2018-2028 WATER SUPPLY ASSET MANAGEMENT PLAN
He Rautaki Whakahaere Rawa mō Te Wai Whakarato

HEADWORKS AND INTAKES

NGĀ TAUPUNI WAI / NGĀ NGOTE WAI

VOLUME ONE | PUKAPUKA TUATAHI

Mountain to Sea
Te Kaunihera-ā-Rohe o Ngāmotu
NEW PLYMOUTH DISTRICT COUNCIL
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DOCUMENT CONTROL

Document Name	2018-2028 Water Supply Asset Management Plan Volume 1 - Headworks and Intakes
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CONTENTS

LIST OF TABLES & FIGURES

List of Tables

List of Figures

1. INTRODUCTION

This volume provides details of the asset lifecycle management for the **Headworks and Inlets** asset category of the Water Supply AMP. The framework and key elements of the overall asset management plan are outlined in Table 1.

Table 1 Asset management document summary

No.	Document Name	Key Document Contents
1	Long Term Plan (LTP)	Infrastructure Strategy • Strategic Framework • Guiding Themes • High Level Information for Each Asset Class Council Services • High Level Information • Levels of Service • Financial Plan
2	Asset Management Strategy	General Asset Management Principles and Overview
3	Asset Class General Volumes	General Information and Glossary about each asset class • Executive Summary • Introduction • Levels of Service • Future Demand • Risk Management Plan • Financial Summary • Plan Improvement and Monitoring
4	Asset Category Lifecycle Management Volumes	Asset Life Cycle Management for each asset category within each asset class • Description • Condition • Remaining Lives • Valuation • Operations & Maintenance • Renewals • Acquisition and Augmentation • Disposals • Annual Work Plan • Risk Management • Financial Summary • Improvement Plan

1. INTRODUCTION

Purpose and key Issues

Intakes and headworks provide regular and uninterrupted intake of raw water from the natural environment to our water treatment plants, which in turn supply water into the reservoirs, trunk mains and reticulation system. The components of this asset category include the raw water sources, intake structures, headworks and falling mains.

The key issues in relation to intakes and headworks are:

- Capacity – with regard to abstraction consent limits and future likely capacity increases.
- Suitability – in relation to environmental conditions (on existing and future consents).
- Accessibility – for monitoring, maintenance and renewal.
- Providing redundancy – in the event of emergency or natural disaster.
- Compliance – with NES regulations for source water abstraction flow metering (Enacted 2012).

Raw water sources and headworks are often the limiting factors in a water supply system. Irrespective of improvements and capacity increases to things such as treatment plants downstream, if the headworks cannot pass matching sufficient flow, the available water supply will be constrained over a given period. Limiting factors may be:

- Regulatory (e.g. the consent abstraction limit),
- Environmental (e.g. low flows in river sources or depletion of an aquifer, source water pollution), and
- Physical (e.g. hydraulic capacity of the intake structure, the falling mains or head losses within the system).

Levels of Service

Intakes and headworks assets support the community's level of service expectations of a reliable water supply.

The 2005 Drinking-water Standards for New Zealand (DWSNZ) required assessment of surface source water to establish each water source's risk category in terms of the protozoa removal 'log credit' requirements for treatment. We conducted assessment of our surface source water over an 18 month period during 2005 and 2006, establishing a four-log removal requirement for the source waters feeding our treatment plants. This was accepted by the Ministry of Health Drinking Water Assessor in May 2008 and all NPDC surface water sources have been proven capable of meeting this standard.

Under DWSNZ 2005 (2008 revision), the testing regime for source water assessment was simplified. Areas with populations under 10,000 (Inglewood and Okato), now require only five-yearly source catchment surveys. Source water characterisation is required for the New Plymouth water treatment plant source. We completed our second 5-yearly programme in 2012/13. Inglewood and Okato were successfully reassessed in 2016/17. New Plymouth sampling was undertaken in 2017/18 and assessment will be finalized in 2018/19. Oakura is assessed by water age determination every five years. We have allowed for these assessments within existing budgets (Priority 2 determinant testing).

Future Demand

Forecasts of future water supply demand have identified capacity issues relating to raw water sources, intakes and headworks. As outlined in the Section 4 of the General Water Supply AMP, the Water Master Plan addresses the options to cater for increased demand on the water supply system. Any items from the Water Master Plan involving augmentation of raw water sources, intakes and headworks assets are included in this volume.

Note: All financial forecasts are shown in inflation adjusted dollar values.

