.

A key component of the Auckland Plan is the high-level Development Strategy for accommodating future growth until 2050, with the aim to provide for up to 70 per cent of growth within existing urban areas (defined by the 2010 Metropolitan Urban Limit) and up to 40 per cent outside of these areas, including in greenfield areas, satellite towns and rural and coastal towns.

The Auckland Plan aims to provide sufficient capacity for up to 313,000 dwellings and 263,000 extra jobs over the next 30 years. In the plan the Silverdale West Industrial structure plan area is identified as a Future Business Area and is located within the wider Upper larger Orewa, Wainui, Silverdale and Dairy Flat Future Urban area.

The Development Strategy and 30-year Infrastructure Strategy (another important component of the Auckland Plan) address the prioritisation, sequencing and funding of essential infrastructure. This includes requirements under the National Policy Statement on Urban Development Capacity to provide sufficient feasible development capacity in the medium and long term.

The Auckland Plan is a critical document in future Resource Management Act 1991 processes in Auckland. It will be a key driver of future plan changes to Unitary Plan, including

Council-initiated and private plan changes to "live zone" future urban areas. It will also be relevant for the assessment of future resource consent applications.

5.3 Future Urban Land Supply Strategy

The Auckland Plan has close links with the Future Urban Land Supply Strategy ("FULSS"). The FULSS informs the greenfield element of the Auckland Plan Development Strategy which makes up a portion of the overall growth anticipated over the next 30 years. The revised FULSS sets out sequencing for the release of development ready land (large future urban areas).

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 proposed sequencing of development ready future urban zoned land in Dairy Flat is as shown in Figure 5 below. The proposed business area in Silverdale – Dairy Flat is sequenced early to provide local employment opportunities and address demand on transport infrastructure.

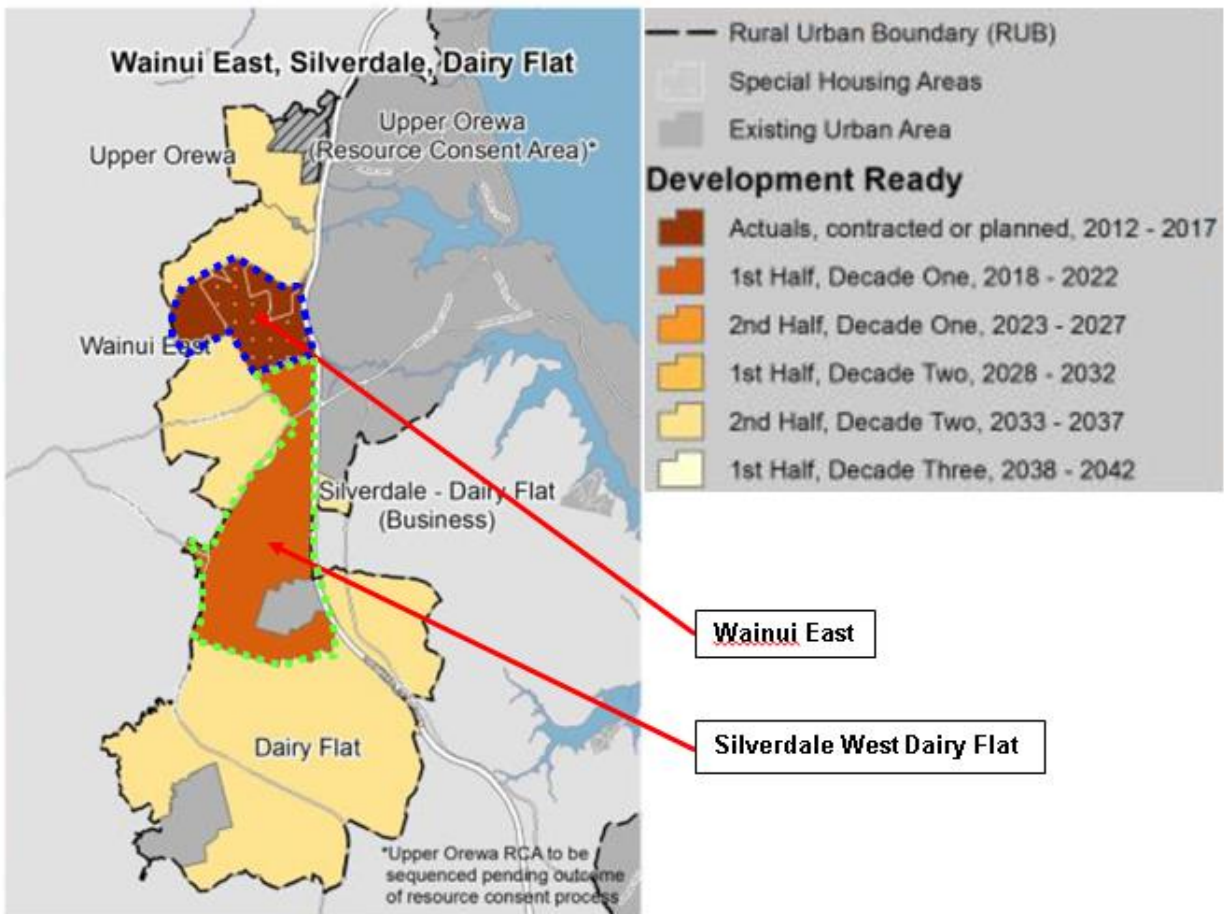


Figure 5: Future Urban Land Supply

This strategy also addresses the council's obligations under The NPS-UDC which requires the council to ensure there is greater focus on enabling urban development and that there is sufficient capacity for housing and businesses. As noted in section 5.1.1, NPS-UDC requires the integration of urban growth and infrastructure.

