WAIMAKARIRI
DISTRICT COUNCIL

# Activity Management Plan 2021

## Waikuku Beach Water Supply Scheme

3 Waters | July 2021

**Prepared by**

**Waimakariri District Council**

**215 High Street,**

**Private Bag 1005**

**Rangiora 7440,**

**New Zealand**

**waimakariri.govt.nz**

***Revision History*:**

| Revision Nº | Description | TRIM | Date |
|---|---|---|---|
| A | Draft for Presentation to U and R Committee | 200120006307 | 18/12/2020 |
| B | Draft for presentation to Council | 200120006307 | 23/02/2021 |
| C | Final for presentation to Council | 200120006307 | |
| | | | |
| | | | |

**Document Acceptance**

| Action | Name | | Signed | Date |
|---|---|---|---|---|
| Prepared by | Colin Roxburgh | Water Asset Manager | | 05/02/2021 |
| | Simon Collin | Infrastructure Strategy Manager | | 05/02/2021 |
| | Chris Bacon | Network Planning Team Leader | | 17/02/2021 |
| Reviewed by | Kalley Simpson | 3 Waters Manager | | 17/02/2021 |
| Approved by | Gerard Cleary | Manager Utilities and Roading | | 17/02/2021 |
| Adopted by | Council | | | |

## Contents


**1 Executive Summary ... 4**

**2 Introduction ... 5**

**3 Related Documents ... 5**

**4 Scheme Description (What Do We Have?) ... 5**

**5 Scheme Management Issues (What Do We Need to Consider?) ... 9**

5.1 Levels Of Service ... 9

5.2 Asset Condition ... 14

5.3 Asset Criticality ... 17

5.4 Risk Assessment ... 19

5.5 Water Safety Plan ... 19

5.6 Disaster Resilience Assessment ... 20

5.7 Growth Projections ... 21

5.8 Capacity & Performance ... 23

**6 Future Works & Financial Projections (What Do We Need To Do?) ... 27**

6.1 Operations & Maintenance ... 27

6.2 Renewals Programme ... 28

6.3 Capital Works ... 31

6.4 Financial Projections ... 35

6.5 Valuation ... 35

6.6 Revenue Sources ... 35

**7 Improvement Plan ... 37**

7.1 2021 Improvement Plan ... 37

**8 Changes to AMP as a result of Long Term Plan consultation ... 37**

**Tables**

Table 1: Key Asset Management Components....4
Table 2: Scheme Statistics for 2019/2020....6
Table 3: Water Supply Pipe Data Summary....7
Table 4: Water Supply Valve Data Summary....7
Table 5: Data References....7
Table 6: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020....10
Table 7: Adopted Reticulation Asset Base Lives for Pressure Pipes....14
Table 8: Pipe Condition Summary....16
Table 9: Number of Events per Level of Risk....19
Table 10: Risks to Above Ground Facilities....20
Table 11: Growth Projections....22
Table 12: Scheme Sources....24
Table 13: Project Demand and Required Capacity for Scheme....24
Table 14: Summary of Capital Works (Includes Renewals)....33
Table 15: Asset Valuation....35
Table 16: 2021 AMP Improvement Plan....37

**Figures**

Figure 1: Network Schematic....8
Figure 2: Pipe Condition Assessment Plan....15
Figure 3: Asset Condition Summary....16
Figure 4: Pipe and Facilities Criticality....18
Figure 5: Population Projections....23
Figure 6: Flow Projections....23
Figure 7: Projected Operation & Maintenance 30-Year Budget....27
Figure 8: Pipe Renewal Time Frames....29
Figure 9: Annual Water Renewals 150-Year Budget....30
Figure 10: Projected Capital Works Expenditure....32
Figure 11: Projected Capital Upgrade Works (not to scale)....34
Figure 12: Projected Total Expenditure....35
Figure 13: A1 - Plan of Serviced Area – Waikuku Beach....38
Figure 14: A2 - Plan of Fire District & Extent of Fire Mains....39
Figure 15: Waikuku Beach Water Supply Statistics....40

# 1 Executive Summary

The following table provides a summary of the key asset management components that have been assessed for the Waikuku Beach Water Supply Scheme. These have been identified through consideration of the levels of service, consents, asset condition, risk analysis, disaster resilience, growth projections, and capacity assessment:

***Table 1: Key Asset Management Components***

| | |
|---|---|
| Resource Consents | The scheme continues to comply with its resource consent conditions. |
| Levels of Service (LoS) | Most levels of service for this scheme are being met. The exception to this are those that relate to water aesthetics, hydrant placement and water usage.<br>Aesthetic parameters are met most of the time, and the LoS performance measure has been adjusted from 2021 forward.<br>Meeting hydrant placement is not a mandatory requirement, as the supply is not within a gazetted firefighting zone. Hydrant placement requirements are met for 99% of properties, and consideration needs to be given to whether the investment required to achieve 100% is justified.<br>Implementation of actions within the Water Conservation Strategy is required before usage LoS can be met. |
| Asset Condition | The majority of the scheme is in good condition, with only minor renewals required over the next 50 years. |
| Capacity and Performance | The capacity of the well supply, (and consents), headworks and reticulation has been assessed as being capable of meeting current and future demand.<br>No storage has been supplied, as it is considered that the underground aquifers constitute sufficient storage.<br>The supply is unchlorinated and it may be challenging to obtain approval for the Water Safety Plan on this account. Dialogue with the Ministry of Health is ongoing. |
| Risk Assessment | There are no remaining high risks on this scheme identified through the risk assessment. |
| Disaster Resilience | The Disaster Resilience Assessment indicated the Kings Ave headworks require further security assessment given the high hazard from public interference. |
| Growth Projections | The scheme growth in connection numbers over the next 50 years is projected to be 23%. Progressive upgrades will be required to accommodate this growth |

## 2 Introduction

The purpose of this Activity Management Plan (AMP) is to:

- Provide an overview of the Waikuku Beach water supply scheme and the assets that make up the scheme;
- Outline any significant issues associated with the assets, and show how the Council will manage these;

This plan summarises the various components of the Waikuku Beach water supply scheme, its condition and performance, and identifies future funding requirements including upgrades where necessary.

The data that has been relied upon to produce this document was taken at the end of the 2019/20 financial year (i.e. 30 June 2020). There are more up to date scheme statistics available on document 121108078783 which is intended to be updated quarterly.

Further details of the asset management practices used by Council to manage this scheme are summarised in the District Water Supply AMP Overview document (200120006283).

Projects identified to improve asset management processes for this scheme will also benefit the performance of other 3 waters schemes and are managed at a District level for efficiency.

Projects are also identified within this AMP that will maintain or improve levels of service.

All figures within this AMP exclude inflation.

## 3 Related Documents

The following related documents have been used as reference documents or for guidance in the development of some of the sections in this Activity Management Plan

- Waimakariri District Plan
- Population in the Waimakariri District (TRIM 170328030077)
- New Projections for LTP 2021-2031 (TRIM 200908117997
- WDC Asset Management Policy (TRIM 180605062091)
- 2019 Customer satisfaction Survey (TRIM 200313034937)
- Development Contributions Policy 2021/22 (TRIM 200729095963)

## 4 Scheme Description (What Do We Have?)

The Waikuku Beach Water Supply Scheme is a predominantly urban water supply with some firefighting capacity, with a small number of restricted connections as well.

The water is sourced from two artesian wells on Kings Avenue which are treated with ultra-violet (UV) disinfection, with a back-up supply from another artesian well at the Camping Ground.

The UV disinfection treatment system at Kings Avenue was installed at the end of 2017 in order to achieve compliance with the protozoal requirements of the DWSNZ. Prior to this, water had been delivered untreated.

Some key statistics (2019/20 year) of the scheme are shown in Table 2 to 5. The extent of the currently serviced area and comprehensive flow data records are presented in Figure 13 and Figure 15.

A schematic view of the principal source, treatment, and distribution system is presented on the following page Figure 1.

***Table 2: Scheme Statistics for 2019/2020***

| Scheme Parameter | Data | Source |
|---|---|---|
| Type of Supply | Urban (on demand) with some fire flow provided, although not a gazetted scheme. | |
| Principal Source | Kings Ave Well 1 and 2 (artesian non-secure groundwater) | |
| Back-up Source | Camping Ground well (artesian non-secure groundwater) | |
| Treatment | UV treatment system installed at Kings Ave in 2017. Backup chlorination system is available. | |
| Nominal Storage Capacity | Artesian aquifers (no above ground storage, but water drawn directly from wells). | |
| Length of Reticulation | 14.7 km | Water Asset Valuation Tables 7-4 and 7-5, pages 53 - 55. |
| Total Replacement Value | $4.95 mil | |
| Depreciated Replacement Value | $3.30 mil | |
| Number of Connections | 468 | 2019/20 Rates Strike |
| Number of Rating Charges | 538 | |
| Average Daily Flow (5 year average) | 546 $m^3$/day | Flow Data Analysis - Water |
| Peak Daily Flow (5 year average) | 1,400 $m^3$/day | |
| Resource Consent Abstraction Limit (Principal Source) | 3,456 $m^3$/day<br>(expires 16/04/2032) | CRC190900<br>200409044078 |
| Average Daily Flow per Connection (5 year average) | 1,173 L/day/conn. | Flow Data Analysis - Water |
| Peak Daily Flow per Connection<br>(5 year average) | 3,007 L/day/conn. | |

*Table 3: Water Supply Pipe Data Summary*

| Water Supply pipe length (m) by diameter and pipe material | | | | | |
|---|---|---|---|---|---|
| **Pipe Material** | **Pipe Diameter (mm)** | | | | |
| | **< 50** | **50** | **100** | **150** | **Total** |
| Asbestos cement | 0m | 0m | 1,597m | 626m | 2,223m |
| PE | 166m | 2,609m | 0m | 0m | 2,785m |
| PVC | 98m | 2,576m | 4,919m | 2,043m | 9,635m |
| Steel | 0m | 0m | 0m | 23m | 23m |
| **Total** | **265m** | **5,185m** | **6,516m** | **2,693m** | **14,667m** |

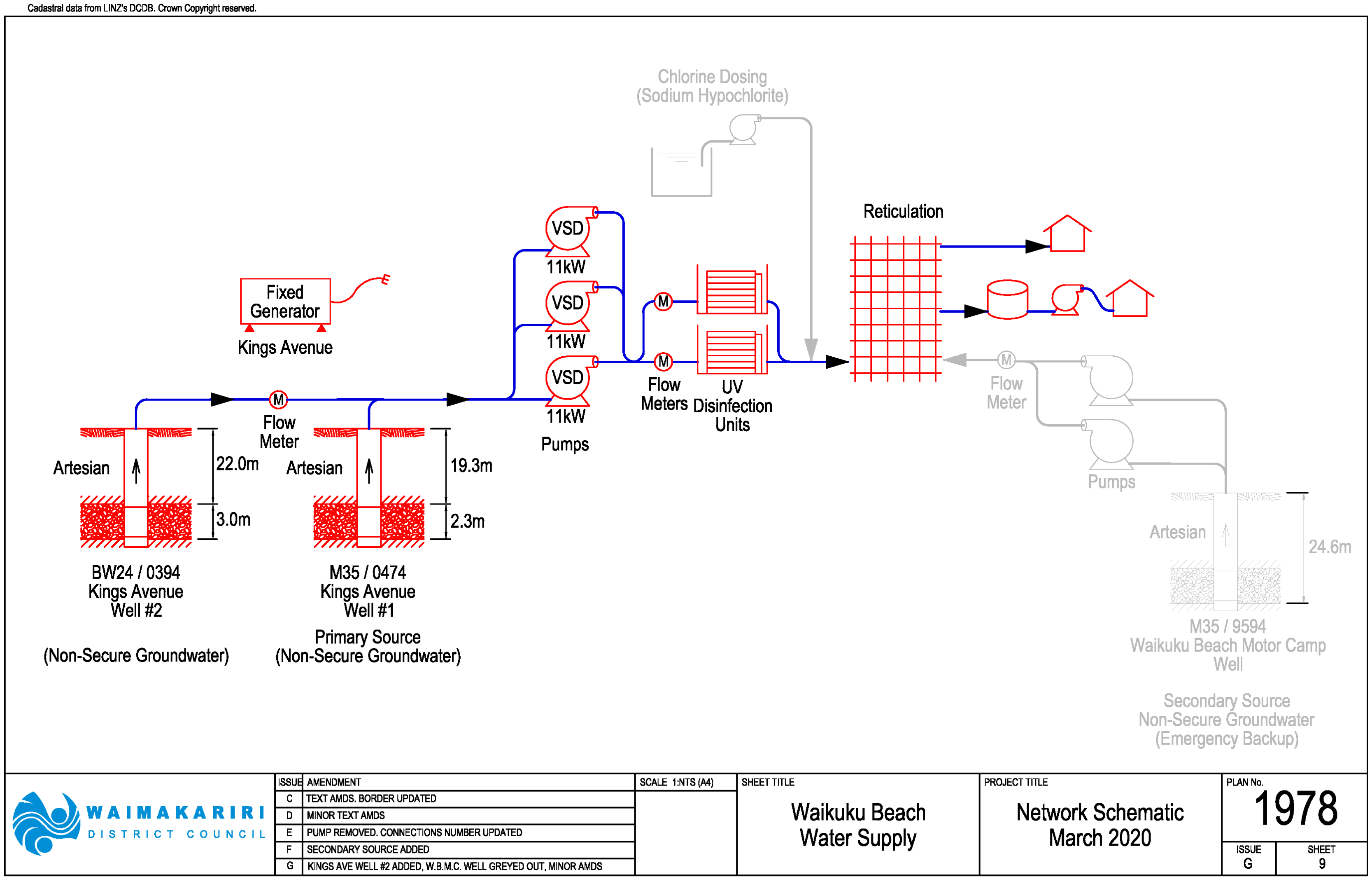
*Table 4: Water Supply Valve Data Summary*