2. ASSET LIFECYCLE MANAGEMENT

2.1 Asset Description

2.1.1 General

We extract raw water at five locations in the district, through nine intake and headwork installations. These are detailed in the Table 2.

Table 2 Locations of raw water extraction

Intake Locations			
Item	Location	Type	Town
1	Lake Mangamahoe, Junction Road, New Plymouth	Take and Use Surface Water	New Plymouth
2	Lake Mangamahoe, Junction Road, New Plymouth	Take and Use Surface Water	New Plymouth
3	Lake Mangamahoe, Junction Road, New Plymouth	Take and Use Surface Water	New Plymouth
4	Dudley Road	Take and Use Surface Water	Inglewood
5	Dudley Road Inglewood	Take and Use Surface Water	Inglewood
6	Okato Intake Saunders Road Okato	Take and Use Surface Water	Okato
7	Upper Wairau Road, Oakura	Take and Use Surface Water	Oakura
8	Wairau Road, Oakura	Take and Use Ground Water	Oakura
9	Waiongana Stream Mountain Road	Take and Use Surface Water	Lepperton

2. ASSET LIFECYCLE MANAGEMENT

The headworks and intakes installations include 11.6 km of falling mains, which convey raw water to the water treatment plants.

Current consents to take raw water from natural sources are summarised in Table 3.

Table 3 Existing consents to take water

Taranaki Regional Council Consents to Take Water					
Consent	Sub Type	Location	Town	Expiry	Purpose
0026-3	Take and Use Surface Water	Okato Intake Saunders Road Okato	Okato	6/1/2019	To take up to 1000 cubic metres/day [13.8 litres/second] of
0126-5	Take and Use Surface Water	Waiongana Stream Mountain Road	Lepperton	6/1/2031	To take and use water from the Waiongana Stream to supply
1278-4	Take and Use Surface Water	Upper Wairau Road, Oakura	Oakura	6/1/2031	To take and use water from the Wairau Stream for Oakura
2055-3	Take and Use Surface Water	Lake Mangamahoe, Junction Road,	New Plymouth	6/1/2021	To take up to 60,480 cubic metres per day at a maximum rate
3934-3	Take and Use Surface Water	Dudley Road Inglewood	Inglewood	6/1/2021	To take water as a contingency supply and for farm supply purposes from an intake weir in the Ngatoro Stream.
4510-2	Take and Use Surface Water	Dudley Road	Inglewood	6/1/2021	To take and use water from the Ngatoro Stream a tributary of the Manganui River in the Waitara Catchment for Inglewood urban water supply purposes
6114-1	Take and Use Groundwater	Wairau Road, Oakura	Oakura	6/1/2020	To take and use groundwater from two bores for Oakura water supply purposes

The accuracy of the data presented in this AMP has been assessed and graded in accordance with Section 5 of the Asset Management Strategy.

2.1.2 New Plymouth Headworks and Intake

Lake Mangamahoe is an artificial lake with 25m high dam that was built in 1931. The lake is fed from three sources; Mangamahoe Stream, an unnamed stream, and the Waiwhakaiho River via a diversion tunnel. The Mangamahoe Stream is the natural inlet to the lake. The tunnel provides the majority of the water to the lake.

Lake Mangamahoe is also a part of the Mangorei Hydroelectric Power Scheme, which includes the dam, lake, diversion tunnel and the Mangorei Hydroelectric Power Station, all of which are owned by TrustPower. The power station releases flow back into the river approximately 6km downstream of the river diversion tunnel.

TrustPower and NPDC share maintenance responsibility for the lake in an agreement that gives NPDC priority over the water for the purpose of municipal supply. TrustPower maintains dual penstocks, which run from the Northern end of the lake to the Mangorei Power Station. NPDC has an offtake (375mm nominal bore) on the west penstock as an emergency water supply source. TrustPower also operates the river diversion weir and tunnel, which includes the weir, residual flow mechanism, fish pass, diversion tunnel, tunnel intake gates and instrumentation for monitoring control.

TrustPower keeps an automatic and continuous record of the residual flow downstream of the abstraction weir (constructed in 1992) and maintains the residual river flow downstream of the intake weir. The operation and adjustment of the intake gates to control the flow into the tunnel is automated. The system uses a Programmable Logic Controller (PLC) and algorithms to control and adjust the intake gate openings in relation to changing weir levels and compliance with consent regulations.

The intake works do not meet current best practice to prevent fish entrainment. TRC require works to be completed to remedy this and ensure compliance with consent conditions.

