

**Appendix 5.3**

**Kāpiti Coast District Council:  
NPS-UDC assessment of infrastructure  
availability to support future growth**

## Contents

|  |    |
|--|----|
| Executive summary.....                                       | 1  |
| Introduction.....  | 2  |
| Approach to assessing infrastructure capacity.....           | 2  |
| Forecast population and dwelling growth for Kāpiti.....      | 3  |
| Capacity of Kāpiti Coast's water supply.....                 | 5  |
| Description of schemes .....                                 | 5  |
| Measuring network performance.....                           | 7  |
| Summary of Assessment.....                                   | 7  |
| Capacity of Kāpiti Coasts wastewater systems.....            | 11 |
| Description of systems.....                                  | 11 |
| Measuring network performance.....                           | 13 |
| Summary of Assessment.....                                   | 13 |
| Capacity of Kāpiti Coasts stormwater network .....           | 16 |
| Description of network.....                                  | 16 |
| Measuring network performance.....                           | 19 |
| Summary of Assessment.....                                   | 19 |
| Assessing capacity of Kāpiti Coast's transport network.....  | 21 |
| Description of network .....                                 | 21 |
| Measuring network performance.....                           | 23 |
| Summary of Assessment.....                                   | 25 |
| Assessing capacity of Kāpiti Coast's open space network..... | 30 |
| Description of network .....                                 | 30 |
| Measuring network performance.....                           | 31 |
| Summary of assessments .....                                 | 32 |
| Assumptions made in assessments .....                        | 35 |

### Executive summary

The Kāpiti Coast District is set to grow by more than 13,000 people by 2047. The availability and cost of infrastructure to service new development is a significant factor affecting how and where growth and development takes place.

This report provides an assessment of Kāpiti District's key infrastructure networks for water supply, wastewater, stormwater, open space, and local transport, and their ability to meet future growth forecast for the District, while continuing to also meet the needs of existing residents.

Over the last few years, Council has been in the process of reviewing its District Plan and infrastructure management as part of the 30-Year Infrastructure Strategy. This process has helped Council to better identify and align infrastructure investment required to support the on-going operation and expansion of network infrastructure. This includes accounting for the future needs of growth.

Overall, Kāpiti is well placed to meet future needs across its range of local infrastructure. This includes the ability for most networks to meet anticipated growth beyond the next 10 years and, in the majority of cases, to 30 years. However, this requires significant on-going investment and is not without its challenges; with a number of planned investments providing critical points to meeting needs of new growth, such as new water mains to service Greenfield growth in Waikanae.

However, undertaking this NPS-UDC assessment has also helped identify areas for improvement. This includes the need to prioritise the update of modelling for Ōtaki wastewater and water supplies. The previous modelling data for Ōtaki used information that saw growth in Ōtaki declining in a few years' time, whereas the most recent Forecast ID shows moderate growth in the Ōtaki area that is in part a response to the construction of the expressway. The impact of this additional growth occurring is that available capacity could be taken up sooner than anticipated. Council is currently updating modelling to ensure relevant investments are identified and accounted for in future planning and ensure sufficient infrastructure is in place to meet longer-term growth in the area.

While the majority of network constraints are identified and planned to be mitigated, the assessment has identified capacity constraints for Kapiti's stormwater network. This is largely a result of early pipe networks being put in place according to what was required at the time, without foreseeing long term changes to Kāpiti's growth and climate. Council has committed to a \$250m programme of works to increase capacity of the network; with future risks of flooding continuing to be controlled through planning restrictions on developing land susceptible to flooding. This includes requirements for new development to be hydraulically neutral whereby new development needs to offset/design stormwater impacts into new development. This assessment does not identify existing constraints as being a constraint on future development.

This report provides the first assessment under the NPS-UDC. It has already identified a number of learnings. Council intends to build on this first assessment, to further link, and align monitoring and modelling of growth to support on-going decisions on infrastructure investment.

## Introduction

The NPS-UDC requires high and medium growth councils to assess whether there is sufficient development capacity to meet future residential and business demand across the short, medium, and long-term (3, 10, and 30 year periods).

A prerequisite for assessing sufficient development capacity is that land is serviced or planned to be serviced by Council infrastructure<sup>1</sup>. Drinking water, wastewater, stormwater (three waters), and roading infrastructure are all critical to servicing urban development. Parks and open space also form an important part of supporting green infrastructure, providing amenity and recreational services to current and future development. The need and availability (or planned provision) of these services is a key factor influencing the sequence, scale, location, cost, and overall feasibility of development.

There are also practical constraints on providing infrastructure. The ability to service and expand infrastructure networks, both with regards to physical capacity, topography, and efficient network operation, are all factors that can influence the cost, provision, and sequencing of infrastructure to service future growth and development.

This report provides an assessment of the capacity of Kāpiti's three waters, roading and open space networks to meet forecast urban growth across Kāpiti. Better understanding the nature and demands around future growth alongside infrastructure capacity and provision will help inform councils planning and investment decisions.

## Approach to assessing infrastructure capacity

Assessing the availability or ability for infrastructure to support future development needs requires comparing forecast numbers and locations of future growth against currently known and available capacity across Council's key infrastructure.

The following report provides a description of each of the three waters, roading, and open space networks and assesses their ability to accommodate anticipated growth to 2047.

The assessment identifies key performance measures to help identify and test whether capacity and the required levels of service can be met alongside future anticipated development. The assessment also identifies any known and planned works that will help networks meet their future capacity and service levels.

To complete an assessment across infrastructure networks is complex and requires a number of assumptions to be made to enable modelling of current and future conditions. Some assumptions are addressed within the report itself, with more general assumptions made across modelling outlined at the end of the report.

---

<sup>1</sup> Provision of other non-Council infrastructure is also being assessed separately by responsible bodies – and will also be included in the housing and business assessment of development capacity.



### Forecast population and dwelling growth for Kāpiti

The Kāpiti Coast population and household forecasts were last updated in 2017<sup>2</sup>. The ID Forecast shows anticipated changes in population and the type and location of households across the District from 2013 to 2043<sup>3</sup>. Over this period, Kāpiti's population is expected to increase by 12,985 with an additional 5,484 dwellings required.

The long term assessment of the NPS-UDC requires covering growth out across a 30-year period. To provide a consistent assessment period, figures from the ID Forecast have been extrapolated from 2043 to 2047 to enable the assessment to cover the period 2017 - 2047. Over this period, the Kāpiti Coast population is expected to increase by 13,441 and dwellings by 5,658.

The table below summarises the forecast population growth across the Kāpiti Coast from 2017 – 2047, across 3, 10, and 30 year periods. The population forecast is also used to forecast dwellings across the District. This takes into account factors influencing household formation including changes to the size and type of households from changing population demographics and the likely form of residential development that might occur in each location. This also takes into account factors for housing including development of new greenfield sites, subdivision, and infill within existing residential area, rezoned land for residential development, and densification of housing development.

### Forecast population growth and net change from 2017-2047

| Unit area   | Population forecasts 2017 - 2047 |               |               |               | Net population change 2017 - 2047 |              |               |
|---|----------------------------------|---------------|---------------|---------------|-----------------------------------|--------------|---------------|
|   | 2017                             | 2020          | 2027          | 2047          | 3 year                            | 10 year      | 30 year       |
| Central Paraparaumu                               | 2,824                            | 2904          | 3106          | 3589          | 80                                | 282          | 765           |
| Ōtaki   | 3,451                            | 3530          | 3664          | 4020          | 79                                | 213          | 569           |
| Ōtaki beach and surroundings                      | 2,774                            | 2880          | 3194          | 3529          | 106                               | 420          | 755           |
| Ōtaki Forks-Kaitawa-Te Horo                       | 3,842                            | 3916          | 4031          | 4445          | 74                                | 189          | 603           |
| Paekākāriki                                       | 1,645                            | 1585          | 1489          | 1510          | -60                               | -156         | -135          |
| Paraparaumu Beach, North Otaihanga, Kāpiti Island | 5,109                            | 5210          | 5443          | 5972          | 101                               | 334          | 863           |
| Paraparaumu Beach South                           | 5,129                            | 5134          | 5147          | 5153          | 5                                 | 18           | 24            |
| Paraparaumu East                                  | 2,283                            | 2318          | 2453          | 2936          | 35                                | 170          | 653           |
| Paraparaumu north                                 | 4,127                            | 4450          | 4798          | 5351          | 323                               | 671          | 1,224         |
| Raumati Beach                                     | 5,178                            | 5238          | 5257          | 5794          | 60                                | 79           | 616           |
| Raumati South                                     | 3,636                            | 3620          | 3622          | 4459          | -16                               | -14          | 823           |
| Waikanae Beach – Peka Peka                        | 3,642                            | 3719          | 3921          | 4653          | 77                                | 279          | 1,011         |
| Waikanae Park                                     | 1,913                            | 2004          | 2461          | 5076          | 91                                | 548          | 3,163         |
| Waikanae-Reikorangi                               | 6,792                            | 7006          | 7588          | 9299          | 214                               | 796          | 2,507         |
| <b>Kāpiti Coast totals</b>                        | <b>52,345</b>                    | <b>53,515</b> | <b>56,175</b> | <b>65,786</b> | <b>1,170</b>                      | <b>3,830</b> | <b>13,441</b> |

<sup>2</sup> by .id, the population experts, on behalf of Kāpiti Coast

<sup>3</sup> Please note that population numbers in forecast.id for the 2013 base year are derived from estimated resident population from Statistics New Zealand. These differ from (and are usually higher than) Census counts as they factor in population missed by the Census and population overseas on Census night. They are generally considered a more accurate measure of population size than Census counts.