| Water Valves | |
|---|---|
| **Diameter (mm)** | **Count** |
| < 50 | 6 |
| 50 | 40 |
| 100 | 38 |
| 150 | 13 |
| **Total Valves** | **97** |
| **Fire Hydrants** | **60** |

*Table 5: Data References*

| Data Reference | Trim Reference |
|---|---|
| Water supply flow data analysis | 121108078783 |
| 2020 3 Waters Asset Valuation | 200824109857 |
| 2020 Water Conservation Strategy | 200501050668 |
| 2020 50 Year Water and Sewer Growth Forecast | 200224024348 |
| 2019 Water Safety Plan | 190822117588[v3] |
| 2014 Water safety Plan | 141205133867 |
| 2014 Water System Assessment | 141205133860 |
| 2020 Fire Fighting Code of Practice Compliance Update | 200904117110 |

***Figure 1: Network Schematic***



# 5 Scheme Management Issues (What Do We Need to Consider?)

There are a number of key aspects to consider when managing a water supply; these include:

- Target & actual levels of service
- Asset condition & criticality
- Capacity & performance of the supply
- Risks associated with the supply
- Growth predictions for the scheme

These issues have been assessed in detail and are explained in the following sections.

## 5.1 Levels Of Service

Table 6 sets out the performance measures and targets specific to the Waikuku Beach water scheme, and performance achievement against targets since 2008.

Mandatory performance measures are measured at the district wide level and are not included in the individual water supply scheme AMPs. They are located in the District Overview Water Supply Activity Management Plan. However there is considerable overlap between the measures at Scheme and District levels. Mandatory measures cover drinking-water standard compliance, water losses, time to respond to faults, and complaints. The scheme LOS measures also include drinking-water standard compliance, water losses and outages, among other measures. However, within the scheme AMP, these are assessed at the scheme level rather than at a district level. These scheme level results then feed into the district level results in the overview document.

None of the WDC targets are planned to change over the 10 year LTP period, so only the one target value has been shown in this document.

Performance in Table 6 is measured against the performance measures set in 2018, as part of the 2018-28 Long Term Plan process. Going forward from 2021 onwards, performance will be against the modified set of performance measures that were presented to the Council's Utilities and Roading Committee in 2020 (refer report 200406043184[v2]), and subsequently approved by Council. These revised levels and targets are detailed in the District Overview Water Supply Activity Management Plan.

***Table 6: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020***

**** Note "Y" indicates that the LOS has been met, and "N" indicates it has not been met***

*# Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment.*

| Section | Level of Service | 2018 – 2021 Performance Measure | 2018 – 2021 Target | 2020 | | | | Previous Results# | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result | Commentary | Status | Action to Address | 2017 | 2014 | 2011 | 2008 |
| Resource Consents | Consent Breach – Action Required | Number breaches of consent conditions that result in an ECan report that identifies compliance issues. | Nil/yr | Nil | No non-compliance reports from ECan. | Achieved | NA | Y | Y | Y | Y |
| DWSNZ | DWSNZ - Aesthetic Compliance | Water supply delivers water that complies to a standard suitable for compliance with the aesthetic requirements of DWSNZ | Complies | Doesn't comply | pH marginally less than aesthetic guideline range of 7 - 8.5 at times. | Not achieved | LoS amended from 2021 onwards. Refer Overview document. | Y | N | N | N |
| | DWSNZ – E. Coli Presence | Number of instances where the presence of E coli was detected at the headworks or within the reticulation | Nil/yr | Nil | No E. coli detected | Achieved | NA | Y | Y | Y | Y |
| | DWSNZ - Protozoa Compliance | Water supply delivers water that achieves a standard suitable for compliance with the health requirements of DWSNZ | Complies | Complies | UV treatment to achieve protozoal compliance | Achieved | NA | Y | N | N | N |
| | DWSNZ - Sampling Non-compliance | Number of instances where sampling programme did not comply with DWSNZ, as demonstrated by Water Information NZ (WINZ) database | Nil/yr | Nil | All samples taken in accordance with DWSNZ | Achieved | NA | Y | Y | Y | N |

| Section | Level of Service | 2018 – 2021 Performance Measure | 2018 – 2021 Target | 2020 | | | | Previous Results# | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result | Commentary | Status | Action to Address | 2017 | 2014 | 2011 | 2008 |
| Fire Fighting | Fire CoP - Hydrant Placement - Urban | Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for placement of hydrants | 100% | 99% | Isolated areas where hydrant placing standards are not met. | Not achieved | Consider review of level of service versus investment required to fully meet target. | Y | Y | Y | Y |
| Fire Fighting | Fire CoP – System Flow - Urban | Percentage of properties within a Fire District serviced by a reticulated system that complies with the Fire Service Code of Practice for flow from system | 95% | 100% | Flow able to be delivered calculated by hydraulic model of reticulation network | Achieved | NA | N | Y | Y | Y |
| Water Losses | Water losses as determined by measured or calculated minimum flow for On Demand schemes | Water losses as determined by measured or calculated minimum flow for On Demand schemes | < 240 litres/ connection/ day | 194 | Data as per Water Conservation Strategy (200501050668). | Achieved | NA | N | N | N | Y |
| Service Outages | Outages - Events >8 hours | Number of events that cause water not to be available to any connection for >8 hours | Nil/yr | Nil | No events > 8 hours during 19/20 period | Achieved | NA | Y | Insuf. Data | Y | Y |
| Water Pressure | Pressure - Point of Supply - On Demand | Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as | >250kPa for 100% of the time | Complies | Validated by water model, running scheme at target demand and | Achieved | NA | Y | Y | Y | Y |

| Section | Level of Service | 2018 – 2021 Performance Measure | 2018 – 2021 Target | 2020 | | | | Previous Results# | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result | Commentary | Status | Action to Address | 2017 | 2014 | 2011 | 2008 |
| | | demonstrated by a reticulation model or audits. | >300kPa for 99% of the time | | ensuring target pressure is achieved. | | | | | | |
| Scheme Capacity | Scheme Capacity - On Demand | Actual peak capacity of the scheme for domestic use - On Demand | >2500 litres/ connection/ day | Complies | Validated by water model, running scheme at target demand and ensuring target pressure is achieved. | Achieved | NA | Y | Y | Y | Y |
| Storage Volume | Storage - On Demand | Volume of available and usable storage for On Demand and Semi-Restricted schemes (dependant on source type) | Source and demand dependent | 0.0 hours | No storage requirement, as water is drawn directly from artesian head. | Achieved | NA | Y | Y | Y | Y |
| Water Usage | Usage - Average Day | Actual usage on average day | Maintain the average daily water use below 100% of the assessed reasonable water use | 104% | Refer to Water Conservation Strategy (200501050668) | Not achieved | Implement actions as identified in Water Conservation Strategy. | Y | Y | Y | NA |
| Water Usage | Usage - Peak Day | Actual usage on Peak Day | Reduce the peak daily usage to below 110% of the assessed | 159% | Refer to Water Conservation Strategy | Not achieved | Implement actions as identified in Water | N | N | N | N |

| Section | Level of Service | 2018 – 2021 Performance Measure | 2018 – 2021 Target | 2020 | | | | Previous Results# | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result | Commentary | Status | Action to Address | 2017 | 2014 | 2011 | 2008 |
| | | | reasonable water use | | (2005010506 68) | | Conservation Strategy. | | | | |

## 5.2 Asset Condition

The asset condition for the reticulation has been determined based on criteria set out in the International Infrastructure Management Manual (IIMM), published by the Institute of Public Works Engineering Australasia (IPWEA), combined with updated calculations of base lives for the pipeline asset types.

The IIMM sets out criteria for converting remaining useful life as a percentage to a Condition Grade from 1 (Very Poor) to 5 (Very Good). This is a relatively simple conversion. However the process for determining the base lives, which in turn gives the condition grading is more complex. The details of this process are outlined in the Water Overview AMP. The following expected asset lives have been adopted:

***Table 7: Adopted Reticulation Asset Base Lives for Pressure Pipes***

| Pipe Category and Definition | Calculated Asset Life (years) |
|---|---|
| PVC Modern (PVC pipe installed post 1997) | 100 |
| PVC Old (PVC pipe installed prior to 1997) | 60 |
| PE Modern (PE pipe installed post 1990) | 100 |
| PE Old (PE pipe installed prior to 1990). | 35 |
| AC Small (AC pipe with diameter < 100mm) | 55 |
| AC Medium (AC pipe with diameter 100mm to 150mm) | 60 |
| AC Large (AC pipe with diameter >= 200mm) | 90 |

<u>Asset Condition Calculation</u>

With the asset base lives calculated as per the process described above, and the condition defined as a function of remaining useful life, the remaining data required to calculate the condition of each asset is the year of installation of the asset. This information is held for each asset within the Council's TechOne asset database. Thus, through a combination of expected asset life, year of installation, remaining useful life of asset, the condition grade for each asset is able to be assigned.

Figure 2 below has been generated using the above process, to show the assessed condition of all the pipe assets on the scheme. Also included within this is the pipe burst data held against each asset.

Figure 3 shows this same information graphically, and also includes headworks assets, and Table 8 presents this information is tabular format.

It is noted that "Headworks" is inclusive of all above ground assets associated with the water supply scheme (e.g. reservoirs, buildings, pump sets). "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.