Asset Capacity /Performance

The tunnel's capacity is 7m^3 /s to 10 m^3/s.

The headworks provide operational flexibility in that within Lake Mangamahoe we can utilise or switch between three different intakes using an automated valve arrangement installed during Project Manaaki Wai. Two separate pipelines form the falling mains from the lake intakes to the NPWTP. These two pipelines converge at the NPWTP and feed into the plant via a 900mm diameter pipe, capable of conveying the full plant capacity of 70 million litres per day flow to the main flash mixer. Alternately, the flow can be directed via an old inlet pipe to the flash mixer. However, this method restricts flow capacity to 47 million litres per day.

The single tunnel that supplies the majority of flow to Lake Mangamahoe from the Waiwhakaiho River has no redundancy. While this single tunnel is capable of delivering the consented abstraction amount of 864 million litres per day into the lake (TrustPower consent limit), its singularity represents a significant risk within the NPWTP headworks. The tunnel is owned by the hydro power utility operator (TrustPower) but there is an operating agreement between TrustPower and NPDC with regard to water supply, ongoing maintenance and capital improvement costs.

TrustPower re-lined the tunnel in 2004, with NPDC contributing 50 per cent of capital costs. TrustPower have indicated that upgrades are required to the dam and that NPDC may be required to contribute towards the cost of the work.

Intakes also include pipe work, valves, I&E cabinets, pre-treatment process and level transmitters.

2.1.3 Inglewood Headworks and Intake

The primary intake at Inglewood is an infiltration gallery within the bed of the Ngatoro Stream. All infiltration galleries are susceptible to stream bed movement, aggrading, or binding up of the stone matrix.

Redundancy is provided in the form of an old contingency intake located at the edge of the Egmont National Park. It is able to convey raw water via a concrete pipeline (falling main) down Dudley Rd to the Inglewood WTP. This intake is now routinely used to back flush the infiltration gallery and to supply water to the plant during periods when the infiltration gallery is inoperable because of poor water quality in the lower river.

The contingency intake also serves as a rural raw (untreated) water supply to local properties bordering Dudley Road. In 2008, we modified the contingency intake farm supply draw point to ensure a reliable supply to the Dudley Water Users Group (farm supply) during periods when the Inglewood Water Treatment Plant draws from the contingency line. While this has improved the Rural User Group supply at the intake end of their system, there still appears to be supply constraint when the contingency system is operated at full flow. Future proposals are to provide the Upper Dudley Road residents with a replacement (treated) water supply by means of a pump at the Inglewood WTP and small bore rider main up Dudley Road. This will ensure the user receive a better quality, more reliable supply of water that meets NZDWS, while allowing the contingency supply to be dedicated to operating the main Inglewood water supply in event of loss of the gallery intake.

Asset Capacity /Performance

The Inglewood intake is capable of delivering the current consented abstraction volume of 4.8 million litres per day via a 1 km long falling main to the Inglewood Treatment Plant on Dudley Road.

Concerns about reduction in the gallery observed in 2008/2009 have been addressed by introducing routine back flushing of the gallery river bed media, using the contingency intake to relieve the progressive fouling experienced over previous years of operation (when back flushing was not done). Full flow testing of the gallery and the plant in 2009/2010 showed that the gallery capacity has recovered, and is being maintained by routine back flushing. As a result of further review of the gallery flow capacity in 2014/15, we raised the height of the infiltration gallery well head to increase the effectiveness of gallery back flushing.

The gallery is regularly monitored and we flush or rehabilitate the gallery bed as changes are observed, typically once per year. The Inglewood infiltration gallery does not sufficiently filter highly turbid, raw water laden with natural organics after heavy rain and floods (freshes) within the Ngatoro catchment. Optimisation of the treatment process since 2004 means the plant can now handle most storm events without needing to be turned off.

2. ASSET LIFECYCLE MANAGEMENT

2.1.4 Okato Headworks and Intake

Okato relies on an infiltration gallery drawing water from the Mangatete Stream. In early 2004, the in-bank gallery was damaged by floods but was successfully repaired. In April 2008, the viability of the gallery was again threatened by floods. We now undertake regular river bed and bank work to shield the infiltration gallery from flood damage and to help protect the property and road bridge that the main pipe from the gallery is attached to.