**Forecast dwelling growth and net change from 2017-2047**

| Unit area   | Dwelling forecasts 2017 - 2047 |               |               |               | Net dwellings change 2017 - 2047 |              |              |
|---|--------------------------------|---------------|---------------|---------------|----------------------------------|--------------|--------------|
|   | 2017                           | 2020          | 2027          | 2047          | 3 year                           | 10 year      | 30 year      |
| Central Paraparaumu                               | 1,325                          | 1351          | 1409          | 1578          | 26                               | 84           | 253          |
| Ōtaki   | 1,581                          | 1614          | 1669          | 1799          | 33                               | 88           | 218          |
| Ōtaki beach and surroundings                      | 1,542                          | 1580          | 1680          | 1798          | 38                               | 138          | 256          |
| Ōtaki Forks-Kaitawa-Te Horo                       | 1,779                          | 1821          | 1911          | 2097          | 42                               | 132          | 318          |
| Paekākāriki                                       | 809                            | 814           | 828           | 872           | 5                                | 19           | 63           |
| Paraparaumu Beach, North Otaihangā, Kāpiti Island | 2,072                          | 2120          | 2197          | 2401          | 48                               | 125          | 329          |
| Paraparaumu Beach South                           | 2,387                          | 2390          | 2422          | 2477          | 3                                | 35           | 90           |
| Paraparaumu East                                  | 877                            | 890           | 920           | 1100          | 13                               | 43           | 223          |
| Paraparaumu north                                 | 1,780                          | 1898          | 1984          | 2211          | 118                              | 204          | 431          |
| Raumati Beach                                     | 2,296                          | 2322          | 2371          | 2616          | 26                               | 75           | 320          |
| Raumati South                                     | 1,561                          | 1568          | 1610          | 1951          | 7                                | 49           | 390          |
| Waikanae Beach – Peka Peka                        | 2,253                          | 2307          | 2403          | 2687          | 54                               | 150          | 434          |
| Waikanae Park                                     | 969                            | 1016          | 1238          | 2272          | 47                               | 269          | 1,303        |
| Waikanae-Reikorangi                               | 3,168                          | 3245          | 3496          | 4198          | 77                               | 328          | 1,030        |
| <b>Kāpiti Coast totals</b>                        | <b>24,399</b>                  | <b>24,936</b> | <b>26,138</b> | <b>30,057</b> | <b>537</b>                       | <b>1,739</b> | <b>5,658</b> |

**Percentage change in population and dwelling from the 2017 baseline**

| Area unit   | % change in population | % change in dwellings |
|---|------------------------|-----------------------|
| Central Paraparaumu                               | 27                     | 19                    |
| Ōtaki   | 16                     | 14                    |
| Ōtaki beach and surroundings                      | 27                     | 17                    |
| Ōtaki Forks-Kaitawa-Te Horo                       | 16                     | 18                    |
| Paekākāriki                                       | -8                     | 8                     |
| Paraparaumu Beach, North Otaihangā, Kāpiti Island | 17                     | 16                    |
| Paraparaumu Beach South                           | 0                      | 4                     |
| Paraparaumu East                                  | 29                     | 25                    |
| Paraparaumu North                                 | 30                     | 24                    |
| Raumati Beach                                     | 12                     | 14                    |
| Raumati South                                     | 23                     | 25                    |
| Waikanae Beach – Peka Peka                        | 28                     | 19                    |
| Waikanae Park                                     | 165                    | 134                   |
| Waikanae-Reikorangi                               | 37                     | 33                    |
| <b>Totals</b>                                     | <b>26</b>              | <b>23</b>             |

The greatest amount of forecast growth is expected to occur in the Waikanae area, with Paraparaumu and Raumati areas also expecting strong growth. Ōtaki is also expecting modest growth, while Paekākāriki is expecting a slight decline in population, but an increase in housing. This is due to changes in household compositions across the area. Further details on changes to residential and business demand are available in the assessment of demand report.

To understand and assess infrastructure capacity, the above levels of forecast growth are compared against recent modelling and assessments of infrastructure capacity. This helps us better understand current capacity, constraints and mitigating factors determining whether infrastructure servicing is available to meet on-going and additional needs from growth.

## Capacity of Kāpiti Coast's water supply

### Description of schemes

The Council is responsible for the provision and management of four water supply schemes at Waikanae/Paraparaumu/Raumati, Ōtaki, Te Horo/Hautere, and Paekākāriki. The four schemes service approximately 22,000 properties and 47,000 people (93% of the District population), with the remaining relying on private tank water and bores.

The overall water supply network for the District consists of 571km of water pipes, five water treatment plants, seven pump stations, and 15 groundwater bores. Based on the Council's most recent assessments, 72% of its water supply pipes are in moderate to very good condition. This assessment is based on industry expected base life knowledge, results of pipe sampling and risk profiling.

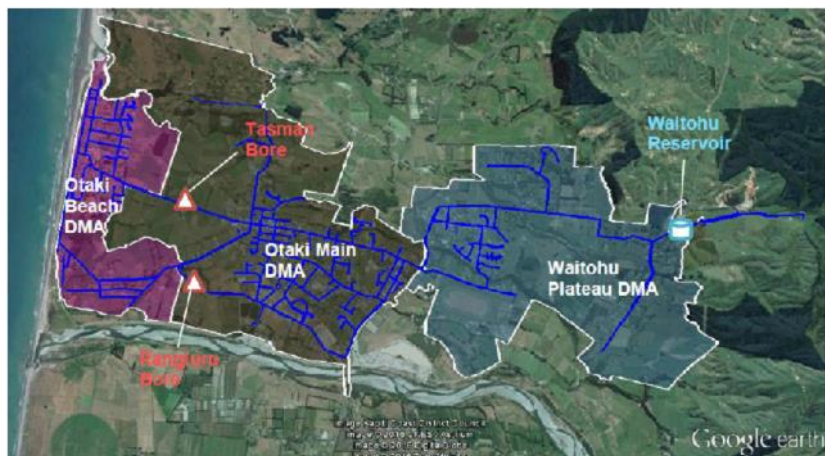
Works have been planned to maintain and improve the supply of drinking water to meet Kāpiti's future needs. This includes works to increase capacity for the both the supply and treatment of water. An example is work planned on the largest Waikanae/Paraparaumu/Raumati scheme to undertake groundwater recharge and enable long term supply to service a 30,700m<sup>3</sup> per day peak demand for a population of 52,000 expected in 2060 during a once in fifty year drought. Other measures include purchasing land for a future dam to further future-proof the water supply for Kāpiti and provide security of supply for the next 100 years.

**Picture 1: Waikanae/Paraparaumu/Raumati water supply scheme**





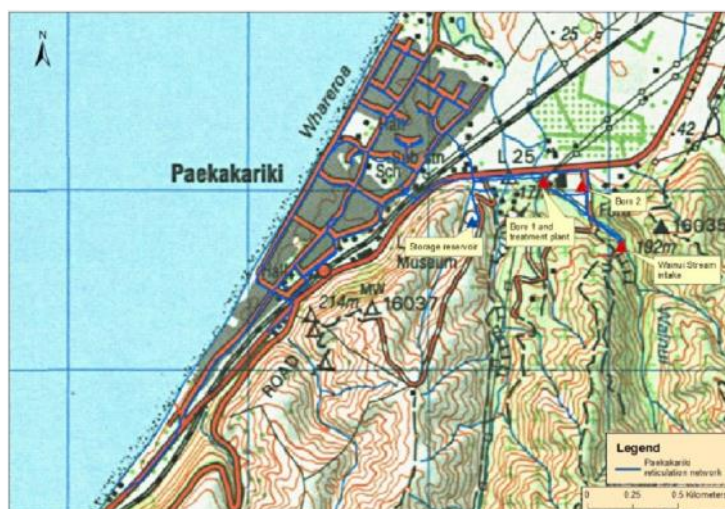
**Picture 2: Ōtaki water supply scheme**



**Picture 3: Te Horo/Hautere water supply scheme**



**Picture 4: Paekakariki water supply scheme**



### Measuring network performance

Modelling of the water supply network uses three sets of performance criteria for storage, minimum and maximum pressures, and fire flows. These three sets of criteria provide a baseline level of service across the four schemes.

Storage – that reservoirs have sufficient storage for 24 hours of average demand in the area they service, plus storage sufficient for fire fighting according to the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice SNZ:PAS 4509:2008 (known as the Fire Code).

Pressures – that pressures at the point of supply of properties connected to the Kāpiti Coast District Council water network should be above 25m or 10m during firefighting events.

Fire code – That fire code requirements will be met and that specified fire flows should be available at 2/3 of peak demand (peak demand is at 8pm for the Kāpiti network).

### Summary of Assessment

#### Waikanae/Paraparaumu/Raumati and Ōtaki

Kāpiti's two largest water schemes were last modelled in 2017<sup>4</sup>. Population projections were used along with a target peak demand of 490 l/person/day to calculate the design demand for the total system. This includes a total of demand for residential demand, commercial/industrial demand, and water loss.

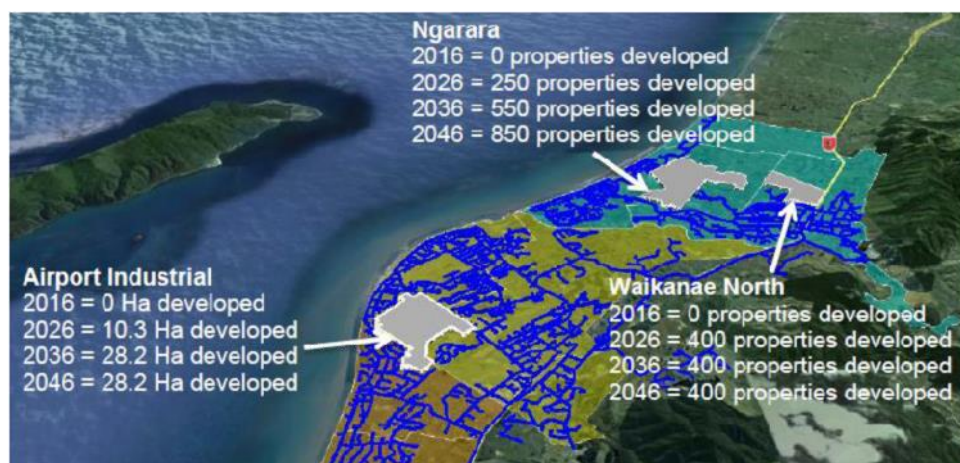
The modelling was based on projected population growth from 2016 to 2046, as shown in the table below.

Population projections 2016 - 2046

| Water supply zone   | 2016          | 2026          | 2036          | 2046          |
|---------------------|---------------|---------------|---------------|---------------|
| Waikanae            | 11,426        | 13,056        | 14,669        | 16,207        |
| Paraparaumu/Raumati | 27,249        | 28,636        | 29,458        | 29,954        |
| Ōtaki               | 5,883         | 5,912         | 5,771         | 5,547         |
| <b>Total</b>        | <b>44,558</b> | <b>47,603</b> | <b>49,898</b> | <b>51,708</b> |

The population figures were then combined with factors including household size and usage to project future demand across each of the supply zones. Modelling also took into account the quantum and timing of key areas of anticipated greenfield development around Ngarara, Waikanae North, and around the airport in Paraparaumu to help also identify and phase additional likely demand created from these areas. It also factored in potential upgrading of water supply to Peka Peka from the current restricted system to on-demand supply, which would increase maximum peak demand.