*Figure 2: Pipe Condition Assessment Plan*

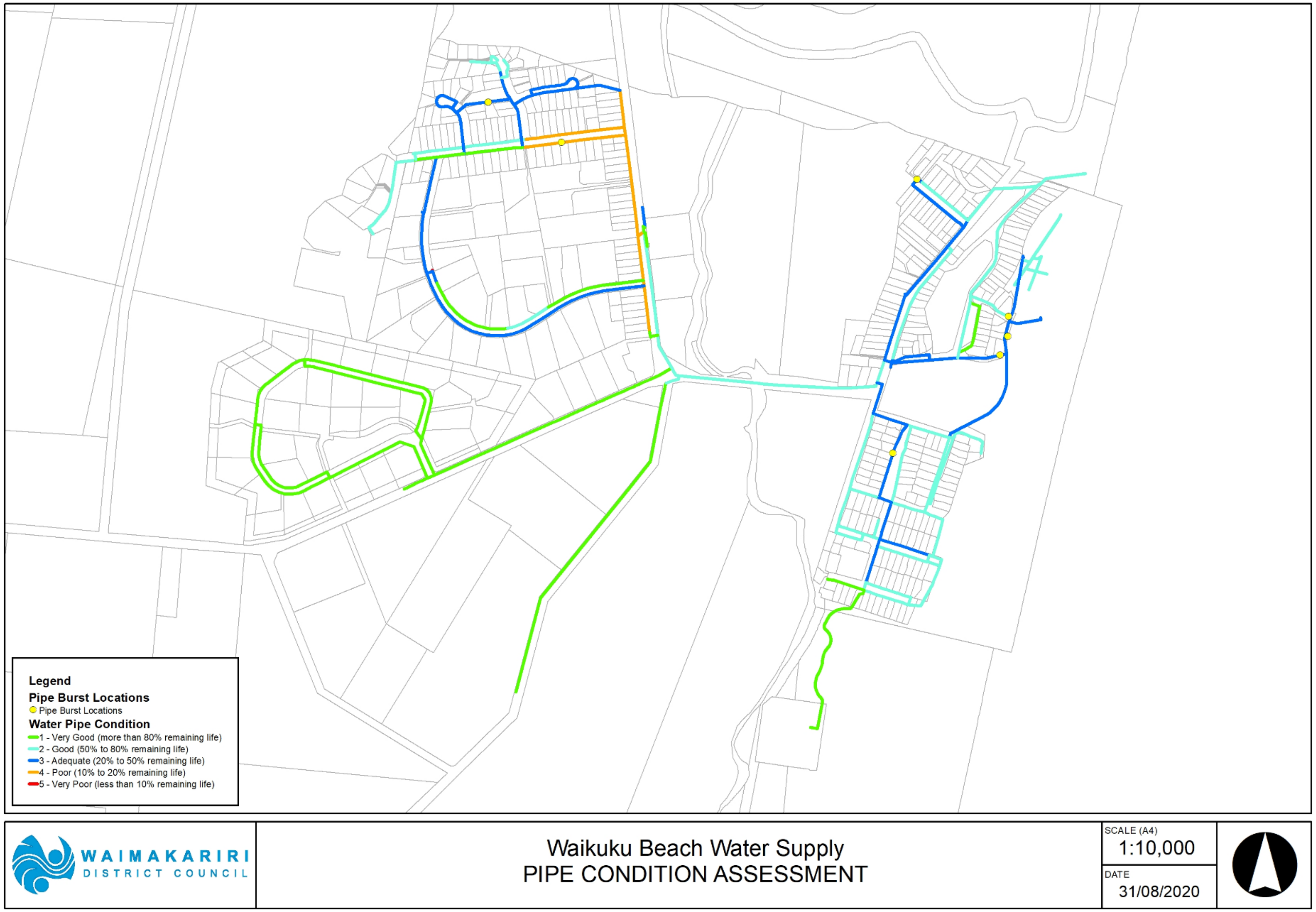


*Figure 3: Asset Condition Summary*

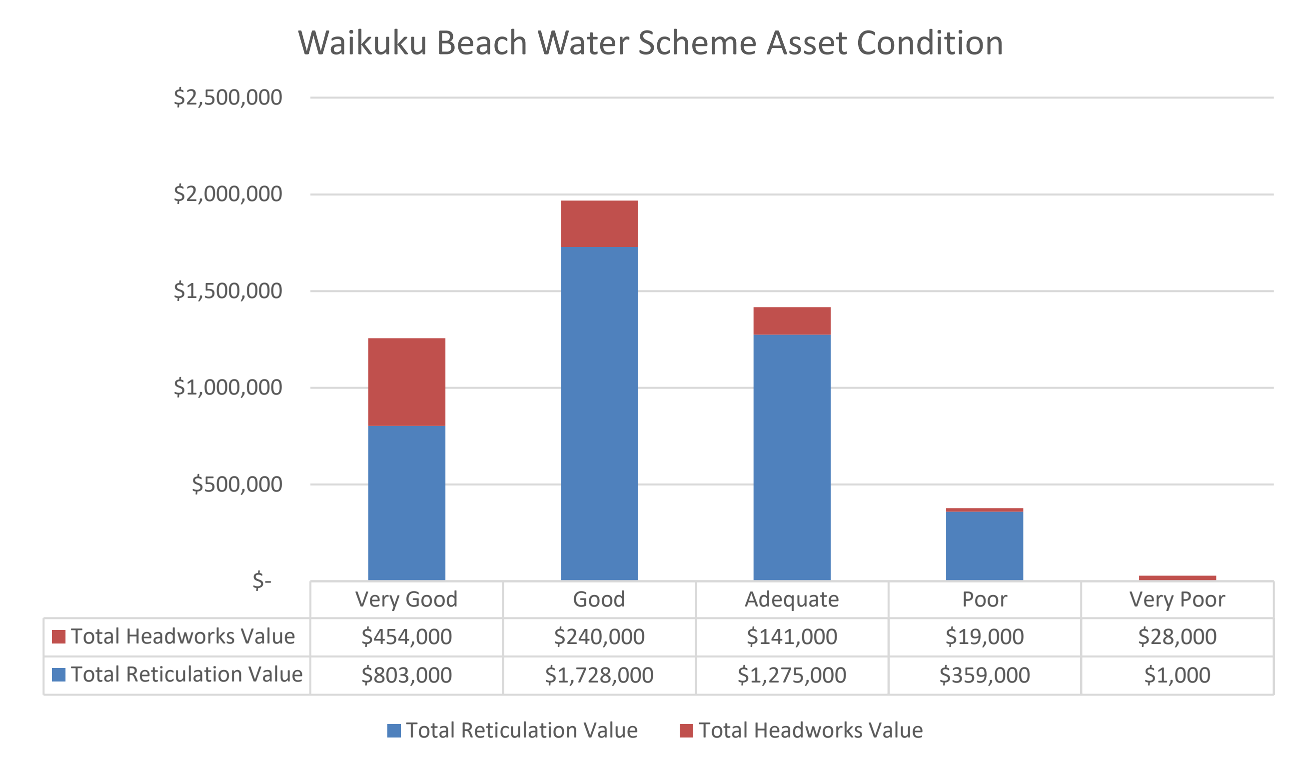



*Table 8: Pipe Condition Summary*

| Condition Grade | Definition | Pipeline Quantity | Total Reticulation Value | Total Headworks Value | Total Value |
|---|---|---|---|---|---|
| 1 | Very Good *More than 80% of life remaining* | 5.1 km *34%* | $ 803,000 *19%* | $ 454,000 *51%* | $ 1,257,000 *25%* |
| 2 | Good *Between 50% and 80% of life remaining* | 5.3 km *35%* | $ 1,728,000 *41%* | $ 240,000 *27%* | $ 1,968,000 *39%* |
| 3 | Adequate *Between 20% and 50% of life remaining* | 3.7 km *25%* | $ 1,275,000 *31%* | $ 141,000 *16%* | $ 1,416,000 *28%* |
| 4 | Poor *Between 10% and 20% of life remaining* | 1.0 km *7%* | $ 359,000 *9%* | $ 19,000 *2%* | $ 378,000 *7%* |
| 5 | Very Poor *Less than 10% of life remaining* | 0.0 km *0%* | $ 1,000 *0%* | $ 28,000 *3%* | $ 29,000 *1%* |
| **Total** | | **15.0 km** | **$ 4,166,000** | **$ 882,000** | **$ 5,048,000** |

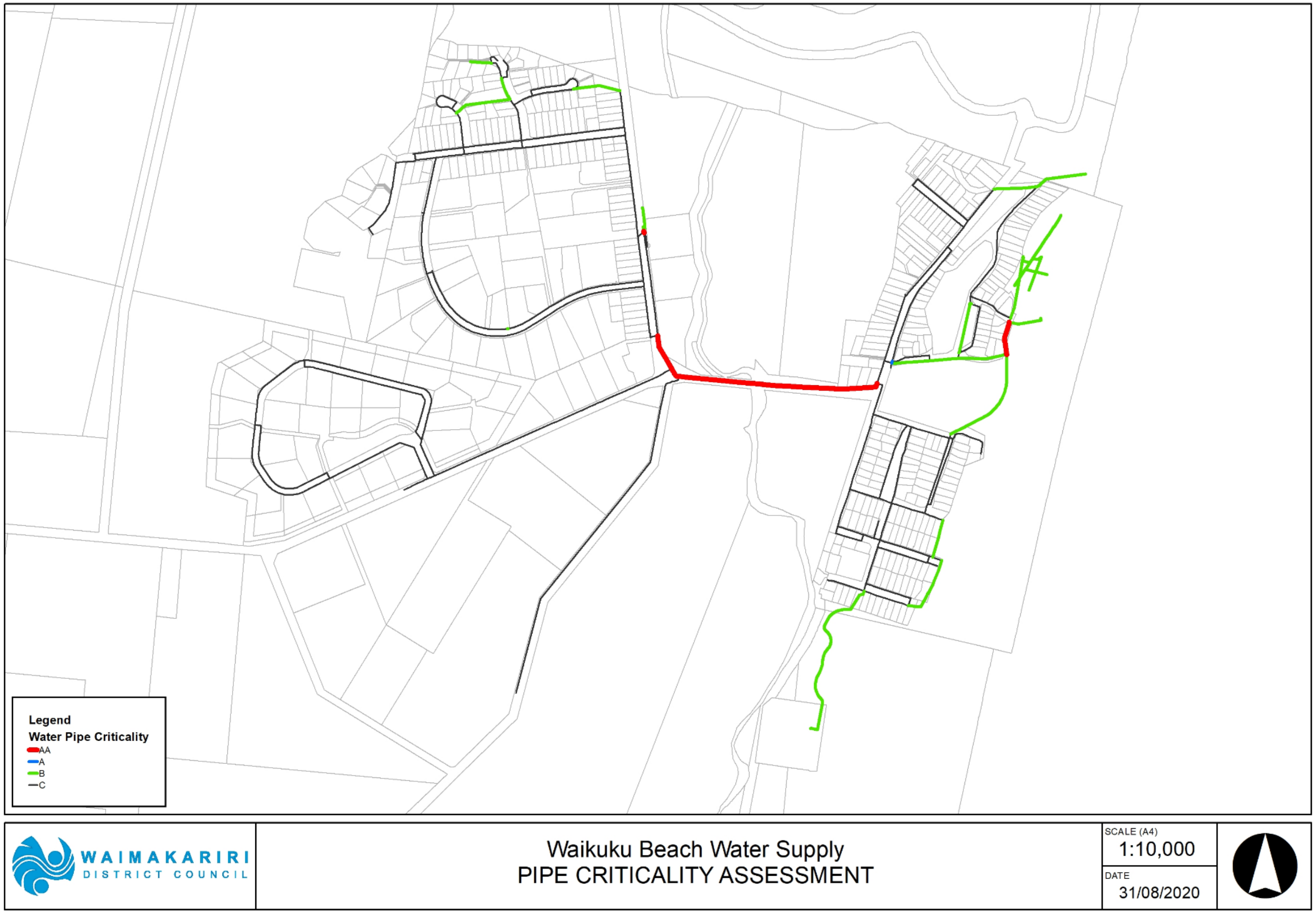
## 5.3 Asset Criticality

Asset criticality provides an indication of the importance of an individual asset and the corresponding impact on the service delivery should the asset fail for any reason. Criticality is used in risk based investment decisions to help decide when an asset should be replaced to avoid the consequences of failure. The Council has developed an assessment process which scores assets from most critical ‘AA’ to least critical ‘C’. Further details of the criticality assessment methodology is covered in the WS Overview AMP.

The pipe criticality scoring process has been significantly improved through automation and dynamic links to GIS data layers for this AMP.

Figure 4 provides a spatial view of asset criticality for the scheme.

*Figure 4: Pipe and Facilities Criticality*



## 5.4 Risk Assessment

An Operational Risk Assessment was first undertaken for the Waikuku Beach Water Supply Scheme in 2004, and it has been regularly updated since that time. It was last updated for the 2015 AMP review. The last two reviews have revealed no extreme or high risks for the Waikuku Beach water supply scheme. The District Wide Overview details the risk events considered and includes a summary of the risk assessment results for all the water supply schemes and is useful in indicating overall water supply network priorities.

Table 9 below shows a summary of the number of events at each level of risk for the Waikuku Beach water supply scheme.