Asset Capacity /Performance

The Mangatete Stream has demonstrated low flows to the point where abstraction consents require us to implement water restrictions at an increasing frequency. In June 2011, we submitted an application to Taranaki Regional Council (TRC) to review the mean annual low flow for the Mangatete Stream and the associated consent conditions. TRC granted a variation amending the low flow levels for the Mangatete Stream, and associated in stream flows at which water restrictions have to be implemented. We investigated alternative groundwater bore sources to augment and preferably replace the existing surface source at Okato. This investigation did not result in identifying a suitable bore. Whilst ground water was found, it was only just sufficient in quantity to meet demand. Herbicides were detected in the water which, although well below the limits that would threaten health it was considered potentially unacceptably for residents.

The infiltration gallery has consistently demonstrated a maximum continuous flow capability of 0.98 million litres per day.

The infiltration gallery in the Mangatete Stream has suffered significant boulder damage. We have temporarily repaired this with large boulders to ensure water flows down the fish pass during low river conditions. This solution is working well but we will need to review this situation and consider a programme of renewal in the next LTP.

2.1.5 Oakura Headworks and Intake Asset Capacity /Performance

The Oakura No.1 bore water supply was commissioned in 2004. Drawing groundwater from a bore at 130 metres to 185 metres below ground level, its single bore pump at 127.5m below ground level is capable of delivering 2.88 million litres per day to the Oakura WTP.

A second bore was commissioned in 2008 drawing water from the same aquifer as bore 1. The second bore is capable of an additional 1.92 million litres per day. The combined consented abstraction limit for both bores is 3.72 million litres per day. Both bores are granted "secure ground water" status under the NZDWS. Based on the last inspection, both production bores and their associated observation bores require further work to secure them from access and contamination by stock.

In case of failure of the bores or bore pumps, we have retained the existing surface water intake (on the Wairau Stream and on the periphery of the Kaitake Ranges) as a contingency measure. This intake is isolated from the treated water supply until it is required and its operable status in now uncertain due to not being regularly maintained. The need for this facility is currently under review.

2.1.6 Waitara Raw Water Headworks and Intake

The existing headworks, falling mains and open reservoirs for the Waitara untreated (raw water industrial) supply, take Waiongana River water from a weir and intake approximately 3km south of Lepperton. Water is conveyed to the ANZCO site in Waitara via a 500mm diameter trunk main and a 60,000,000 litre capacity open reservoir on Mountain Road and a 20,000,000 litre capacity reservoir off Raleigh St, Waitara.

Asset Capacity /Performance

In November 2006, the abstraction consent was renewed for a further five years. This consent had a reduced abstraction limit of 6 million litres per day and stringent no-take provisions to preserve minimum river levels. Since commissioning the alternate refrigeration plant, no water has been used by the Waitara cool stores now owned by ANZCO. The trunk mains and steel pipe-work are in a poor condition and now have numerous leaks. By agreement between ANZCO and NPDC, this system is currently mothballed but we are obliged to maintain this system under an agreement with ANZCO. If ANZCO was to require water supplies in the future the current system would need to be significantly upgraded. We are investigating alternatives with ANZCO with the ultimate aim of either transferring ownership or decommissioning this system in the next ten years. The abstraction consent was renewed in 2011 for a further 20 years.

A well maintained and updated asset inventory means the data presented in this AMP on the length, diameter, quantity and age of the assets is classed as grade B – Reliable.

2. ASSET LIFECYCLE MANAGEMENT

2.2 Asset Condition

Asset condition grades are given in accordance with Section 5 of the Asset Management Strategy.

No formal asset conditions are recorded for headworks and intakes in the asset inventory and all asset conditions are recorded as 6 – Unknown. Therefore the data accuracy for asset condition is classed as grade E – Unknown. **This is a data integrity issue and is recorded as an action in Section 5 – Improvement and Monitoring Plan.**

Intakes and headworks assets are generally considered to be in good condition with a few known exceptions that have either already been addressed or will need to be addressed in either renewals plans or reactive maintenance.

2.3 Asset Remaining Lives

The life expectancy data for headworks and intakes assets has been recorded in EAM. This data was provided by Beca as part of the plant and equipment valuation and is therefore classed as grade B – Reliable.

The life expectancy of intakes and headworks assets is variable as it is based on the type of construction material and usage. Concrete structures have a life expectancy of 100 years; valves and other miscellaneous assets have a life expectancy similar to those described in other volumes of this AMP.

2.4 Asset Valuation

As at 30 June 2016, the value of all headworks, intakes and falling mains assets is shown in Table 4.