<sup>4</sup> Kāpiti Coast water modelling phases 4+5 - Water Network Development Plan, Stantec, 2017



#### Summary of demand

| Supply Zone / Category        | 2016 (m3/day) | 2026 (m3/day) | 2036 (m3/day) | 2046 (m3/day) |
|-------------------------------|---------------|---------------|---------------|---------------|
| <b>Waikanae</b>               | <b>5,698</b>  | <b>6,708</b>  | <b>7,499</b>  | <b>8,253</b>  |
| Existing commercial           | 599           | 599           | 599           | 599           |
| Existing leakage              | 1,877         | 1,877         | 1,877         | 1,877         |
| Existing residential + infill | 3,123         | 3,125         | 3,548         | 3,935         |
| Greenfields                   | 99            | 1,107         | 1,475         | 1,842         |
| <b>Paraparaumu/Raumati</b>    | <b>13,352</b> | <b>14,031</b> | <b>14,434</b> | <b>14,677</b> |
| Existing commercial           | 1,277         | 1,277         | 1,277         | 1,277         |
| Existing leakage              | 1,672         | 1,672         | 1,672         | 1,672         |
| Existing residential + infill | 10,403        | 10,637        | 10,267        | 10,510        |
| Greenfields                   | 0             | 445           | 1,218         | 1,218         |
| <b>Ōtaki</b>                  | <b>2,883</b>  | <b>2,897</b>  | <b>2,897</b>  | <b>2,897</b>  |
| Existing commercial           | 395           | 395           | 395           | 395           |
| Existing leakage              | 732           | 732           | 732           | 732           |
| Existing residential + infill | 1,756         | 1,770         | 1,770         | 1,770         |
| Greenfields                   | 0             | 0             | 0             | 0             |
| <b>Total</b>                  | <b>21,933</b> | <b>23,636</b> | <b>24,830</b> | <b>25,827</b> |

Modelling for peak future flows out to 2046 identified a number of upgrades to address deficiencies. A summary is provided below, but the full assessment is available in the Water 2017 Network Development Plan.

- Pressure deficiencies – five areas affected: four moderate, one severe
- Fire flow deficiencies – 12 areas affected: five severe, four moderate, and three minor
- Storage deficiencies – Ōtaki lacking 2500m3

These deficiencies have been used to identify and prioritise a programme of work to mitigate and manage impacts on the networks ongoing delivery, while not affecting the ability to service



growth expected in key locations (inline with projections). The work programme also identifies a number of strategic projects, which have been programmed to provide services and necessary capacity to key greenfield areas as development occurs over the next 30 years and beyond.

One of the most notable points identified from the assessment is the difference between the growth projections used for modelling in Ōtaki compared to the latest levels of growth anticipated. The projections used in the 2017 modelling anticipated a decrease in population; whereas, the more recent ID forecast shows an increase in growth across the wider Ōtaki area (including Ōtaki Beach). However, when modelled in 2017, an assumption was made that future demand in Ōtaki would remain constant after its peak of growth that was anticipated for 2023 (rather than modelling a decline).

This difference in anticipated growth also has a bearing on the storage deficiencies identified for Ōtaki reservoir storage was identified as lacking by some 2500m<sup>3</sup>. This increases further to 5,100m<sup>3</sup> when compared to the higher levels of growth anticipated from the latest ID forecasts. Despite the specific existing storage deficiency, our current calculations of capacity and expected levels and location of growth identify sufficient capacity in the existing system to deliver water to meet the growth in Ōtaki for the next 10 years (see further discussion on network efficiencies achieved through water metering under network improvements).

However, servicing growth beyond this level/period is expected to require key infrastructure upgrades. We are currently undertaking updating modelling of the growth and demand in Ōtaki. This updated modelling will update assumptions around growth in the area and help inform the nature and scale of investment required to enable the network to service future needs. This includes the provision of an additional reservoir.

#### Hautere Rural water supply scheme

The Hautere scheme services part of the Te Horo and Hautere plains area. The scheme currently has 803 water units allocated, with each water unit equating to 1 m<sup>3</sup>/day (+/- 15%). Consented allocation is a maximum of 1,382.4m<sup>3</sup>/day with the difference allowing the scheme to have operational flexibility. The scheme is now closed which means that no new allocation is allowed from the scheme, but existing allocations can be divided across additional development to support the addition of new development within the cap.

Operational flexibility, especially for small public water schemes such as Hautere, is needed to account for such things as:

- Managing leakage control activities: for example, should two sizable (180-200 m<sup>3</sup>/day) leaks progressively develop concurrently such as with tapping bands or lateral failures, it may take time to locate them for repair; and
- Maintenance activities: for example, refilling reservoirs following inspections or operational shut downs will draw additional short term flows.

While a small amount of uptake of existing allocation might be able to be accommodated within the existing capacity and servicing of the scheme (cap), new development in the area is otherwise required to be self-servicing, with onsite options for water supply (e.g. rainwater).



Paekākāriki water supply scheme

The Paekākāriki drinking water supply is a small urban supply providing water to a population of approximately 1,665 people in the town of Paekākāriki.

Filters were recently renewed alongside works preparing for construction of Transmission Gully. The scheme abstracts water from two bores before it undergoes treatment at the Paekākāriki water treatment plant. A third water source is available from Wainui Stream as an emergency backup.

Water from the treatment plant is then pumped from the treatment plant to a storage reservoir and gravity fed to the towns' reticulation.

The recently reviewed Paekākāriki Drinking Water Supply Water Safety Plan identified the average daily volume of water supplied by the scheme was 643 m<sup>3</sup>/day with a peak daily volume at 850 m<sup>3</sup>/day. The maximum consented take for the scheme is 2,160 m<sup>3</sup>/day, more than double the current maximum usage. The Paekākāriki area is currently forecast to decrease in population by 135 people by 2047, but dwellings are expected to increase by 63. Based on this limited forecast for growth, there is enough capacity within the water supply scheme to cater for need to 2047 and beyond.

Network improvements

A key consideration in determining available capacity is that many of the usage figures used in modelling were based on levels of water usage prior to the introduction of water metering. We have undertaken subsequent analysis that shows water metering has produced a 26% saving from previous peak day usage since its introduction. This efficiency saving effectively extends the existing networks capacity to ensure we have at least 10 years of additional servicing available across the systems, without the need for significant upgrades in that timeframe. However, there are a number of key network works required to provide capacity beyond that period in the Waikanae and Ōtaki areas.

Planned key infrastructure investments to support increasing capacity needs across the next 30 years include:

- Waikanae treatment plan stage 2 (2019)
- Waikanae treatment plan stage 3 (2024)
- River recharge stage 2 (2033)
- Ōtaki and Hautere water safety upgrades (2020)
- Ōtaki Reservoir upgrade (2025)
- Districtwide network upgrades (2026)
- Other measures includes the purchase of land for a future dam to further future-proof the water supply for Kāpiti and provide security of supply for the next 100 years.

**Summary of capacity of water schemes to meet forecast growth levels**

While there are some areas of current deficiency within and across Kāpiti's water supply schemes, discussion with the Infrastructure Services team and analysis of recent modelling

identifies that Kāpiti's water supply schemes have sufficient capacity available, or planned to be available, to support forecast development needs to 2047.

|                               | 3 years | 10 Years | 30 years | Comments  |
|-------------------------------|---------|----------|----------|---|
| Waikanae/Paraparaumu /Raumati | Yes     | Yes      | Yes      | Upgrades are planned in years 2026 to the Waikanae Trunk and Peka Peka Main in 2031 to provide additional capacity in key growth areas.   |
| Ōtaki                         | Yes+    | Yes*+    | Yes**    | *Capacity in the delivery network is available on the basis of efficiencies from water metering and smaller upgrades<br>** The system faces constraints to meet levels of growth much beyond the current projections to 2047.<br>+ There are existing storage deficiencies that are proposed to be addressed around 2024/25 to meet the future growth in the community. |
| Te Horo/Hautere               | Yes     | Yes      | Yes      | The Te Horo/Hautere Scheme is in a rural area and is a closed scheme, with limited capacity for new connections. New development will provide its own water supply.   |
| Paekākāriki                   | Yes     | Yes      | Yes      | Capacity from the scheme is sufficient to meet the current and future population forecast for the village.  |

### Capacity of Kāpiti Coasts wastewater systems

#### Description of systems

Council has two wastewater treatment systems, one in Ōtaki and one in Paraparaumu serving Waikanae, Paraparaumu, and Raumati. These collectively serve approximately 21,000 properties and 42,000 people (83% of the Districts population).

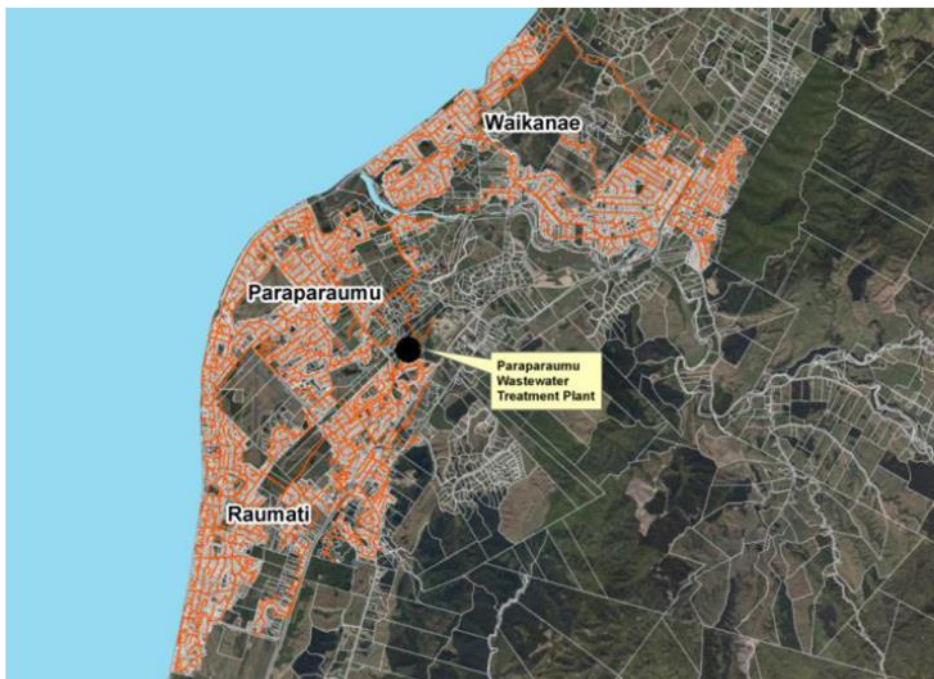
Kāpiti Coasts wastewater network has more than 360km of wastewater pipes and 147 wastewater pumping stations. Many of the wastewater pipes were installed in the 1970s and 80s, with several now reaching middle age because the pumping stations are of varying ages and condition.