***Table 9: Number of Events per Level of Risk***

| Risk Level | 2004 | 2008 | 2011 | 2014 |
|---|---|---|---|---|
| Extreme risks | 0 | 0 | 0 | 0 |
| High risks | 2 | 3 | 2 | 1 |
| Moderate risks | 14 | 17 | 20 | 21 |
| Low risks | 16 | 22 | 22 | 22 |
| Not applicable | 23 | 13 | 14 | 14 |
| **Total** | **55** | **55** | **58** | **58** |

Both of the high risks identified in the 2011 assessment have been mitigated. The risk of contamination from backflow due to the lack of backflow prevention devices on at risk properties has been mitigated through the adoption by Council of the Backflow Prevention Policy, which is now being implemented. The other high risk identified, of protozoa contamination due to inadequate treatment process, has been mitigated through the installation and commissioning of ultra-violet disinfection equipment.

District wide, moderate risks are being deferred until extreme and high risks have been addressed

## 5.5 Water Safety Plan

Water Safety Plans provide a summary of how the scheme is operated, undertakes a risk assessment for the scheme, identifies preventative measures, and recommends any upgrades to address unacceptable risks. Under the Health Act, these are required to be renewed every 5 years. The Waikuku Beach WSP was last approved in 2014. An updated plan was submitted to the Ministry of Health in late 2019, and updated and re-submitted in July 2020, but as at the time of this AMP being approval had not been received.

Throughout 2020, there have been significant challenges gaining approved WSPs, with only one WSP having been approved across the country by late October 2020. Staff are continuing to provide the necessary updates and information to gain approval of the WSPs that are currently outstanding, including for Waikuku Beach. With the circumstances created by the Havelock North water enquiry, obtaining approval for a non-chlorinated supply may, however, prove challenging

Budgetary requirements arising from the plan are incorporated into the draft LTP.

When the Water Services Bill comes into effect, which is expected to be in mid-2021, the requirement for WSPs to be produced will be transferred from the Health Act to the Water Services Bill. The plans will then be submitted to Taumata Arowai, rather than the current Drinking-water Assessors which operate under the Ministry of Health.

## 5.6 Disaster Resilience Assessment

The 2009 Disaster Resilience Assessment (DRA) is a desk top study that primarily considered the risks to above ground structures presented by natural hazard events to above ground assets across all Council operated 3 Waters schemes. The original assessment was updated in 2012 using revised hazard and asset behaviour information captured during the 2010-11 Canterbury earthquake sequence.

Risk from earthquake events that could induce liquefaction, on brittle pipes (AC and earthenware) is managed using a reticulation vulnerability score. This is used as an input to the risk based renewals assessment.

### Above Ground Facilities

The above ground facilities were assessed for risk of failure against 13 natural and 2 manmade hazard scenarios. The following risk profile reflects the likelihood of the event occurring and the consequence on the community of the facility failing. Hazards classified as having 'No Known Risk' have been omitted from the table.

***Table 10: Risks to Above Ground Facilities***

| Threat | Motor Camp Headworks | Kings Ave Headworks |
|---|---|---|
| 100 yr Local Flooding | L | L |
| 475 yr Earthquake Induced Slope Hazard | L | L |
| Ashley Flood (100 yr) | M | M |
| Ashley Flood (500 yr) | L | M |
| Earthquake (50 yr) | L | L |
| Earthquake (150 yr) | L | M |
| Earthquake (475 yr) | L | L |
| Wildfire (threat based) | L | L |
| Snow (150 yr) | L | L |
| Wind (150 yr) | L | L |
| Lightning (100 yr) | M | M |
| Pandemic (50 yr) | M | M |
| Terrorism (100 yr) | L | H |
| E = Extreme, H = High, M = Moderate, L = Low | | |

The scheme is located in the high liquefaction susceptibility zone with the facilities are considered to have low resilience to earthquake activity.

Kings Ave Headworks is rated as high risk from terrorism and the site is considered moderately resilient to this hazard.

Assets at Waikuku Beach have been modelled to be at risk from 0.5-1.2 metres of inundation from a worst case distant source tsunami.

Inundation of assets between 0.7-0.8 metres has been modelled from an Ashley River breakout.

The Council's response to these risks is being managed at a district level via the DRA Action Plan and related projects. Refer to the District level AMP for details. Since there is some overlap of the DRA and Operational Risk Assessment, a review and integration of the risk assessment methodologies is planned, prior to risk assessments next being carried out.

## 5.7 Growth Projections

**Situation**

The growth in the Waikuku Beach area is constrained by the physical characteristics of the area. The growth in the Waikuku Beach area is projected to occur mainly as infill. A small 14 lot development to the North West of the scheme could also be developed.

The overall district population growth scenario used for the 2021 AMP update was supplied by Council's Development Planning Unit, broken into towns and rural areas. Water supply growth projections were calculated using the New Projections for LTP 2021-2031 (TRIM 200908117997), which was the basis for infrastructure planning.

Due to issues that have occurred with the Census 2018, the population projections that would normally be used as a basis for updating the work previously developed by the Council's Development Planning Unit have not been released by Stats NZ in time for the development of this assessment.

However, based on the historical growth patterns of new dwelling Building Consents over the last three years (636 in 2017/18, 661 in 2018/19 and 615 in 2019/20), the projections used for the previous LTP/infrastructure strategy remain valid to be used for infrastructure planning. As the timeframe for this infrastructure planning is for the thirty years between 2021 to 2051, the previous population projections have been extended out a further three years, as documented in New Projections for LTP 2021-2031 (TRIM200908117997).

It is important to provide a brief comment on COVID19 and the impact it could have on population projections. At the time of writing this paragraph (August 2020), New Zealand is currently in Level 3 restrictions in Auckland and Level 2 restrictions in the remainder of the country. While international migration is currently low arising from the COVID19 travel restrictions, a significant number of New Zealanders are returning home due to the impact of COVID19 on overseas countries. This has contributed to a high level of population growth nationally over the last six months, which has had a flow on effect to growth in the Greater Christchurch and Waimakariri Districts. How long this might continue for and when international migration (from other countries) might return to pre COVID levels is still to be determined. However the existing population projections remained the most appropriate to use for infrastructure planning at this time.

**Demand**

Demand on the Waikuku Beach water supply scheme is expected to increase by 6%, by the end of the 2021-31 Long Term Plan (LTP) period.

This projection is based on 29 new dwellings and connections being established from 2019/20 to 2030/31, identified in the 2020 50 Year Water and Sewer Growth Forecast Report (TRIM reference number 200224024348).

The number of restricted connections will be increased by an average of 3 per year during the 2021-31 LTP period to accommodate this demand. Demand beyond the 2021-31 LTP period (to 2070/71) is forecast to transition to a slightly lower growth profile resulting in an average of 2 new connections per year (Table 11).

***Table 11: Growth Projections***

| Waikuku Beach | Rates Strike July 2019 | Years 1 - 3 | Years 4 - 10 | Years 11 - 20 | Years 21 - 30 | Years 31 - 50 |
|---|---|---|---|---|---|---|
| | 2019/20 | 2021/22 to 2023/24 | 2024/25 to 2030/31 | 2031/32 to 2040/41 | 2041-42 to 2050/51 | 2051/52 to 2070/71 |
| Projected Connections | 464 | 476 | 493 | 517 | 539 | 571 |
| Projected Rating Units | 533 | 546 | 564 | 590 | 614 | 649 |
| Projected increase in Connections | | 3% | 6% | 11% | 16% | 23% |
| Projected Average Daily Flow (m3/day) | 604 | 617 | 634 | 658 | 681 | 714 |
| Projected Peak Daily Flow (m3/day) | 1,672 | 1,702 | 1,744 | 1,803 | 1,859 | 1,939 |

Note that the time frames have been chosen to reflect the periods 3, 10, 20 and 30 years from the AMP release date, however due to the time it takes to complete the analysis the base rates strike data used was from 2019/20.

Longer term, connections are projected to increase by 23%. This long term projection is significantly lower than the 2017 growth projection, 82% (used for the 2017 AMP). Both projections utilised the best data and information available to project the connections for the water schemes at the time. The base population projections given to PDU for 2019 infrastructure planning were more area specific than the 2017 projections, and has given a better projection for the Waikuku Beach area.

Water use predictions for the Waikuku Beach water supply scheme have been based on the standard assumption used when modelling the future water demands within the water distribution models. These are an average and peak daily water use per day of 1,000 litres and 2,500 litres respectively (including losses).

**Projections**

Figure 5 & Figure 6 present the projected growth and corresponding demand trends for the Waikuku Beach Water Supply.

*Figure 5: Population Projections*

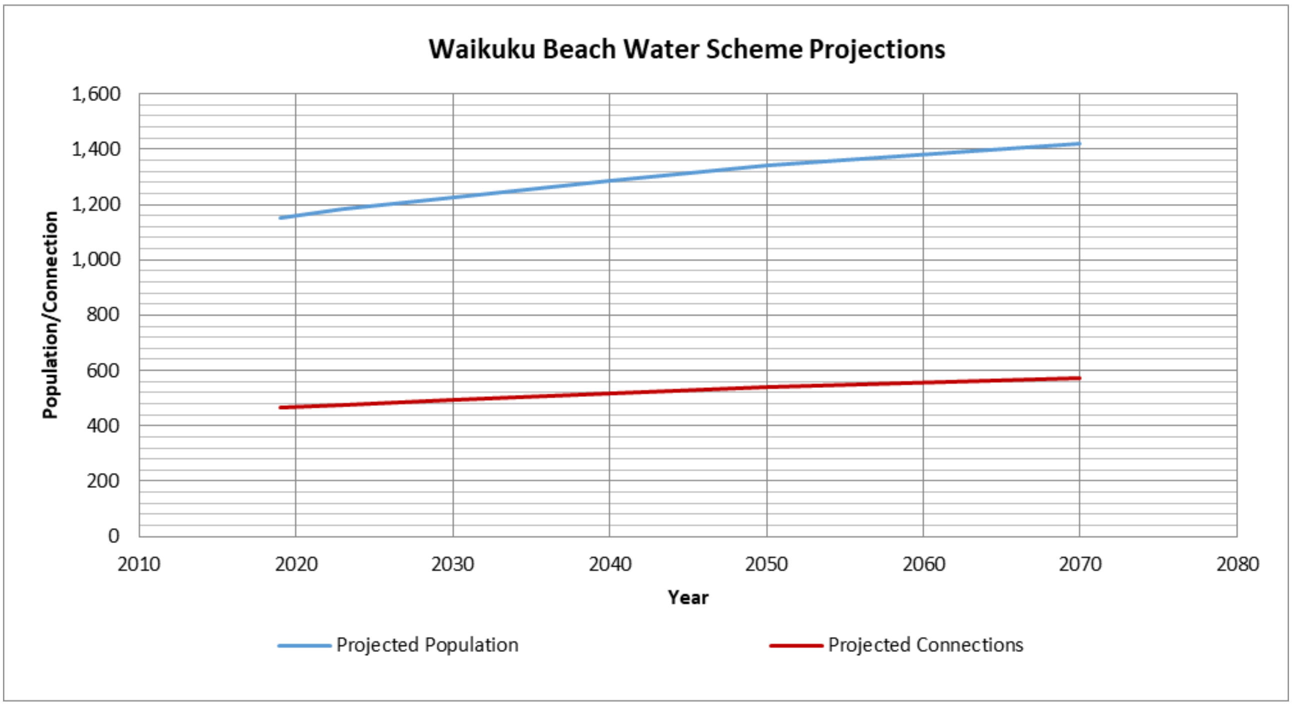
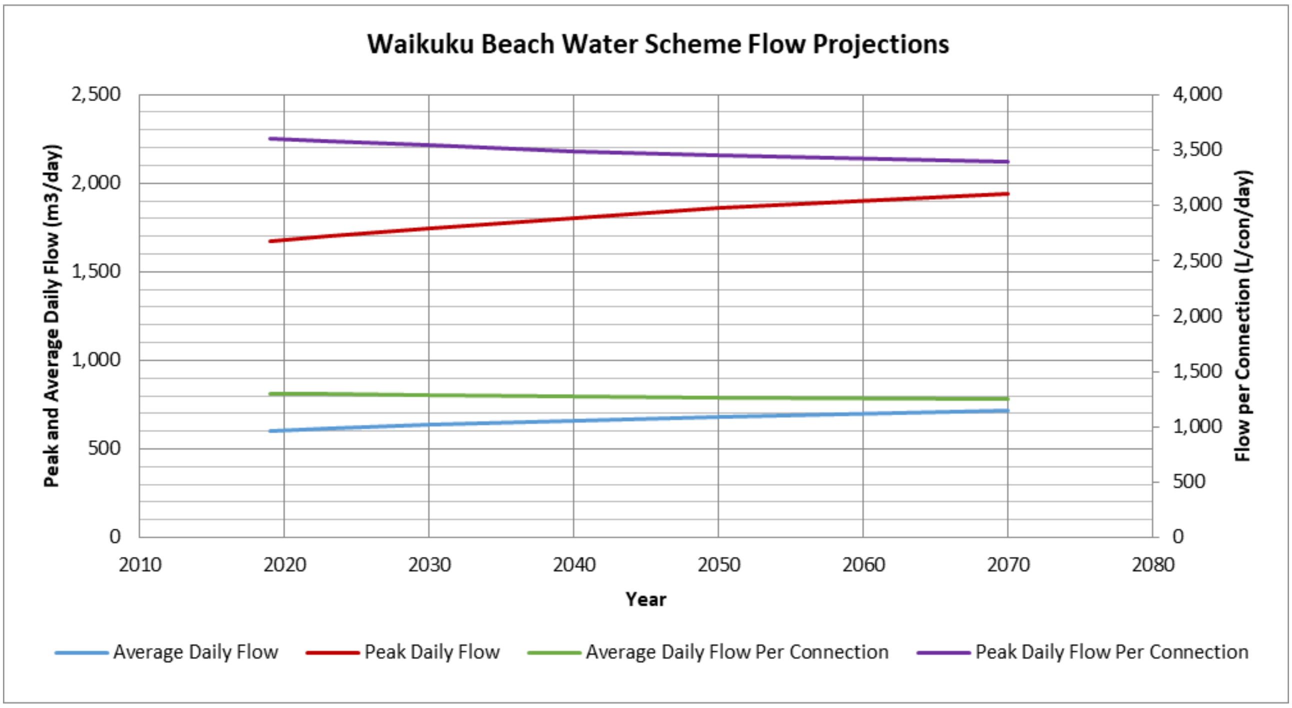