5.4 The Auckland Unitary Plan (Operative in Part) (2016)

Regional Policy Statement

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.

Of particular relevance is Section B3 – Infrastructure, which sets out objectives and policies relating to infrastructure. Policy 5 for example, requires that Infrastructure planning and land use planning are integrated to service growth efficiently. Policy 6 requires that Infrastructure is protected from reverse sensitivity effects caused by incompatible subdivision, use and development.

B3. - Infrastructure, transport and energy

B3.2.1. Objectives

- (1) Infrastructure is resilient, efficient and effective.
- (2) The benefits of infrastructure are recognised, including:
 - (a) providing essential services for the functioning of communities, businesses and industries within and beyond Auckland;
 - (b) enabling economic growth;
 - (c) contributing to the economy of Auckland and New Zealand;
 - (d) providing for public health, safety and the well-being of people and communities;
 - (e) protecting the quality of the natural environment; and
 - (f) enabling interaction and communication, including national and international links for trade and tourism.
- (3) Development, operation, maintenance, and upgrading of infrastructure is enabled, while managing adverse effects on:
 - (a) the quality of the environment and, in particular, natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character;
 - (b) the health and safety of communities and amenity values.

- (4) The functional and operational needs of infrastructure are recognised.
- (5) Infrastructure planning and land use planning are integrated to service growth efficiently.
- (6) Infrastructure is protected from reverse sensitivity effects caused by incompatible subdivision, use and development.
- (7) The national significance of the National Grid is recognised and provided for and its effective development, operation, maintenance and upgrading are enabled.
- (8) The adverse effects of infrastructure are avoided, remedied or mitigated

District Plan

Chapter E26 of the Auckland-Wide provisions sets out District Level objectives, policies and rules relating to infrastructure. These provisions provide a framework for the development, operation, use, maintenance, repair, upgrading and removal of infrastructure.

The plan recognises that Infrastructure is critical to the social, economic, and cultural well-being of people and communities and the quality of the environment. This means that in some circumstances other activities and development need to be managed in a way that does not impede the operation of infrastructure.

The plan also acknowledges that as well as benefits infrastructure can have a range of adverse effects on the environment, visual amenity of an area, and public health and safety. The sensitivity of adjacent activities, particularly residential, to these effects can lead to complaints and ultimately constraints on the operation of infrastructure. Managing these reverse sensitivity effects is essential.

E26. Infrastructure

E26.2.1. Objectives [rp/dp]

- (1) The benefits of infrastructure are recognised.
- (2) The value of investment in infrastructure is recognised.
- (3) Safe, efficient and secure infrastructure is enabled, to service the needs of existing and authorised proposed subdivision, use and development.
- (4) Development, operation, maintenance, repair, replacement, renewal, upgrading and removal of infrastructure is enabled.
- (5) The resilience of infrastructure is improved and continuity of service is enabled.
- (6) Infrastructure is appropriately protected from incompatible subdivision, use and development, and reverse sensitivity effects.

(9) The adverse effects of infrastructure are avoided, remedied or mitigated

6 Constraints, opportunities, and information gaps

This section summarises the water and wastewater constraints, opportunities, and information gaps of the structure plan area.

6.1 Constraints

6.1.1 Water

There is limited existing water capacity to provide for the development in the Silverdale West Dairy Flat Industrial area.

To service land in the Structure Plan area, upgrades include:

- A new booster pump station located on the Orewa 2 watermain.
- A new connection from the Orewa 2 watermain across to the Silverdale West Industrial zone, and construction of part of the Orewa 3 watermain within the Structure Plan area (initially fed from Orewa 2).

The long term plan for servicing growth in the Hibiscus Coast including the Silverdale West Industrial area includes:

- A new Orewa 3 trunk watermain from Albany or Schnapper Rock reservoirs (south) which will pass through the Silverdale West Industrial zone on its way north to Orewa / Whangaparaoa Peninsula.
- New reservoir storage to supplement future localised growth and trunk operation.
- Abandonment of the existing Orewa 1 watermain.

6.1.2 Wastewater

The infrastructure being built for Wainui provides a connection point for the development in the Silverdale West Dairy Flat Industrial area. This is a new tunnel under SH1 that connects into the Orewa Pump Station.

To service land in the Structure Plan area, North of Wilks Road, upgrades include:

- Two new pump stations and connecting pipelines to connect to the Wainui wastewater tunnel.

To service the land South of Wilks Road that is in the Structure Plan area will require an additional pump station and additional connecting pipelines.

6.2 Opportunities

Watercare is working with Auckland Council and developers to determine the location and sizing of new water and wastewater infrastructure, and upsizing where it is appropriate to meet the servicing needs in the wider future development areas.

6.3 Information gaps

Servicing plans for water and wastewater servicing in the FUZ are being worked on to test proposed locations of pipeline, pump station and reservoir locations.

Find out more: **phone 09 301 0101**
or visit **shapeauckland.co.nz**