Areas not serviced by the two wastewater schemes have on-site treatment (septic tanks). Paekākāriki, Peka Peka, and Te Horo Beach are all urban residential areas that do not have reticulated wastewater systems.

Picture 5: Ōtaki wastewater scheme



Picture 6: Waikanae/Paraparaumu/Raumati wastewater scheme



### Measuring network performance

Wastewater modelling has been undertaken to assess network performance during 1, 2, 5, and 10-year average recurrence interval (ARI) storms. A contributing measure to this is levels of inflow and infiltration (I/I) of stormwater into the wastewater system. This is important as I/I reduces available capacity of pipes and contributes to potential system overflows.

### Summary of Assessment

Wastewater models were updated for Paraparaumu/Raumati and Waikanae schemes in 2017 and 2015 respectively<sup>5</sup>, and an assessment of capacity in the Ōtaki wastewater treatment plant was undertaken in 2015, as part of the review of its wastewater consent. This information provides an indication of the current and future capacity across some of the wastewater assets to meet the anticipated growth, using a number of assumptions for demand.

The condition and capacity of the Paraparaumu wastewater treatment plant was assessed in 2016. From this study a programme of treatment plant process renewals and upgrades was developed to meet the future growth in the Waikanae and Paraparaumu/Raumati communities. These upgrades include hydraulic capacity of the inlet works and reconfiguration of the process units to accommodate the additional population expected.

### Paraparaumu/Raumati

Modelling for the Paraparaumu/Raumati part of the wastewater network used a 2013 and 2046 population projection as its basis and then used a number of assumptions, including household formations, to distribute growth across vacant properties and large lots to come up with a modelled population connected to the network out to 2046.

### Modelled population growth to 2046

| Area unit               | 2013 modelled<br>population connected | 2046 modelled<br>Population Connected |
|-------------------------|---------------------------------------|---------------------------------------|
| Otaihanga               | 1,116                                 | 1,302                                 |
| Paraparaumu Beach North | 3,348                                 | 3,348                                 |
| Paraparaumu Beach South | 4,956                                 | 4,956                                 |
| Paraparaumu Central     | 8,562                                 | 10,553                                |
| Raumati Beach           | 4,738                                 | 4,738                                 |
| Raumati South           | 3,609                                 | 6,153                                 |
| <b>Total</b>            | <b>26,329</b>                         | <b>31,051</b>                         |

This growth scenario was then modelled against a 1, 2, 5, and 10-year average recurrence interval (ARI) storms. For the 2013 scenario, one manhole (located just upstream of the Hinemoa pump station) was predicted to overflow in a one year ARI design storm and above, and another manhole (also located just upstream of the Hinemoa pump station) was predicted to overflow in a five-year ARI design storm.

Overall, the modelled capacity of 31,051 for the Paraparaumu/Raumati network equates to 17 years of capacity when compared against the current ID forecasts for population growth across the same area. The results of modelling identified two locations of small manhole overflows. In

<sup>5</sup> Paraparaumu wastewater model update stage 2: Recalibration & system performance, Watershed, 2017; Waikanae Wastewater Modelling Ngarara Development Impact Assessment, Watershed, 2015

addition, work to address I/I impacts in the area impacting stormwater spikes is a priority under the current programme of work.

Work has been planned to refresh the wastewater strategy for the Kāpiti wastewater networks. This work will consider their performance versus costs and benefits of interventions to achieve various systems containment standards and levels of service.

#### Waikanae

Modelling of the Waikanae wastewater system was updated in 2015 looking specifically at available network capacity and potential impacts from growth expected to service the Ngarara and Waikanae North developments, in addition to general infill across the wider area. Population projections were used to provide the basis of population increases across Waikanae and the two large developments (anticipating 1880 and 800 lots respectively) rather than the actual staging plans for the developments. Future development scenarios included 10% infill through the existing Waikanae catchment, with the remaining 90% as greenfield development. Two periods were used for scenario testing of growth, 2018 and 2061. The Table below shows the figures used for the modelled future growth.

#### **Modelled future growth projections for Waikanae (2015)**

| Area unit      | 2013        | 2018         | 2061         |
|----------------|-------------|--------------|--------------|
| Waikanae Beach | 3049        | 3049         | 3555         |
| Waikanae Park  | 1937        | 1968         | 2508         |
| Waikanae West* | 1507        | 1562         | 2196         |
| Waikanae East* | 2830        | 2830         | 3297         |
| Ngarara        | 0           | 498          | 4700         |
| Waikanae North | 0           | 288          | 800          |
| <b>Total</b>   | <b>9323</b> | <b>10194</b> | <b>18256</b> |

\*Future population excludes Ngarara and Waikanae North developments

Results for both a two and 10-year ARI were tested. Modelling showed that while existing piped conveyance capacity was exceeded for storm events modelled, this was able to be contained within allocated network storage facilities. Modelling identified an increased use of the ponds wastewater pump station storage with the addition growth anticipated out to 2061. The upgrades to the Waikanae terminal pump station and associated completion of the rising main in 2020-21 will reduce the need to use the storage to the same levels/extent, reducing the risk of discharge to the environment.

Latest ID forecast population projections indicate population growth across the whole of Waikanae area<sup>6</sup> of 12,726 by 2020, 13,970 by 2027, and 19,028 by 2047. While the latest projections for 2047 are higher than those used as part of the 2061 scenarios test, modelling indicates that there is sufficient capacity, with just short of 30 years capacity (until at least 2044) when compared to the latest ID forecast projections.

#### Ōtaki

Wastewater flows to the Ōtaki wastewater plant were assessed in 2015 as part of the resource consent renewal process. The consent assessment expected the population for Ōtaki to increase

<sup>6</sup> This also includes an element of population growth in the Peka Peka and Reikorangi areas that fall outside of the reticulated network.



from 5,960 over the 2005-2015 period, up to a total of 6,520 by 2035. This level of growth was used as the basis to calculate future wastewater flows to the Ōtaki wastewater treatment plan including dry and wet weather flows.

ID forecast of population for the Ōtaki and surrounding area shows a population of 7,159 at 2035; 639 more than the forecast used in the consenting work. The equivalent population level of 6,520 is expected to be reached by 2022 under the latest ID forecast.

The maximum effluent discharge volume is limited to 2820m<sup>3</sup>/day under the existing consent condition. There is sufficient storage within the secondary lagoons and the storm buffer ponds to store excess flow, as well as rainfall on the secondary lagoons during extended periods of wet weather (e.g. a typical wet month). No increase in this limit was requested for the consent at the time, as forecast population growth was relatively minor and any increase in dry weather flow due to population growth over the proposed consent period could be accommodated within the current system.

The growth projected will require review of the Ōtaki wastewater treatment plant process capacity and that of the associated discharge consent. The review will identify the required upgrades and any environmental impacts that need to be addressed to meet the growth.

Growth will continue to reduce available network capacity and exacerbate any potential wet weather overflows from the network. This will slowly reduce the containment levels that are being achieved by the wastewater network in Ōtaki and likely require upgrades in the future. Modelling is currently underway to identify the exact locations and extent of any overflows from the network with the projected growth.

#### Network improvements

Similar to water supply, the introduction of water metering has also contributed to improved capacity of the two wastewater treatment schemes. The reduction in the overall amount of water being used has resulted in reductions in the average and peak flows of wastewater. While not to the same extent as reductions in water supply, a reduced throughput on the piped system and treatment system has extended the capacity available within the system.

There are also a range of works underway to improve the performance and capacity of the wastewater network. There is a Districtwide programme of work to understand and address inflow and infiltration impacts. Paraparaumu treatment plan is also due for additional upgrades in 2024 along with the renewal of the aeration system in 2021 that will both support and expand the ongoing capacity of the main wastewater system in the District.

Key infrastructure investments to support increasing capacity needs across the next 30 years includes:

- 30-year asset renewal programme (2018 – 48)
- Paraparaumu wastewater treatment plant inlet works (2020 - 21)
- Paraparaumu wastewater treatment plant upgrade (2023 - 25)
- Aeration system renewal (2021 and 2039)

### Summary of capacity of wastewater systems to meet forecast growth levels

Discussion with the Infrastructure Services team and analysis of the recent modelling identifies that Kāpiti's wastewater schemes have sufficient capacity available, or planned to be available, to support forecast development needs out to 2047.

Ōtaki's wastewater system, however, has known restrictions to growth that are currently being modelled to develop upgrades to service future growth. Continued growth in the long term without upgrades is likely to cause overflows and increase their magnitude.

|                              | 3 years | 10 Years | 30 years | Comments  |
|------------------------------|---------|----------|----------|---|
| Waikanae/Paraparaumu/Raumati | Yes     | Yes*     | Yes*     | *Key renewals and upgrades are planned to the Paraparaumu wastewater treatment plant and networks in 2024 and 2021/39 that will ensure and expand its ongoing capacity.   |
| Ōtaki                        | Yes     | No*      | No**     | *Known capacity constraints exist in the current network that will likely restrict medium term growth. The exact nature and extent of these restrictions is being investigated to develop upgrades required to service the projected growth |

### Capacity of Kāpiti Coasts stormwater network

#### Description of network

The Council provides stormwater services in the urban areas of the District (Ōtaki, Waikanae, Paraparaumu/Raumati and Paekākāriki) to protect property from flooding and improve the quality of waterways. Most of the urban areas in the district receive stormwater protection through a variety of means including reticulated system (pipes), kerb discharge, a system of soak pits, retention ponds, and overland flow paths. Overall 21,901 properties are serviced by public stormwater systems.

The main characteristics of the urban systems are:

- coastal areas where stormwater is generally discharged to the sea;
- southern peat and dune areas that do not drain to any water course and are served by pump stations;
- Paraparaumu and Waikanae open water courses with smaller branches that are piped and/or open;
- varying design levels across the District depending on when the stormwater infrastructure was installed;
- significant barriers to east/west flow;
- vulnerability to key climate change factors (for example, sea level rise and storm surges, increasing rainfall and storm events);
- Nearly 50% of the piped reticulation system is exceeded in a one in 10-year event;



- 110km of open waterways forming part of the drainage network;
- Nearly 250 ponds form part of, or discharge into, the stormwater network.