*Figure 6: Flow Projections*




## 5.8 Capacity & Performance

This section of the AMP considers the capacity and performance of the Waikuku Beach Water Supply, both given the current demand, and also taking into account the forecast growth. The specific aspects of the scheme that have been considered are the source, treatment, headworks, and reticulation system. These are discussed in more detail in the following sub-sections. All of the upgrades mentioned in the following sections necessary to maintain capacity for growth have been included in the Long Term Plan budgets.

## Source

The Waikuku Beach Water Supply Scheme draws water from the following sources (Table 12).

***Table 12: Scheme Sources***

| Well name | Well No. | Diameter (mm) | Depth (m) |
|---|---|---|---|
| Kings Avenue Well 1 | M35/0474 | 150 | 21.6 |
| Kings Avenue Well 2 | BW24/0394 | 300 | 25.2 |
| Campground | M35/9594 | 150 | 24.6 |

The resource consent (CRC190900) conditions for the current wells limit the allowable abstraction to 52 litres per second, with a combined volume not exceeding 3,456 cubic metres per day.

Council plans capacity for its water supplies on the basis that one of the primary wells is out of operation at any given time. This concept was used in deciding when source capacity upgrades would be required. This ensures that each scheme has an acceptable level of redundancy. The total capacity able to be delivery by the Kings Avenue headworks, from only one well, is in the order of 25 to 30 L/s.

As there is no storage on this scheme the source capacity is a function of peak hourly flow, rather than peak daily flow.

The required source capacity is calculated using modelled peak daily flows plus 10% (groundwater usage safety factor).

Table 13 presents the projected water demand and associated required source capacity for the Waikuku supply:

***Table 13: Project Demand and Required Capacity for Scheme***

| | 0yrs | 10yrs | 20yrs | 30yrs | 50yrs |
|---|---|---|---|---|---|
| Expected Peak Hourly Flow (L/s) | 23.7 | 25.2 | 26.0 | 26.8 | 28.4 |
| Required Source Capacity (L/s) | 26.3 | 28.0 | 28.9 | 29.8 | 31.6 |

The above figures do not include an allowance for firefighting flows. The Engineering Code of Practice requires that systems be sized to provide for fire flows plus 50% of peak hourly flow. The New Zealand Fire Service Firefighting Water Supplies Code of Practice gives a required fire flow of 25 L/s (based on FW2 classification, requiring 25 L/s across two hydrants). Thus, the total flow required to be delivered, taking into account fire flows, is 39 L/s based on 50 year flow projections. This scheme is not currently within a gazetted fire service area.

### Storage

No reservoirs are provided at either of the sources as the storage is deemed to be provided by the two artesian aquifers.

### Headworks

The existing headworks at Kings Avenue consist of three supply pumps connected to VSD's (variable speed drives). The pumps operate as duty-assist-assist. With all three pumps running, the station can achieve a flow of approximately 38 L/s, while maintaining pressure of approximately 400 kPa.

For redundancy it is assumed that one of the main pumps is unavailable, therefore the total assessed capacity is currently 26 L/s, with one pump unavailable. No growth related upgrades are scheduled in the next 50 years for the headworks.

The existing headworks at the Campground consist of two supply pumps with VSD control. The pumps operates as a backup to the Kings Avenue pumps and have an approximate capacity of 9 L/s per pump, at a pressure of 420 kPa (refer 180806087800 for pump curve). These two pumps are considered to be duty-standby, thus the total capacity of the station is assessed as 9 L/s (i.e the capacity of a single pump.

Currently, the Campground headworks is a backup only, as it does not have any treatment, and does not meet the Drinking-water Standards. There is a project proposed for 2021/22 to add UV treatment to this site, which would mean it could be used as a second primary headworks, rather than an emergency backup. Upon completion of this project, the capacity able to be provided by this headworks would be able to be taken into consideration in addition to the Kings Avenue headworks, when assessing the overall scheme capacity.

### Treatment

Up until recently, the Waikuku Beach scheme had delivered water from the first Kings Avenue well via the Kings Avenue headworks, plus the Campground Well (in summer only), without treatment. This did not comply with the Drinking-water Standards for Zealand, as the sources do not meet the secure groundwater classification, therefore treatment for protozoa is required.

In 2018, ultra-violet (UV) disinfection was installed which provided a 3-log treatment barrier at the Kings Avenue headworks, and protozoal compliance was achieved. Following this, a second well was added to the Kings Avenue site, to increase the capacity of this headworks (Kings Ave Well 2). This means that the Kings Avenue headworks can meet full peak hourly flow, without requiring the Campground headworks (which still has not treatment), and the scheme as a whole complied with the Drinking-water Standards for New Zealand.

Following the risk assessment process for the scheme's Water Safety Plan preparation however, it was identified that there were some deficiencies in terms of the certainty that positive pressure would always be maintained in the reticulation network. To improve the resilience and redundancy of the supply, to give better confidence that pressure would be maintained, it was recommended that UV treatment be added to the Campground headworks. This would mean that this station could be used in tandem with the Kings Avenue headworks, and reduce the risk of pressure loss events. This project is planned to take place within the 2021/22 financial year, and is to be funded from the District Water UV cost centre, rather than the Waikuku Beach water cost centre.

It is noted that the Kings Avenue headworks also has equipment installed to provide chlorination, although this is currently only for emergency use. Given the contents of the Water Services Bill and the potential that residual disinfection may be mandatory, chlorination equipment will likely also be required at the Campground headworks. Once the implications of the Water Services Bill are better understood, an assessment will be made as to whether to include chlorination equipment within the scope of the Campground headworks upgrade, and also whether this will be required to be in use permanently.

Certain water supplies have a risk of being plumbosolvent.  The definition of plumbosolvent water is water that is able to dissolve lead easily.  Water that has low pH and alkalinity tends to be slightly corrosive and therefore plumbosolvent. The Council complies with the requirements of the Drinking Water Standards for plumbosolvency by advertising twice per year advising customers to flush the first 500 mls of water before taking water for drinking purposes. Adverts are district wide and do not distinguish between water supplies.

**Reticulation**

Due to the low levels of growth, there was no reticulation upgrades scheduled for the 50 year projection, for Waikuku Beach.

# 6 Future Works & Financial Projections (What Do We Need To Do?)

This section covers the future works required to meet the target levels of service, maintain the asset in an acceptable condition, reduce the risks to an acceptable level and accommodate growth.

Financial forecasts do not include inflation.

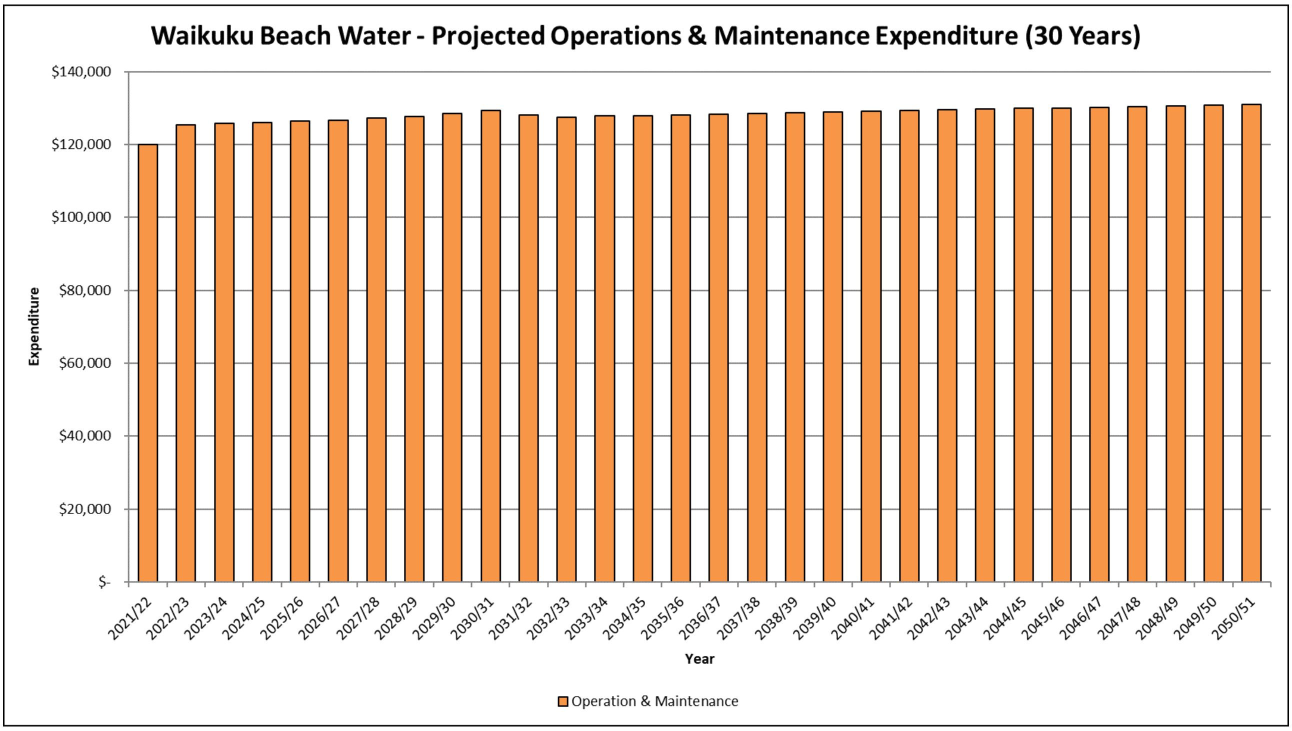
## 6.1 Operations & Maintenance

Operation and maintenance (O&M) expenditure incorporates the day to day running of the water supply network and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised within the Overview document.

O&M budgets are set based on a combination of past expenditure (for reactive tasks), cost estimates for planned works, and adjustments going forward to account for growth, inflation, depreciation and any significant new works planned. Further detail of this process is provided in the Overview document. The end result of this is shown in Figure 7. There are no known deferred maintenance items

***Figure 7: Projected Operation & Maintenance 30-Year Budget***




It is noted that there is a step increase in O&M costs shown going from 2021/22 to 2022/23. This shows the allowance made for chlorination of the supply, assuming that this will become mandatory. It is however acknowledged that there is some uncertainty in this assumption as the Water Services Bill had not yet been adopted by Government at the time this AMP was being published, and further information would be required on what may be involved to gain an exemption from chlorination under the proposed new bill.