In the past, assessments of stormwater asset condition and capacity were typically undertaken on an ad hoc basis following a flooding event. This limited the Council's understanding of the condition of assets across the network.

Subsequent to the May 2015 flood event, Council has undertaken more comprehensive condition and capacity assessments across the network. These assessments are staged over several years.

| Area        | Length of piped network  | Length of open waterways maintained by Council | Number of stormwater pump stations |
|-------------|--------------------------|--|------------------------------------|
| Paraparaumu | 130km                    | 31km   | 6                                  |
| Waikanae    | 48km                     | 8km  | 3                                  |
| Ōtaki       | 28km                     | 0.9km  | 3                                  |
| Paekākāriki | 5.4km                    | 0.65km   | 0                                  |
| Te Horo     | 0.18km (sump leads only) | 0km  | 0                                  |

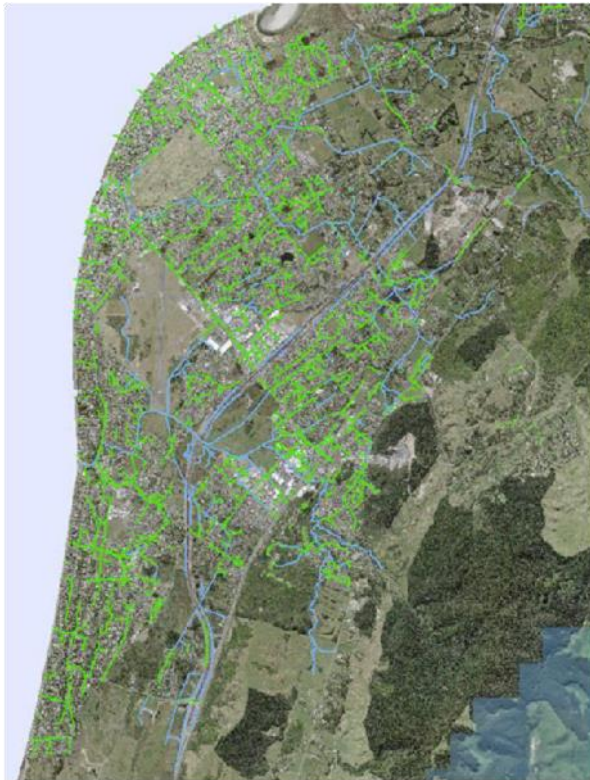
**Picture X: Ōtaki stormwater system**



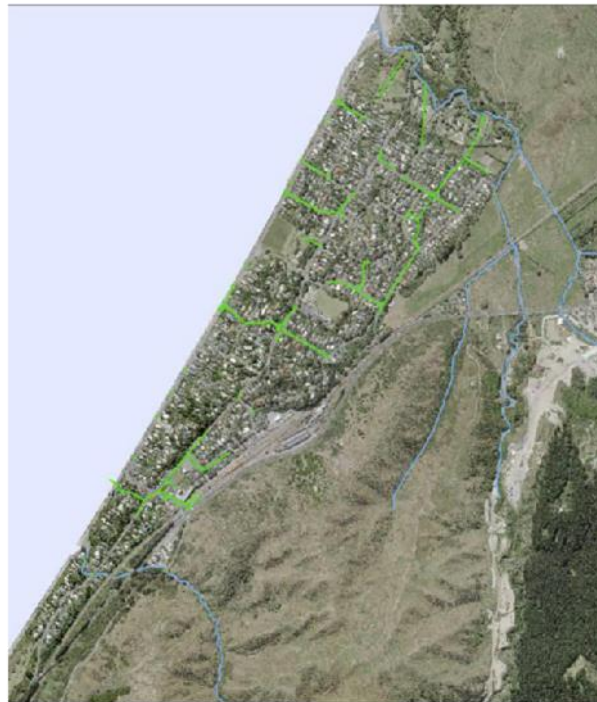
Picture X: Waikanae stormwater system



Picture X: Paraparaumu/Raumati stormwater system



Picture X: Paekākāriki stormwater system



#### Measuring network performance

For existing dwellings, the main performance measure used for measuring provision and capacity for stormwater is the prevention of flooding of habitable floor space up to a one in 50 year event. All new developments are required to prevent flooding of habitable floor space up to a one in 100 year event, which includes the predicted impacts of climate change.

For this assessment, the water quality effects from stormwater are not considered in the level of service. However, the management of stormwater to achieve improved water quality will be needed to meet the new requirements in the Proposed Natural Resource Management Plan for the Wellington Region.

#### Summary of Assessment

Out of the 21,901 urban properties contributing stormwater rates, nearly 6,500 have a flood designation identified on the property in the District Plan's flood hazard maps for a one in 100 year rain event. Nearly 50% of the current infrastructure exceeds capacity in events smaller than a one in 10 year event.

Council has committed \$250M to a programme of stormwater works [240 projects over 45 years], including upgrades to the stormwater network to a level that reduces dwelling inundation in events up to the one in 50 year event. The initial focus is on properties that are susceptible to habitable floor flooding.

To ensure future flooding issues are not exacerbated, all new development within the District is required to mimic its predevelopment flow regime in the range of design storm events, from one in two-year event, up to the one in 100 year event. This involves using a range of measures to ensure new development remains hydraulically neutral; including, but not limited to: detention or disposal areas, tanks, and limits to if or how areas susceptible to flooding and overland flows are developed (including earthworks).

New development is also required to ensure any loss of flood storage is mitigated on the subject site and that such loss does not adversely impact another property.

These requirements are key determinants of where and how land is appropriately developed, and as they vary by location can often only be considered on a site-by-site basis. Where a site is large enough it may be easy to accommodate stormwater requirements onsite. Smaller sites, including infill sites, may have more limited options. The feasibility of some sites to be developed are, therefore, influenced by site-specific considerations such as location, size, and the viability of the options available.

#### Network improvements

To address capacity and condition issues Council has formulated a work programme with 240 physical works projects; prioritised on the severity of flooding impact and implementation aspects (such as budget, downstream constraints, consenting requirements), which include:

- Habitable floor flooding 2018–48
- Addressing downstream constraints 2018–48
- Commercial property flooding 2018–40
- Garage flooding 2032–48
- 30-year asset renewal programme 2018-48.

In addition to the work programme for capital works, Council is undertaking a range of supporting tasks. These include:

- Replacement of pipes creating I/I issues and asset maintenance
- Open drain/stream maintenance
- Stormwater management strategy and bylaw
- Rebuild Council's flood hazard models to reflect recent development which has occurred within the District and taking the opportunity to improve models through access to updated software and information
- Community education on maintaining private stormwater assets.

The Council's hazard maps combine the model results from both Greater Wellington Regional Council and Kāpiti Coast District Council. Greater Wellington Regional Council is responsible for the modelling and maintenance associated with several of the major river systems in the District (principally the Waikanae and Ōtaki Rivers).



### Summary of stormwater network capacity to meet forecast growth levels

Analysis and modelling from the Council's Stormwater team has indicated that areas of existing development are currently affected by flooding as a consequence of the current capacity of infrastructure being exceeded. Council has committed budget to undertake works to redress this issue. This work will not eliminate flooding in the one in 100-year event. It is considered that there is sufficient capacity available to meet forecast growth as the planning process requires all new development to meet and or mitigate stormwater requirements as part requirements for hydraulic neutrality, this includes improving the quality of waterways and providing compensatory storage for any displaced flood water. This report does not model the overall feasibility or impact of this requirement on development.

Planned upgrades and renewals are planned to support forecast development within the existing District Plan requirements for all new development.

|                         | 3 years | 10 years | 30 years | 45 years | Comments  |
|-------------------------|---------|----------|----------|----------|---|
| Paekākāriki             | Yes     | Yes      | Yes      | yes      | Key renewals and upgrades are planned including town centre pipe upgrades (2030-2034), asset upgrades (2030-2034), Tilley Road upgrade and enhancement of Wainui Stream (2040-45)   |
| Paraparaumu and Raumati | Yes     | Yes      | Yes      | Yes      | Key renewals and upgrades are planned including Kena Kena catchment upgrade and pumpstation (2018-2026), several bridge upgrades on Wharemauku and Mazengarb Stream (2018-2030), and Amohia upgrade (2018-2048), undercapacity network upgrades (2018-2028) |
| Waikanae                | Yes     | Yes      | Yes      | yes      | Key renewals and upgrades are planned including Charmwood pumpstation and Richmond Avenue upgrade (2027-2030), Karariki Stream network upgrade (2018-2028), Waikanae lagoon and undercapacity network upgrades (2022-2030)                                  |
| Ōtaki                   | Yes     | Yes      | Yes      | yes      | Key renewals and upgrades including Mangapouri culvert upgrade (joint project with GWRC 2040-2048), undercapacity network upgrades (2031-2036)  |

### Assessing capacity of Kāpiti Coast's transport network

#### Description of network

Transport plays a key role in connecting communities, businesses, and markets. It is important that land transport enables housing and economic development within the District and that efficient links between production and communities are strengthened.

The wider transport network for Kāpiti is defined by a number of key elements. This includes

- State Highway 1, which runs through the middle of the District joining key settlements to one another, but also to Wellington to the south and Levin to the north. The new expressway improves connectivity within communities. While the Old State Highway 1

provided transport linkages within and outside Kāpiti it bi-sected our town centres, the Expressway now provides opportunities to improve connectivity at these locations;

- The completion of the Transmission Gully and the Peka Peka to Ōtaki Expressway projects are expected to further increase accessibility across the District;
- Commuter rail, which supports connectivity across Waikanae, Paraparaumu, and Paekākāriki, south to Wellington and the Capital Connect service from Levin, through Ōtaki to Wellington;
- Bus services connecting communities and to the railway stations, primarily in Paraparaumu and Waikanae which supports mode shift and can reduce pressure on commuter parking;
- Park and Ride at the railway stations;
- The Stride and Ride initiative has made it easier to walk and cycle around the District using the cycle, walkways, and bridleway network. These include shared path improvements between Paekākāriki and Waikanae, enhanced connections to and from our town centres and the Mackays to Peka Peka shared pathway, and links along the Peka Peka to Ōtaki Expressway.

The local roading network provides an important layer to the District's transport network, providing access and connecting locations in and across the District. Kāpiti Coast's local roading network is made up of 403.7 kilometres of sealed roads. 247.1 kilometres of this is in urban areas and 156.0 kilometres is in rural areas. As well as roads, Kāpiti has a wide array of supporting roading infrastructure, including footpaths, shared paths, kerb and channel, bridges, and streetlights. The table below provides an overview of current roading assets.

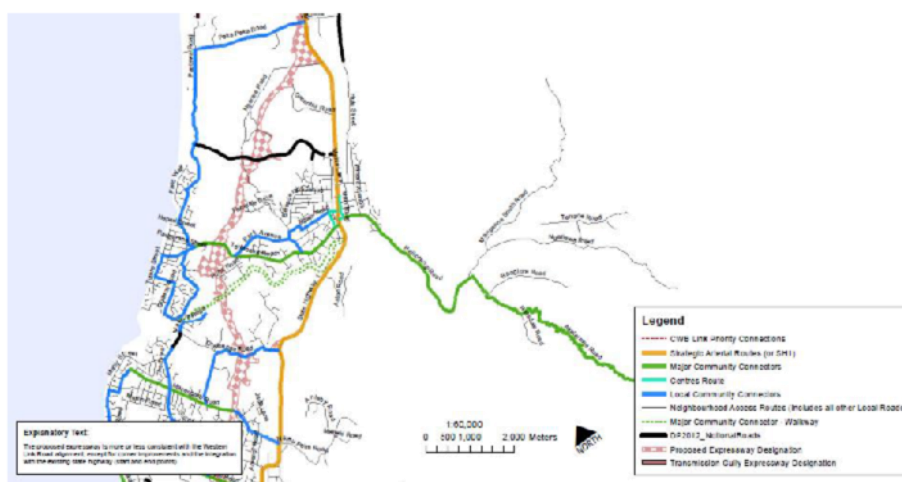
#### Summary of Kāpiti Coast's local roading assets

| Asset              | Asset component  |
|--------------------|--|
| Pedestrian network | 427.08 kilometres of footpaths   |
|                    | 379.26 kilometres of berms   |
|                    | 17 pedestrian islands  |
|                    | 11 raised pedestrian crossings   |
| Safety             | 190 railings equating to 8,080 metres (including guard rails, hand rails, and sight rails)   |
|                    | 22 speed humps   |
| Water management   | 954 culverts equating to 14814.5 metres  |
|                    | 8,438 drainage elements (including manholes, soakpits, sumps, etc).                          |
|                    | Surface water channels (including kerb and channel, dish channel, and mountable kerb)        |
|                    | 5,347 sump leads equal to 46,237 metres  |
| Vehicle network    | 13.3 kilometres of unsealed roads (all rural)  |
|                    | 403.7 kilometres sealed roads (247.1 kilometres urban and 156.0 kilometres rural)            |
|                    | 278 retaining walls equating to 7.14 kilometres  |
|                    | 55 bridges and bridge culverts   |
| Traffic service    | five sets of traffic signals (owned by Kāpiti Coast District Council)                        |
|                    | 4,025 line/sign markings equating to 482.4 kilometres  |
|                    | 312 traffic islands (including kerb extension, median, raised platform, splitter, and other) |
|                    | 35 traffic islands (rotary)  |
|                    | 5,825 signs  |

|                  |  |
|------------------|--|
|                  | 5,382 street lights                      |
| Parking          | 54,038 square metres of formed car parks |
| Street furniture | 154 benches                              |

While the One Road Network Classification (ONRC) identifies a hierarchy of roads based on national standards, the appeals version of the Proposed District Plan also contains a hierarchy for planning purposes. This hierarchy can be seen in the map below and includes strategic arterial routes (such as State Highway 1), major community connectors (such as Te Moana Road and Kāpiti Road), and local community connectors such as Otaihangā Road and local roads. The hierarchy is described in the Sustainable Transport Strategy, but has been developed based on function and the level of traffic using these routes. All these roads serve to help support the movement and connectivity of people and goods.

Map of Kapiti Coast's central existing network hierarchy and notional roads



This report provides an assessment of the local transport network and its ability to support forecast growth. The map above, while identifying the existing network hierarchy, also shows notional roads that are identified in the Proposed District Plan as being necessary to support growth. While aspects and connectivity to the State Highway and Public Transport Networks are mentioned where relevant, they are assessed separately as part of regional assessments undertaken by New Zealand Transport Authority and Greater Wellington Regional Council.

#### Measuring network performance

The Kāpiti Coast District Council uses a range of indicators to monitor the performance of the roading network. This includes indicators on access and transport activity required under the Local Government Act 2002 and those customer levels of service that form part of the One Road Classification Network (ONRC). As the reporting evidence base grows, the ONRC and its performance measures will enable New Zealand Transport Agency and each Council to benchmark the performance of our network and inform our investment decisions.

Level of service measures focus on the following key areas:

- Mobility (travel time and reliability) - throughput at indicator sites.



- Resilience (network access and availability) - the number of journeys impacted by unplanned events.
- Accessibility (land access and road network connectivity) - proportion of network not available to Class 1 heavy vehicles and 50MAX vehicles.
- Amenity (travel quality and aesthetics) – aesthetic faults and roughness of road
- Safety – e.g. measured using number of deaths and serious injuries and the communities at risk register.

Looking at each of these performance measures in turn:

- Throughput is an issue on some of our local road network such as on our major community connectors form an important part of our network in moving people and goods. Our performance measures have identified that in Quarter 2 of 2018/19 73% of our residents considered that the existing transport system allows easy movement around the District, which dropped from 78% in 2017/18. We know that congestion is a problem in areas such as Kāpiti Road, which experiences traffic levels in excess of 24,000 vehicles per day, and at Elizabeth Street/Old State Highway 1 in Waikanae. More detail on how we intend to address this is identified in the Paraparaumu and Waikanae sections below.
- More frequent and severe weather events are damaging local road infrastructure and our coastal roads are vulnerable to sea level rise. In setting our funding priorities, we need to ensure that we plan for a more resilient network that prevents damage and can adapt to the effects of these events.
- With regards to accessibility, some of our network is not available for 50MAX vehicles and our ageing population can find that travel choices are more limited. Problems can include access to public transport services, pedestrian and cycle connectivity, parking, the ability for our network to accommodate mobility scooters, and road safety.
- Parking has been, and will continue to be, an issue particular to our major urban areas of Paraparaumu and Waikanae, and is as a result of land use (including out of centre developments with associated parking facilities), mode choice, accessibility, and commuter parking. These problems, particularly around the town centres and railway stations, include insufficient capacity to serve business and commuting needs, spill-over parking into residential areas, and providing the right balance of long term parking (e.g.: to serve commuting needs) and short term parking (to enable turnover of spaces for local businesses). These issues could become increasingly worse as a result of increased development across the District without a management strategy.
- Amenity is where we need to increase our focus. The performance measures shown in the table below identify that we have not met our resurfacing targets. Additionally, since 2017/18 residents consider that there has been a reduction in level of service in a number of areas relating to the objective of our network being affordable and reliable, and users can easily get around the district by their preferred means”.

**Level of Service: Performance Measures**

| Measure   | Target                       | Result  |
|---|------------------------------|---|
| Percentage of the sealed local road network that is | 5% (expressed as kilometres) | A number of roads with the higher cost asphalt surfacing were resurfaced, rather than the lower |

|   |   |   |
|---|---|---|
| resurfaced  |   | cost chip seal roads, so 5% was not achieved in 2017/18. This year result will be reported at the end of year but we are currently on track.  |
| Residents (%) who are satisfied with the condition of roads   | 70%   | Quarter 2 2018/19 68% - dropped from 2017/18 (which was 80%)  |
| Roads that meet smooth roads standards  | Overall smooth travel exposure is above 85%     | NZTA's ONRC database shows a total smooth travel exposure of 90% for 2017/18  |
| Residents (%) who are satisfied with the condition of footpaths   | 65%   | 64% Quarter 2 2018/19 – dropped from 69% in 2017/18   |
| Percentage of footpaths that fall within the service standard for the condition of footpaths as set out in the activity management plan | 2018/19 – 40%<br>2019/20 – 50%<br>2020/21 – 60% | A refined measure has been established using road asset maintenance management data for the 2018/19 year. Proposed is 'the % of footpaths that fall within the service standard for footpaths set out in the Activity Management Plan Year 1: 40%, Year 2: 50% and Year 3:60%'. |

- Turning to safety, from the latest crash data published by NZTA it appears that that over the last 10 years, the serious injury and fatal crash numbers have been trending downwards until 2015, and from there show an upward trend both on the State Highway and on Council's local roads. Compared to our Council peer group, Kāpiti has higher personal risk on secondary roads and the second highest risk for arterial roads. Our accident statistics show that three serious injury crashes have been recorded for the first two quarters of this year on our roads compared to a total of 15 for the whole of 2017/18. Performance measures have also shown that 82% of residents in Quarter 2 2018/19 are satisfied with street lighting, which dropped from the 2016/17 result of 86%.

While these are measures of existing performance, there is also a need to ensure that they are not exacerbated by growth.

#### Summary of Assessment

Council aims to enhance community connectedness through the creation of a well-planned physical transport system that allows for the reliable, efficient, and safe movement of people and goods.

As can be seen from the above performance measures, there are some areas where we continue to need to prioritise our infrastructure spending and ensure that new developments contribute towards solutions rather than add to existing pressures.

Our improvement projects are based on the priorities established in our 30-year programme and Kāpiti Coast District Council has developed a response to our challenges based on a number of key elements:

- Providing additional capacity;
- Encouraging mode shift;
- Maintaining and making the best use of our existing network; and
- Managing the safety of our roads.

The most significant level of infrastructure provision in the Kāpiti District is the Roads of National Significance (RONS) projects being led by the NZTA. As well as increasing capacity within and across our District, the Expressway also provides Council with the opportunity to improve the current road network including the soon-to-be revoked State Highway 1. Additionally, Council has also identified investment in new roading infrastructure and the details of this are identified in the sections relating specific locations below.

However, balancing the ability for Council to maintain the current roading network and fund renewals, while meeting future growth needs, is an ongoing challenge, given the size and scale of the assets and limited funding sources, and increasing capacity is not sustainable in the long-term. Neither does it wholly address other key areas of performance such as resilience, amenity, accessibility and safety.

Opportunities for modal shift are also required as part of network improvements and individual developments. This includes the use and linkages of cycleways, walkways, and opportunities to connect to public transport. This is particularly important when considering 36.3% of our working population commutes outside of the District and there is a high reliance on private cars. It creates the need for good access and connectivity to the State Highway and public transport network and we will continue to work with our partners to monitor demand, seek improvements to public transport, and make the most of opportunities where they arise, such as improvements relating to the revocation of State Highway 1 and train station access. Both capacity improvements and opportunities to encourage mode shift will help support a resilient transport network as well as improve safety and accessibility.