### 6.2 Renewals Programme

A renewals model is used to generate renewal timeframes for each reticulation asset on each scheme. This model takes into account the remaining life from the asset condition data, and the criticality of each asset, and recommends an acceptable renewals window for each pipe. More information on the model is provided in the overview document.

Renewal of pipework assets are then programmed on an annual basis, taking into account the outputs from the renewals model, but also being informed by other works that may be planned in the area, as well as local burst history for the cases where a particular asset may be performing differently than its base life suggests.

The outputs from the renewals model are summarised in Figure 8 below, with category bands depicting how soon renewal is required of each asset. This data is available to staff for analysis on the Council's GIS mapping system (Waimap).

The first ten years of the programme are based on the above assessments by the Asset Manager, but from year 11 forward expenditure is taken directly from the model.

*Figure 8: Pipe Renewal Time Frames*

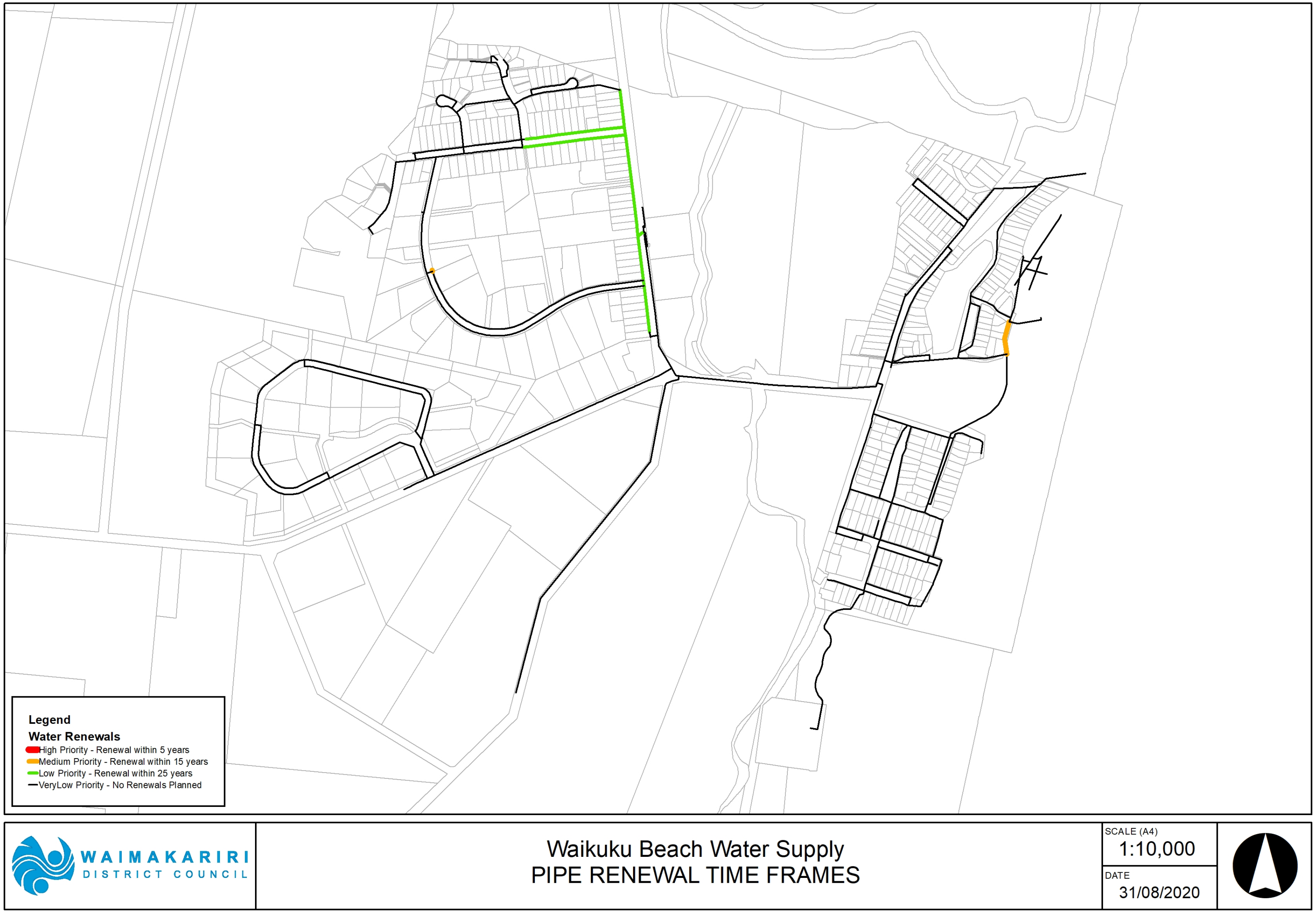
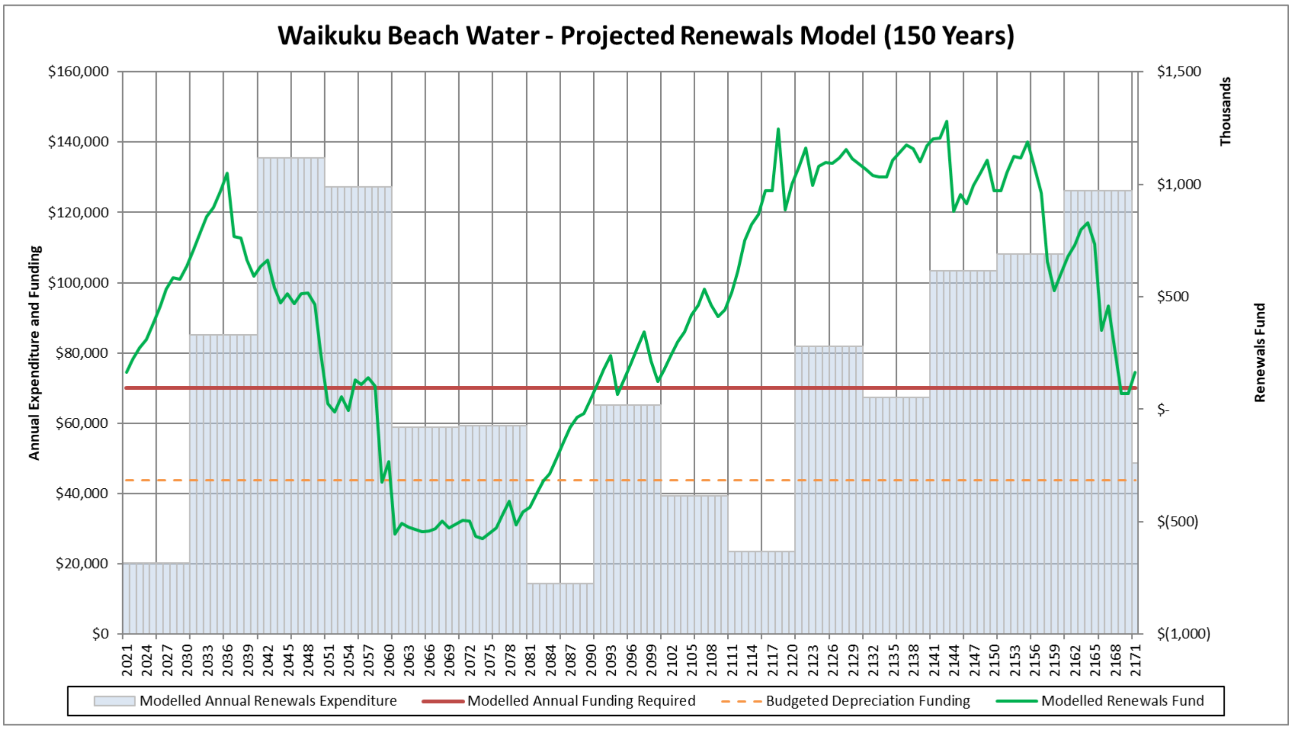


Figure 9 below shows the financial output from the model alone. Over a 150 year period it shows the projected expenditure; the value in the renewals fund; the level of funding required to ensure the fund can meet the required renewals programme, and the annual depreciation.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager from the direct renewals model outputs. Individual scheme AMPs detail the actual planned renewals budgets for the first ten years. There are no deferred renewals.

***Figure 9: Annual Water Renewals 150-Year Budget***




The key parameters in the figure above are explained below:

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model.

The key point to note is that the Budgeted Depreciation Funding is less than the Modelled Annual Funding Required. The reason for this discrepancy is twofold:

- **Depreciation Discount Factor:** Council's financing of future renewals incorporates the expectation that depreciation funding can be invested at a higher rate of return over the life of the assets than the rate of inflation. Further information regarding this approach is provided in the Finance Policy. This concept is embodied in the scheme budgets in the form of a discount rate (referred to in the budgets as the 'Depreciation Discount Factor'). This reduces the annual depreciation funding required from rates, while still ensuring that there will be sufficient funding available to renew assets at the end of their useful life. The renewals model takes a simpler and more conservative approach to the way this effect is calculated, which accounts for some of the difference shown in Figure 9.

- **Improvement in Asset Base Lives:** The second, and more significant, factor explaining this difference particular to this LTP, is a consequence of recent analysis work carried out on the base lives of all water pressure pipe (refer 200508053285 for a record of this analysis, or refer to the Asset Condition section). A significant difference from the previous base lives to the updated ones is that the previous 100 year life for old PVC (defined as pre-1997 installation) pipe, should be reduced to 60 years. This reduced life for this particular pipe class increases the depreciation rate, and therefore increases the annual renewals funding required for schemes with a high proportion of old PVC mains. The analysis was undertaken after asset lives were finalised for the three yearly valuation update, so the updated depreciation rates from the pipe burst analysis work were not able to be incorporated into the 2020 valuation work. However they have been incorporated into the renewals model, which is the primary cause of the difference shown in Figure 9. This will be self-correcting at the next LTP, as a common life for old PVC pipes will be used for both the valuation and the renewals modelling work. Going forward this improved understanding of the expected base lives of pressure pipes will ensure that the required amount of depreciation funding is allowed for.

## 6.3 Capital Works

The following graph shows the 50 year budget for new work motivated by consideration of growth and levels of service (Figure 10). Renewals expenditure showing in the first ten years of the graph, includes the actual planned programme, not the model output. District wide rates funded projects are not shown

*Figure 10: Projected Capital Works Expenditure*

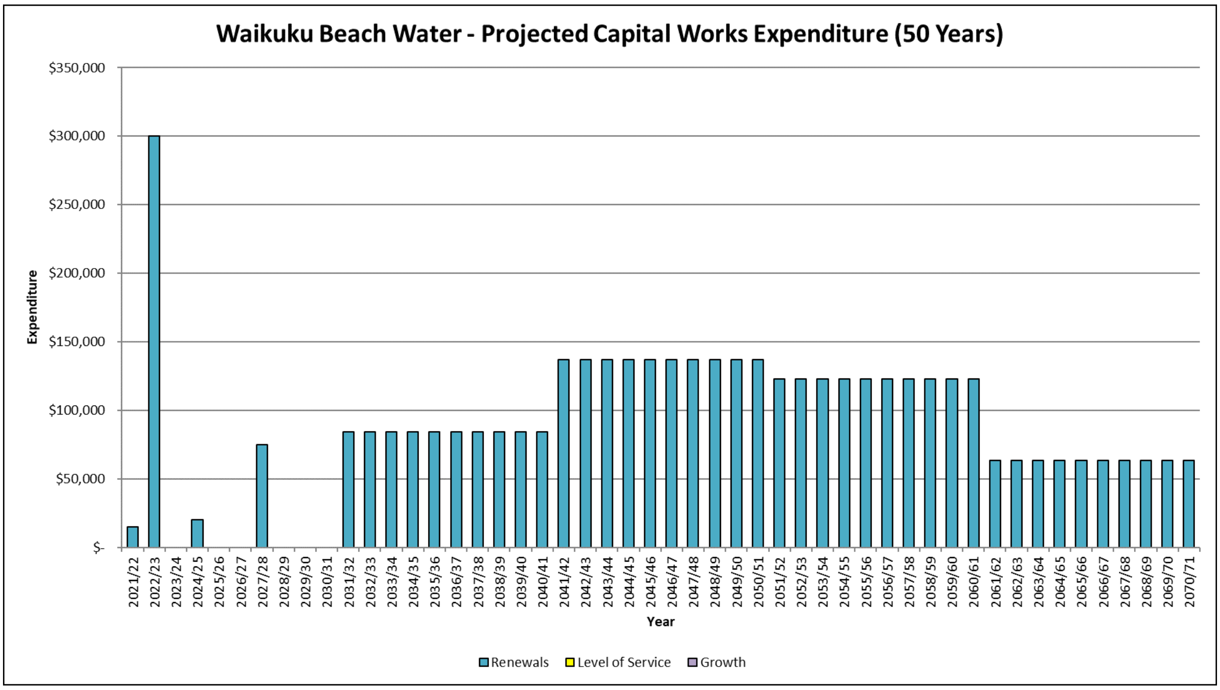



Table 14 summarises the projected capital works for the next 50 years, including renewals. Figure 11 shows the corresponding location of the projected capital works. The $220,000 for the installation of a UV treatment capability at the Waikuku Beach campground in 2021/22 is not shown in the table, but is shown in Figure 11.