To address issues relating to amenity our renewal and upgrades programme, that is co-funded by the NZTA, will continue to be a spending priority and we will gradually increase the footpath budget to improve on current levels of service measured by resident satisfaction.

With regards to safety, Council is currently undertaking a number of initiatives to support safety for all road users, give effect to the Government Policy Statement, and address communities identified at risk. This includes Districtwide speed limit review and safety interventions on roads that NZTA have identified as being the top 10% of roads that require improvement to address high risks to road users. These are undertaken in accordance with NZTA's requirements. We have a programme of localised road safety schemes such as new roundabouts on major community connectors and pedestrian crossings. In addition, revocation of State Highway 1 provides us with the opportunity to implement schemes that will improve high risk junctions and connectivity, accessibility, and safety within our town centres for all road users.

We work closely with the community through education to reduce the number of road accidents in the region and reduce the social cost of damage to people, vehicles, and property. We run a number of road safety projects and activities involving primary and secondary schools and a range of community groups. The LED lighting conversion will also address safety and performance measures relating to residents' satisfaction of lighting, as well as lead to significant energy cost savings and decrease carbon emissions from this source by more than half.

#### Future Development

Whilst our Long Term Plan identifies Council spending, local transport infrastructure to support new development is also provided by each new development on an 'as needed' basis through master planning, resource consent, and development contribution processes.

Funds from rates, development contributions, and NZTA subsidies are used to help address network maintenance and renewals such as safety of roads and structures, but two issues relate more specifically to new developments' impact on the network. This includes congestion, which is a problem impacting Paraparaumu and Waikanae, and parking, particularly around our town centres and transport hubs, which requires ongoing management. While congestion will be addressed through increased capacity, development led schemes, and projects to encourage mode shift, Council has also developed parking management strategies for Paraparaumu and Waikanae. Some of the parking issues in Waikanae are as a result of limited public transport services in the Ōtaki area, and we continue to perform an advocacy role, and work with our partners to seek improved public transport services.

Looking at our network in more detail, assessment of the local roading network and pressures across the key urban areas of Paraparaumu, Waikanae, Ōtaki, and Paekākāriki is outlined below. The revocation process to vest current State Highway 1 in Council has enabled Council to think more innovatively about how our town centres should look, feel, and operate in the future, supporting future growth.

The Council will continue to work with Greater Wellington Regional Council and New Zealand Transport Agency to ensure that schemes of significance are identified and funding secured in the Regional Land Transport Plan and National Land Transport Programme. We note that the Greater Wellington Regional Council have also identified the role of public transport in responding to growth and we will work with them to ensure the needs of Kāpiti are met. We are generally supportive of the approach to public transport provision and have been seeking bus and rail improvements in our District, particularly in Ōtaki. We note the layered hierarchy of services as being core routes, local routes, and targeted services and want to ensure that improvements to core routes are not at the expense of local routes. In addition, in planning new developments we will take account of the public transport planning and the needs of public transport through appropriate design.

#### Paraparaumu

While the completion of the McKay's to Peka Peka Expressway has improved capacity and helped reduce traffic levels across the wider network, it has not reduced congestion on Kāpiti Road, with inter-peak periods not varying significantly to the morning and afternoon peak. Poor east-west connections within Paraparaumu town centre and adjacent areas are a key contributor to congestion. Based on current conditions, future plans for anticipated growth and intensification around the Paraparaumu District Centre, along with future business development around Te Roto Drive and the Kāpiti Airport, would see congestion along Kāpiti Road and Rimu Road worsen.

The East West Connectors project has been identified as a significant project in both the Kāpiti Coast District Council Long Term Plan and the Regional Land Transport Plan. The project includes a number of proposals including providing a connection between Ihakara Street and Arawhata Road, linking Ihakara Street to the north-west, and improving access to town centre development. This will help address current issues such as congestion on Kāpiti Road and support economic and residential growth in the town centre and airport areas.

In combination with parking restrictions (such as time restrictions) to manage demand and enforcement, the number of existing car parking spaces available have gone some way to enable shopping, worker, and commuter parking to park safely in the Paraparaumu central business area. However, there are parking pressures from worker and commuter parking spilling into residential areas and creating problems around the railway station. We are developing

Phase 3 of a parking strategy, considering proposals and recommended actions from Phases 1 and 2, as well as working with our partners to look at options to address these issues in the future.

In addition, the proximity for intensification of residential development to the town centre and railway station is expected to support plans for modal shift. Plans are currently being developed for improved access to the railway station in Paraparaumu for public transport, pedestrians, and cyclists, and this includes an at-grade crossing, amenity improvements, and integrating bus and train services. Other schemes include:

- improved connections for Coastlands and the civic precinct;
- upgrade of Kāpiti Lights (completed)
- assessment of junctions along Kāpiti Road and possible improvements;
- improvements to Iver Trask Place (completed) to improve pedestrian activity and amenity;
- Rimu Road streetscaping to improve the pedestrian environment and amenity; and
- the Paraparaumu town centre link road.

#### Waikanae

Waikanae is expecting the largest amount of growth across the District, largely associated with the Ngarara and Waikanae North developments, but also as development occurs along Waikanae East (along the bottom of the Hemi Matanga Range) and in rural Reikorangi, linked to the back of Waikanae via the Akatarawa Road.

Growth and accessibility across the Ngarara and Waikanae North developments are supported by a proposed road in the Proposed District Plan. The proposed road will be developed and vested as development progresses and provide a second link between Waikanae Beach, new areas for development, the Waikanae town centre, and Old State Highway 1.

Waikanae currently experiences congestion where Elizabeth Street crosses the Old State Highway junction, which experiences congestion with traffic giving way at lights and a train crossing. A notional link road between Hadfield Road and Huia Street has been identified in the Proposed District Plan and is being investigated as an alternative route to relieve pressure on the Elizabeth Street junction.

Waikanae town centre has also been experiencing parking pressures, particularly with demand from train commuters. The Greater Wellington Regional Council has constructed a large new commuter car park in Waikanae town centre to add to the Park and Ride provision along the Kāpiti Line. This has helped relieve the parking pressures around the Waikanae train station, but has not completely resolved parking issues in the area. As a result, we are implementing the parking strategy, taking on board proposals and recommended actions from Phases 1 and 2, as well as working with our partners to look at options to address these issues in the future.

In Waikanae, the Council has a number of schemes planned or underway to deliver a viable and attractive roading and access system that can accommodate the impact of projected passenger transport and growth, vehicle, pedestrian and cycle movements and enhances the Waikanae town centre. This includes:

- improved connections to the railway crossing (such as a new pedestrian crossing);
- upgrades to Mahara Place, upgrades to car parking;
- improved links between the Whakarongotai Marae and the town centre;
- upgrade of the Te Moana intersection and connection to Waikanae River;
- improvements to the Ngaio Road streetscape;

- Minor road realignments;
- Revocation of State Highway 1; and
- Te Moana Road improvements.

#### Ōtaki

While Ōtaki is set to receive less growth than other centres, it is growing. The Peka Peka to Ōtaki expressway is currently in construction and expected to be completed in 2021. The new expressway will provide further challenges and opportunities to Ōtaki. While Ōtaki currently has limited rail services, the expressway will provide better access in and around the State Highway network. Rooding link to support growth in Ōtaki North are currently being explored along with an assessment of the impact on the railway precinct and the town centre of the Peka Peka to Ōtaki Project. We continue to work with local interest groups to look at schemes that may be implemented in the future.

#### Paekākāriki

Paekākāriki local roading network has ongoing safety considerations where it adjoins the state highway network. The upcoming completion of Transmission Gully is expected to result in a significant reduction in the amount of traffic passing through the interchange. This, along with the revocation of State Highway 1, provides the opportunity for these safety issues to be addressed. The impacts of future development would need to be considered in the context of current pressures, such as safety and issues, relating to the railway line.

#### Network improvements

As discussed above a number of specific transport projects that are planned that will enable future development capacity. These will be considered further within the context of infrastructure to support growth within an infrastructure delivery strategy but include:

- Transmission Gully (government-led);
- Peka Peka to Ōtaki Expressway (government-led) and upgrade the connection at Te Horo from the Peka Peka Expressway to Ōtaki Forks (removes severance from Ōtaki township);
- Proposed Ihakara Street to Arawhata Road relief road (potentially 2022 subject to Provincial Growth Fund application);
- Ihakara and airport connector road (2035);
- Construct a roundabout at the Mazengarb Road/Ratanui Road intersection to improve the current level of service of this intersection and improve safety;
- Annual (low cost, low risk) minor safety enhancement programme;
- Notional roads identified in the Proposed District Plan such as Ōtaki North and Hadfield Road;
- Waikanae emergency rail access;
- Conversion of the District's streetlights to improve amenity and safety;
- Revocation Town Centre Projects – to improve accessibility, connectivity, and safety;
- Deliver the annual general maintenance and renewals programme for the roading network – including maintenance and renewals of footpaths;
- Road safety education programme including school travel planning;
- Road network planning as part of Council's regulatory planning processes;
- Kapiti Road signalisation optimisation to improve flows; and
- Continued work with partners to look at ways of improving access to and use of public transport services.