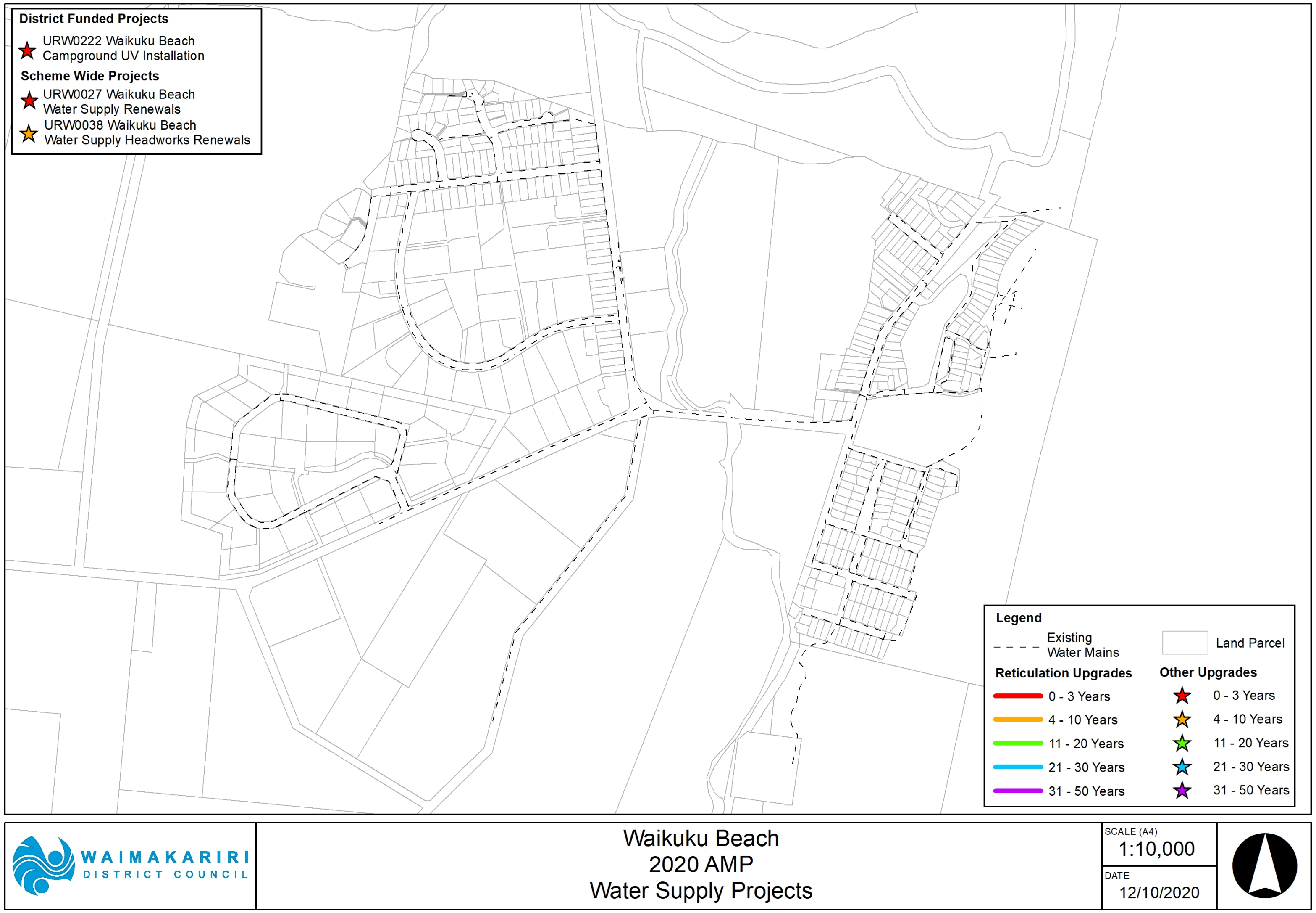
The level of confidence in the budget for the works (High / Medium / Low) is presented in the table. For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP. The figures in the table are not adjusted for inflation.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

*Table 14: Summary of Capital Works (Includes Renewals)*

| Year | Project ID | Project Name | Level of Confidence | Project Value | LOS Component | Renewals Component | Growth Component |
|---|---|---|---|---|---|---|---|
| **Year 1 - 10** | | | | | | | |
| 2022 | **URW0027** | Waikuku Beach Water Supply Renewals | **3 - Low** | **$ 3,317,882** | **$ -** | **$ 3,317,882** | **$ -** |
| 2025 | **URW0038** | Waikuku Beach Water Supply Headworks Renewals | **3 - Low** | **$ 1,164,341** | **$ -** | **$ 1,164,341** | **$ -** |
| **Grand Total** | | | | **$ 4,482,223** | **$ -** | **$ 4,482,223** | **$ -** |

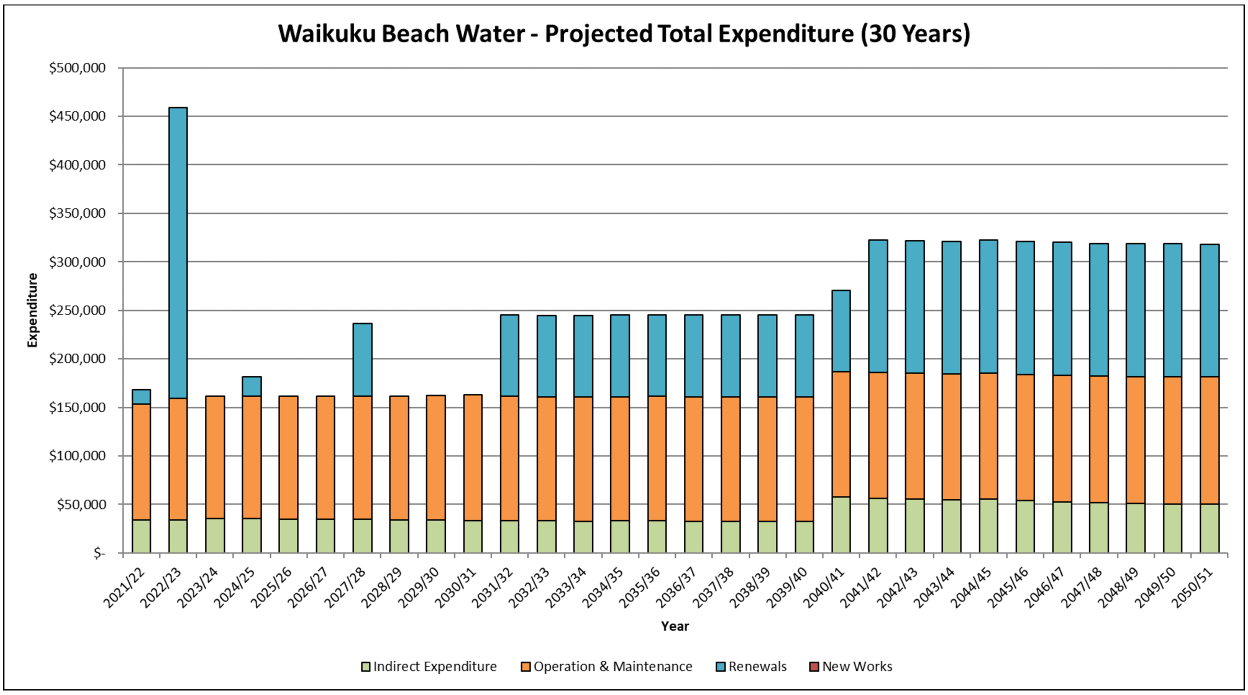
***Figure 11: Projected Capital Upgrade Works (not to scale)***



## 6.4 Financial Projections

The following graph summarises the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service and renewals.

***Figure 12: Projected Total Expenditure***




## 6.5 Valuation

A full peer reviewed valuation of assets is carried out on a three yearly cycle, using the asset data in our asset management information system. Table 15 below provides a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme

***Table 15: Asset Valuation***

| Asset Type | Unit | Quantity | Replacement Cost | Depreciated Replacement Cost | Annual Depreciation |
|---|---|---|---|---|---|
| Valve | No. | 97 | $277,306 | $185,799 | $3,157 |
| Main | m | 14,667 | $3,223,248 | $2,108,267 | $36,787 |
| Hydrant | No. | 60 | $163,619 | $106,553 | $1,909 |
| Service Line | Properties | 465 | $398,777 | $265,138 | $4,452 |
| **Facilities** | | | **$882,608** | **$636,086** | **$27,302** |
| **Total** | | | **$4,945,557** | **$3,301,843** | **$73,607** |

## 6.6 Revenue Sources

Revenue is provided from two key sources; targeted rates and Development Contributions. Development contributions are calculated in accordance with Council's Development

Contributions Policy (TRIM 191129168016), while targeted rates are charged in accordance with Council's Revenue and Financing Policy (TRIM 180522056008).

A further revenue source is the district wide rate that has been set up specifically to fund installation of UV disinfection at all schemes that do not already have it, although it is noted this is simply an alternative type of targeted rate, rather than a separate type of funding source.

# 7 Improvement Plan

## 7.1 2021 Improvement Plan

**Error! Reference source not found.** details the scheme specific improvements recommended to address the management issues identified in Section 3. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track Councils response.

If the table is empty, this indicates that all improvements required are either district wide improvements (covered by the Overview AMP), or covered by a capital project or projects, covered in the Capital Works section.

***Table 16: 2021 AMP Improvement Plan***

| Project Ref | AMP Section | Project Description | Priority | Status | Estimated Cost |
|---|---|---|---|---|---|
| NA | NA | NA | NA | NA | NA |

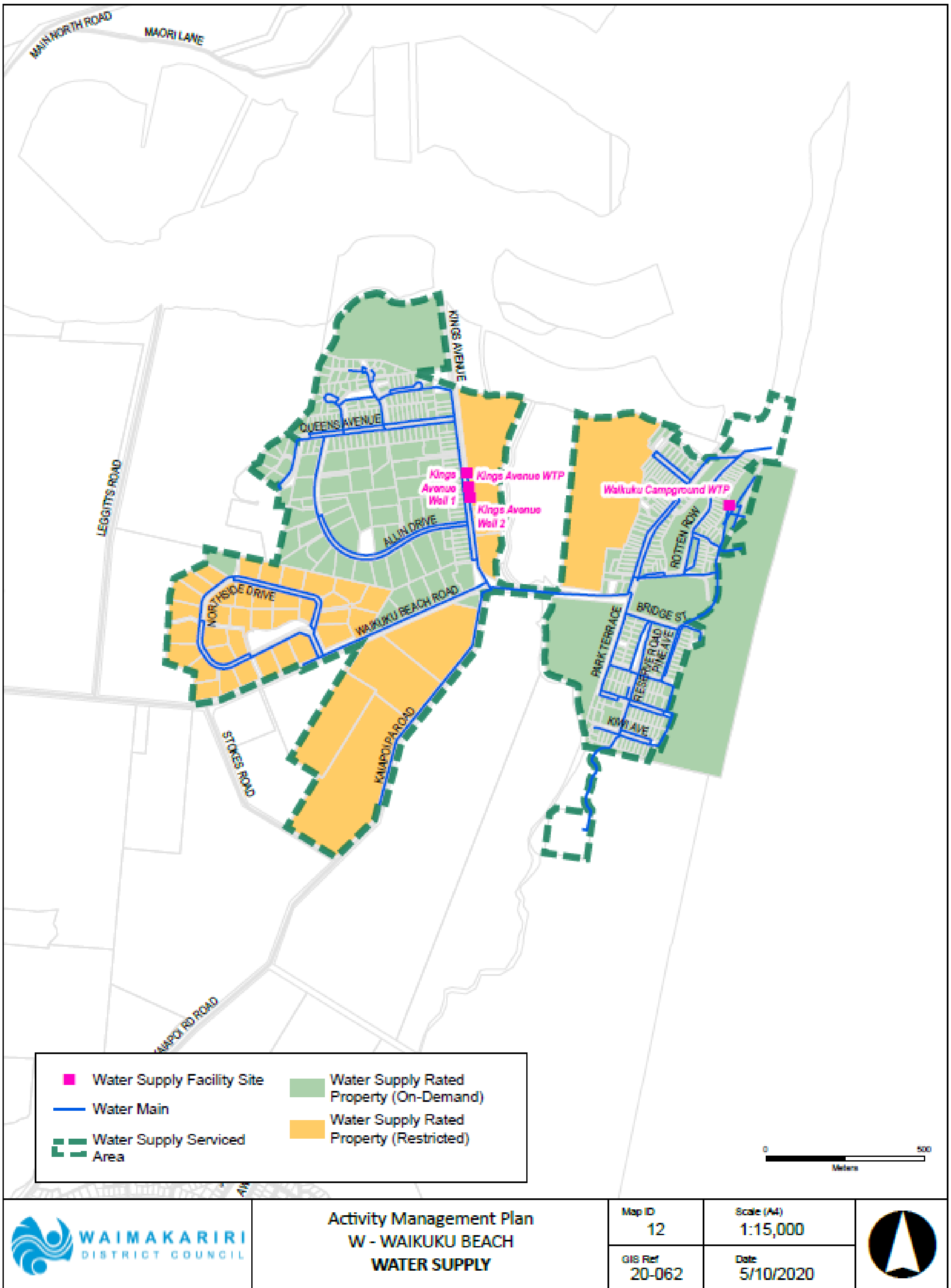
# 8 Changes to AMP as a result of Long Term Plan consultation

Some changes to budgets have arisen as a consequence of a staff submission report to Council during LTP hearings 25-26 May (TRIM 210420063358). Projects themselves have not changed, but budgets have been modified as a consequence of detailed designs progressing. The table below provides a summary of the changes to capital budgets for this scheme

| Budget Name | Draft 2021-31 LTP (2021/22) | Proposed Revised Budget (2021/22) | Difference | Notes |
|---|---|---|---|---|
| Waikuku Beach Campground UV | $ 220,000 | $ 295,000 | $75,000 | Concept design completed and cost estimate revised |

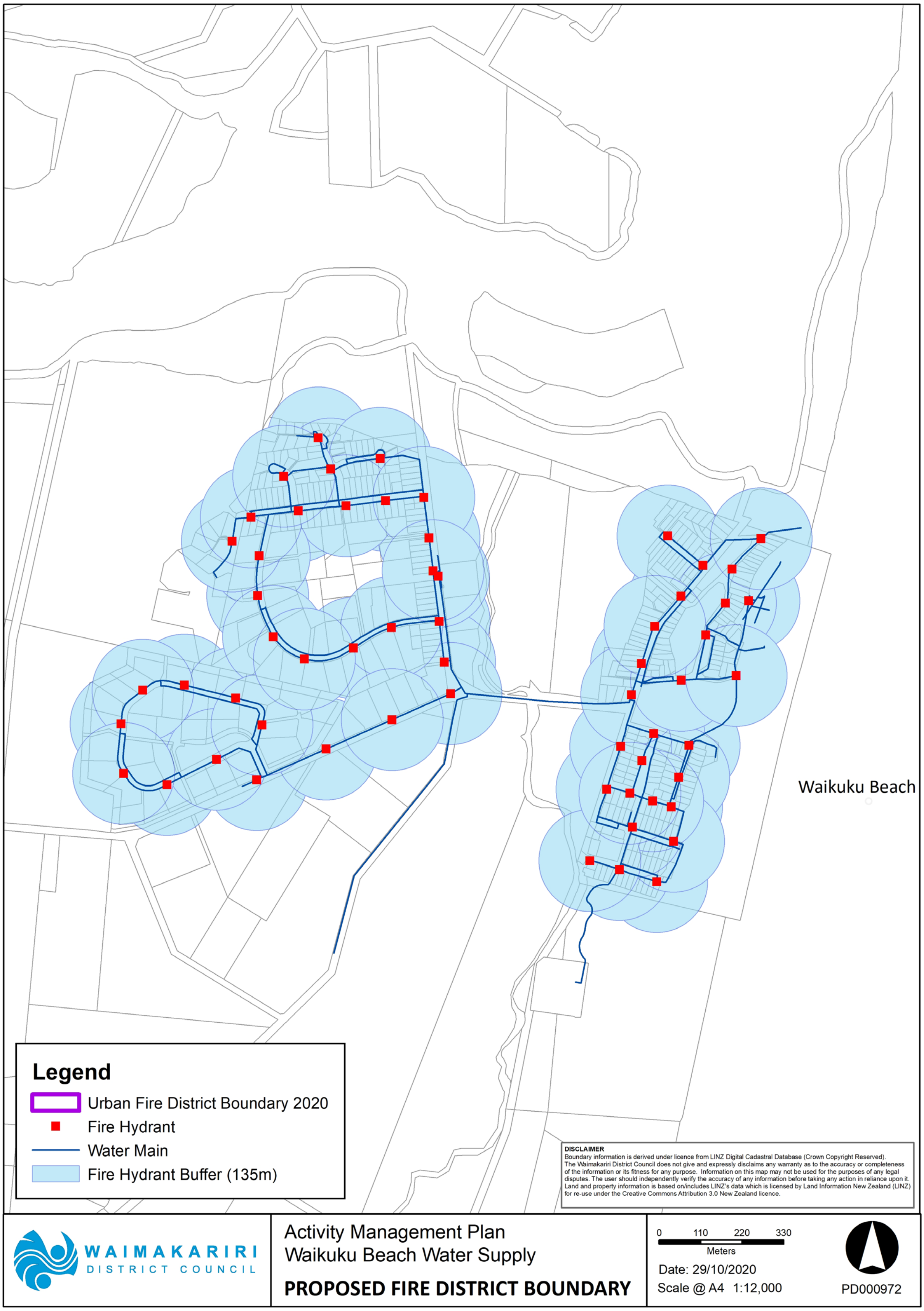
## APPENDIX 'A'. PLANS

***Figure 13: A1 - Plan of Serviced Area – Waikuku Beach***




DISCLAIMER
Boundary information is derived under licence from LINZ Digital Cadastral Database (Crown Copyright Reserved). The Waimakariri District Council does not give and expressly disclaims any warranty as to the accuracy or completeness of the information or its fitness for any purpose. Information on this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it. Land and property information is based on/includes LINZ's data which is licensed by Land Information New Zealand (LINZ) for re-use under the Creative Commons Attribution 3.0 New Zealand licence.

*Figure 14: A2 - Plan of Fire District & Extent of Fire Mains*




***This scheme is not included in the Fire District but a plan of hydrants is included for reference.***

***Figure 15: Waikuku Beach Water Supply Statistics***

**Waikuku Beach Water Supply Statistics**

Waikuku Beach | 19/20 | Last Update Jun-20

Note that shading indicates the relative quantity measured for the ten year period (i.e. the lowest value has no shading, the highest has complete shading.)

| | | July '09 - June '10 | July '10 - June '11 | July '11 - June '12 | July '12 - June '13 | July '13 - June '14 | July '14 - June '15 | July '15 - June '16 | July '16 - June '17 | July '17 - June '18 | July '18 - June '19 | July '19 - June '20 | 5 yr Average | 10 yr Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nightly Flow | L/s | - | - | - | - | - | - | - | - | 1.00 | 2.20 | - | 1.60 | 1.60 |
| Average Daily Flow | m³/day | 622 | 515 | 520 | 573 | 516 | 501 | 604 | 547 | 421 | 547 | 611 | 546 | 536 |
| Peak Daily Flow | m³/day | 1,542 | 1,642 | 1,436 | 1,655 | 1,397 | 1,139 | 1,430 | 1,461 | 834 | 1,672 | 1,602 | 1,400 | 1,427 |
| Peak Weekly Flow | m³/day | 1,339 | 1,014 | 1,130 | 1,304 | 1,062 | 923 | 1,236 | 1,178 | 733 | 1,375 | 1,319 | 1,168 | 1,127 |
| Peak Monthly Flow | m³/day | 959 | 823 | 871 | 1,060 | 945 | 767 | 1,067 | 1,057 | 586 | 992 | 1,124 | 965 | 929 |
| Peak Hourly Flow | L/s | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Peak Month | | Nov | Feb | Jan | Jan | Jan | Nov | Dec | Feb | Apr | Jan | Jan | | |
| Peak Week | | Week 2 | Week 6 | Week 4 | Week 3 | Week 4 | Week 2 | Week 49 | Week 1 | Week 15 | Week 5 | Week 6 | | |
| Peak Day | | 26/11/2009 | 17/01/2011 | 5/12/2011 | 14/01/2013 | 19/01/2014 | 18/01/2015 | 2/12/2015 | 6/02/2017 | 2/04/2018 | 28/01/2019 | 3/02/2020 | | |
| Peaking Factor | | 2.5 | 3.2 | 2.8 | 2.9 | 2.7 | 2.3 | 2.4 | 2.7 | 2.0 | 3.1 | 2.6 | | |
| Total Annual Volume | m³ | 228,282 | 188,827 | 190,930 | 210,291 | 189,200 | 183,980 | 221,762 | 200,852 | 154,411 | 200,928 | 224,264 | 200,443 | 196,544 |
| Resource Consent | m³/day | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 |
| Well Pump Capacity | m³/day | - | - | - | - | - | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 | 3,456 |
| Surface Pump Capacity | m³/day | 3,827 | 3,827 | 3,827 | 3,827 | 3,827 | 3,715 | 3,715 | 3,715 | 3,715 | 3,715 | 3,715 | 3,715 | 3,760 |
| On-Demand Connections | | 420 | 420 | 421 | 454 | 457 | 458 | 424 | 424 | 424 | 423 | 424 | | |
| Restricted Connections | | 5 | 5 | 5 | 5 | 5 | 5 | 41 | 41 | 41 | 41 | 44 | | |
| Total Connections | | 425 | 425 | 426 | 459 | 462 | 463 | 465 | 465 | 465 | 464 | 468 | | |
| Average Daily Demand | L/con/day | 1,464 | 1,211 | 1,221 | 1,248 | 1,116 | 1,083 | 1,299 | 1,177 | 905 | 1,180 | 1,306 | 1,173 | 1,175 |
| Peak Daily Demand | L/con/day | 3,628 | 3,864 | 3,371 | 3,606 | 3,024 | 2,461 | 3,075 | 3,142 | 1,793 | 3,604 | 3,423 | 3,007 | 3,136 |
| Allocated Water Units | m³/day | - | - | - | - | - | - | - | - | - | - | - | | |
| Average Daily Flow per Unit | L/unit/day | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Peak Daily Flow per Unit | L/unit/day | - | - | - | - | - | - | - | - | - | - | - | - | - |
| On-Demand Rating Charges | | 441 | 436 | 436 | 478 | 481 | 485 | 445 | 445 | 448 | 448 | 445 | | |
| Restricted Rating Charges | | 10 | 10 | 10 | 10 | 10 | 10 | 85 | 85 | 85 | 85 | 93 | | |
| Total Rating Charges | | 451 | 446 | 446 | 488 | 491 | 495 | 530 | 530 | 533 | 533 | 538 | | |
| Data Quality | | very high | very high | very high | very high | very high | very high | high | very high | very high | very high | very high | | |