### Summary of local roading network capacity to meet forecast growth levels

Discussion and analysis from the Council's Transport team has identified that Kāpiti Coast's local roading network has sufficient capacity to support its future forecast growth. This is largely based on the ability for the planning process to mitigate future issues from development on a case-by-case basis through the planning process. However, the realisation of capacity in key growth locations of Paraparaumu and Waikanae is reliant on resolving current constraints around congestion, through the realisation of key roading projects and encouraging mode shift through better infrastructure and seeking upgraded service provision.

|                     | 3 years | 10 years | 30 years | Comments  |
|---------------------|---------|----------|----------|---|
| Paekākāriki         | Yes     | Yes      | Yes      | Improvements to the junction with Beach Road with Old State Highway 1 need to be explored further.                              |
| Raumati/Paraparaumu | Yes     | Yes*     | Yes      | *The RONS projects and east-west connectors will play a large part in alleviating current congestion and supporting new growth. |
| Waikanae            | Yes     | Yes      | Yes      | RONS projects, new development, and notional roads in the Proposed District Plan will provide opportunities to support growth.  |
| Ōtaki               | Yes     | Yes      | Yes      | RONS projects, new development and notional roads in the Proposed District Plan will provide opportunities to support growth.   |

### Assessing capacity of Kāpiti Coast's open space network

#### Description of network

The Council manages an assortment of open spaces. These range from formal parks and gardens to sports grounds and natural areas, covering a total of 721.6 hectares. Open spaces provide recreational, social, and cultural opportunities for all people within the District as well as supporting biodiversity and ecological function. Likewise, in some areas, open spaces offer disaster relief, while also providing a capacity to manage stormwater runoff and overflow.

| Open space category | Asset type   | Area owned or managed               |
|---------------------|--|-------------------------------------|
| Total open space    | Open space   | 721.65 hectares<br>536 land parcels |
| Parks               | Sport & recreation<br>Neighbourhood<br>Public gardens<br>Civic space | 207.13 hectares                     |
| Sports grounds      | Sports grounds   | 94 hectares                         |
| Playgrounds         | Playgrounds  | 45 playgrounds                      |



|  |  |   |
|--|--|---|
|  |  | 4 skate parks                             |
| Reserves and monitored ecological sites <sup>7</sup> | Natural Recreation & ecological linkages | 410.3 hectares                            |
| Cemeteries   | Cemeteries                               | 11.66 hectares<br>4 operating<br>1 closed |
| Built assets (pavilions, toilets, furniture, etc.)   | Built assets                             | 7,676 individual assets at minimum        |

**Diagram: Map of Kāpiti Coast District public open space (2012)**



#### Measuring network performance

A key level of service for open space is that residents in urban areas live reasonably close to a recreation facility (including other publicly owned space) and a range of active recreation facilities is available throughout the District. Specific measures of this include:

- Residential dwellings in urban areas are within 400 metres of a publicly owned open space
- Sports grounds are open (scheduled hours and weather dependent)
- Residents are satisfied with availability of facilities
- Residents are satisfied with the quality and range of recreation and sporting facilities in the District

<sup>7</sup> Monitored ecological sites may be Council owned or privately owned. Council assists with grants and advice for the privately owned sites.

- Residents are satisfied with council playgrounds

#### Summary of assessments

The Council's last assessment of open space was conducted as part of the development of the Open Space Strategy in 2012. The assessment identified that despite a period of significant population growth over the previous 20 years, the District remained abundant with open spaces. River corridors, coastal/beach reserves, and local parks all provided residents with a plethora of opportunities to use and enjoy open space. The Open Space Strategy 2012 is currently under review.

The assessment used a strategic comparison against a national standard of 4 hectares/1000 residents as a measure of provision. At that time, Kāpiti had an open space area of 445 hectares and a ratio of 9.32. If we used the same area and compared it the population forecast at that time for 2031 (58,284) the ratio would be 7.6. While this does not account for any additional reserves land acquired by council over the future period, it is still well above four. Comparing the current amount of open space of 721.6 hectares with the ID forecast for population of 65,786 by 2047, would provide a ratio of 10.96. Again, while this does not account for potential future reserve additions, it indicates that the open space ratio has continued to be well above the national standard and provide plenty of capacity to accommodate future development.

The difference between the 445 hectare figure in the 2012 Strategy and the latest 721.6 hectare figure includes the acquisitions of a number of significant reserves including Otaraue Park and as part of the Waikanae North Development, and better information on the range of council owned/managed reserve spaces, including those supporting water supply and ex-local road reserve purposes.

#### Kāpiti Coast District Council population figures from the Open Space Strategy 2012

| Area                  | 2010          | 2031          | Projected % increase |
|-----------------------|---------------|---------------|----------------------|
| Ōtaki                 | 5,470         | 6,311         | 15.37                |
| Rural North           | 2,741         | 2,607         | -4.8                 |
| Waikanae              | 10,625        | 15,594        | 46%                  |
| Paraparaumu/Otaihanga | 18,211        | 21,532        | 18.24                |
| Raumati               | 8,264         | 10,061        | 21.74                |
| Paekākāriki           | 1,559         | 1,284         | -17.64               |
| Rural South           | 872           | 896           | 2.75                 |
| <b>Total</b>          | <b>47,742</b> | <b>58,284</b> | <b>22.08</b>         |

The assessment of current public open space provision was undertaken at two scales: at a community or ward scale to assess community needs, and at a Districtwide scale to assess broader landscape, ecological, and community needs.

However, while the ratio indicates a healthy provision of open space, Council goals with regard to containment of the urban area raises gaps within the distribution of open spaces, with unevenness between the different wards. Much of this issue can be explained by the large influence of regional parks that are located within some wards. However, because of the large distribution of open space in the District, many communities are not within the reasonable walking distance parameters addressed within the Open Space Strategy 2012.

The 2012 analysis identified some initial gaps with regards to community's access to Council open spaces, but these were mitigated by access to alternative open spaces i.e. schools, beaches, or Department of Conservation land. The strategy recognised that with growing demands in the District there may be a need for more proactive management and provision of open spaces.

#### Total open space provision from the Open Space Strategy 2012

| Ward                | Kāpiti Coast District Council owned public land (hectare) | Total public open Space (hectare) |
|---------------------|---|-----------------------------------|
| Ōtaki               | 61  | 33,142                            |
| Waikanae            | 97  | 415                               |
| Paraparaumu         | 78  | 853                               |
| Paekākāriki/Raumati | 88  | 3235                              |
| <b>Total</b>        | <b>324<sup>8</sup></b>                                    | <b>37,645 hectares</b>            |

Map 4: Paekākāriki residential areas with inadequate access to Council public open space



<sup>8</sup> This figure does not include reserve areas that are not owned by the Council but are actively managed by the Council on behalf of the owner (and example includes Crown-owned coastal reserve areas above mean spring tide).

Map 5: Paraparaumu/Raumati residential areas with inadequate access to Council public open space



Map 6: Waikanae residential areas with inadequate access to Council public open space



Map 7: Ōtaki residential areas with inadequate access to Council public open space



The location, type, and extent of new public open space is to a degree dictated by the location and extent of new private development. Council can identify areas of expansion, but the specifics are often not at a level applicable for development until a much later stage. Developments are also subject to economic forces and other factors which create uncertainty.

Currently, the primary locations of greenfield development which may lead to new parks and open space development are in the Ngarara zone, on the urban fringe of Waikanae North and some limited space in Ōtaki. It is also recognised that infill housing and intensification increases the use of existing assets, requiring additional investment in order to maintain levels of service in line with growth and community expectation.

The assessment of reserves is required as part of the process of assessing new development. This includes contributions to the Council towards the acquisition, protection and enhancement of areas of cultural, ecological, or amenity value. This is to address additional demand caused by development. The reserve contribution can either be paid to improve existing facilities, or land developers can set aside a piece of land for open space use, or a mix of both.

The prevailing trend in open space demand is the need to balance increased growth with the provision of quality open space experiences. The community has a desire for a quality natural environment and managing this expectation in relation to future growth will be one of the primary challenges for the open space network in the medium term. This will involve both reinvestment in existing open spaces as well as the acquisition of new open spaces.

The future demands on Council's open space network are currently being reassessed as part of a review of the Open Spaces Strategy, which guides the future development of the network. This strategy will be reviewed in consultation with the community in 2019/2020 to ensure it is in keeping with current needs. The review of the Open Spaces strategy will inform a review of the Development Contributions policy as part of the next Long Term Plan.

### Network improvements

Our programme of key network improvements includes:

- Reviewing our Open Spaces Strategy to ensure we are up to date with issues relating to network development and management for the next Long Term Plan.
- A project to prepare and review Reserve Management Plans for all reserves in the District beginning in 2019.
- The development of Otarua Park as a Districtwide sports and recreation facility.
- Rolling programme of asset renewals for the District's playgrounds.
- Drainage upgrades to major sports fields and the establishment of new artificial surfaces in 2021 and 2031.
- Minor upgrades to Maclean Park in 2018/19 and 2020/21 with new destination facilities in 2031.
- Continuation of new asset development to maintain burial capacity in our cemeteries.
- Rolling programme of environmental restoration and biodiversity improvements across the District.

### **Summary of openspace network capacity to meet forecast growth levels**

Discussion and analysis with the Council's Parks and Open Spaces team identifies that, overall, the District has sufficient open space infrastructure available or planned to meet the needs of forecast growth. The ability to consider new development on a case-by-case basis at both the local and District scale provides a key mechanism to address any current gaps and future needs and demands. While there are some gaps in services to current developments, this does not constrain new greenfield development, but does present opportunities around infill to fill these gaps.

The current review of the Open Space Strategy will enable future needs, demand, and proprieties to be identified and applied through the development process as well as informing Council's wider reserve management and acquisition functions.

|             | 3<br>years | 10<br>years | 30<br>years | Comments  |
|-------------|------------|-------------|-------------|---|
| Paekākāriki | Yes        | Yes         | Yes         | The current review of the Open Space Strategy will refresh Council's strategic priorities for managing the Kapiti Coast's openspace reserves, including how, where, and how contributions from new development will support the ongoing development of the Kāpiti Coast' openspace network. |
| Raumati     | Yes        | Yes         | Yes         |   |
| Paraparaumu | Yes        | Yes         | Yes         |   |
| Waikanae    | Yes        | Yes         | Yes         |   |
| Ōtaki       | Yes        | Yes         | Yes         |   |

### Assumptions made in assessments

In order to assess the capacity of infrastructure against future population growth, it has been necessary to make a number of assumptions and simplifications. A number of these are covered in the report itself, but a number are also identified below to serve as caveats to the overall findings of this report.



Extrapolating future growth

ID forecast population projections cover a 30-year period from 2013 to 2043. The NPS-UDC requires 30 years' coverage from 2017 to 2047. To achieve this, it was necessary to extrapolate ID forecast figures out a further four years. This was undertaken by taking the growth rates for the last remaining years of the model and applying them out across the four-year period.

Differences between boundaries

There are a small number of differences between statistical areas and boundaries used for modelling against the boundaries or areas covered by network infrastructure. An example of this includes future population growth for parts of Peka Peka and Reikorangi which were included in the assessment against reticulated water and wastewater capacity, despite neither being connected to the reticulated network.

There are only a small number of examples where this is the case, with each only holding a small percentage of the overall population. Including these areas effectively increases the amount of people that need servicing, in effect creating further headroom in capacity calculations.

Future processes will look at opportunities to further improve capture and alignment of data across different boundaries.

Water and wastewater

A number of assumptions have been made consistently across the water and wastewater modelling. This includes an allocation of 10% to infill of current sites; that future need does not account for any new significant wet industries; and that inflow and infiltration does not get worse (e.g. new pipes should be water tight).

Stormwater

Current modelling of network capacity constraints and proposed District Plan planning restrictions take into account early projections for future predicted rainfall and sea level rise. Further modelling work is planned to update this information for the District in line with the latest central government guidance.