Table 4 Asset valuation

Gross Current Replacement Cost (GCRC) ($)	Annual Depreciation ($)	Optimised Depreciated Replacement Cost (ODRC) ($)
6,269,323	121,375	3,371,900

Beca provided a detailed valuation of each asset component as part of the general plant and equipment valuation during the 2016 statutory valuation. Therefore, in conjunction with a well maintained and updated asset inventory, the valuation data is classed as B – Reliable.

2.5 Operations and Maintenance Plan

2.5.1 Operations

Routine operational activities include the following:

- Valve operation for source selection and flow control, and for functional checks.
- Regular scouring of the mains to the treatment plants.
- Regular inspection and cleaning of permanent screens and filter socks.
- Regular inspection, maintenance, and functional testing of stepper screens on the New Plymouth headworks.
- Regular inspection, maintenance, and functional testing of telemetry and control equipment.
- Inspection of all valves, locks, hinges, and security covers for correct operation.
- Checking of the integrity of weirs, fish passes, well head structures, valve pits, stream bed armoring and filtration media, and river banks for erosion, undermining, corrosion, flood damage or fouling, general silting, etc.
- Removal of sand and silt build up in intake structures.
- Maintaining all vehicle access tracks.
- Ensuring all access ways and ladders are clear and safe to use.
- Checking for indications of source water contamination from upstream discharges.
- Regular flow tests on the Inglewood and Okato plants to determine maximum intake flow capability.
- Continuous measuring of abstraction flows for all plants and sources using electronic Mag Flow meters. Flows are recorded continuously through each site's SCADA system.
- Annual infiltration gallery remedial work to maintain river bed profile.
- Infiltration remedial work, including back flushing, to clear blockages on an as required basis – primarily at Inglewood.
- Monitoring of consents compliance, including regular TRC inspections, abstraction Mag Flow meter five yearly validation to validate our flow measurement (from 1 July 2011), and provision of daily source water abstraction data to TRC.
- Routine sampling and analysis of source water for Drinking Water Standards water characterization.
- Sludge management at Lake Mangamahoe.

Work is managed through daily and weekly check sheets.

Specific additional operational expenditure has been for the following:

- The Oakura operability of the contingency surface water supply system at Upper Wairau Road has not been tested since 2002, following the second bore being established at Wairau Road. The continued requirement for surface water contingency assets needs investigation, including whether we need to test or decommission/dispose of these assets.
- Okato infiltration gallery maintenance work is restricted to the period 1 November to 30 April. We require resource consent for maintenance work to be carried out all year round. As the bores will not replace the surface water intake, we also need to review the available options to improve the integrity of the intake.
- The Inglewood contingency intake supplies some properties and operates as a backwash for the main intake. We need to review the options to make modifications at this location.
- Lake Mangamahoe has a single inlet tunnel used for bringing the majority of the water supply into the lake from the Waiwhakaiho River. We require a study to investigate the necessity of a second inlet tunnel or pipe to provide the required level of resilience.

2. ASSET LIFECYCLE MANAGEMENT

2.5.2 Maintenance

Our general approach to asset maintenance is outlined in the Asset Management Strategy.

In terms of headworks and intake assets, weekly visits and cleaning is required but the screens at the NPWTP are automated to enable remote operation and switching between intakes.

We will require ongoing risk assessment for each of our water source catchments to identify changes in source water risks. This involves:

- Regular visual assessment by walking and overflying each source river catchment.
- 5 yearly source water re-characterisation and catchment surveys in line with DWSNZ 2005 (2008 revision) requirements.
- Liaison with TRC with regards to changes to activities along Source Rivers.

Assessments to date include an extensive sanitary survey of the NPWTP source water catchment to comply with the DWSNZ assessment criteria. In 2008, we conducted less rigorous surveys of the Okato WTP, Inglewood WTP and NPWTP as part of the source risk categorisation process. In 2016/17 we conducted detailed assessments at Okato and Inglewood. In 2017/18 a protozoa sampling programme was undertaken at NPWTP to comply with the NZDWS.

2.5.3 Critical Spares

An assessment of the critical spares required has not yet been conducted for headworks and intake assets. **This is an asset data integrity issue and is recorded as an action in Section 5 – Improvement and Monitoring Plan.**

2.5.4 Opex Forecast

The general 10-year Opex forecast for water supply assets is included in the Water Supply General Volume. It includes the Opex forecast for the maintenance and operation of headworks and intakes assets.

2.6 Renewals Plan

Our general approach to asset renewal is included in Section 4.3 of the Asset Management Strategy.

As the headworks and intakes continue to age, we will require investment in renewals to maintain current reliability levels. Prior to confirming expenditure on renewal projects, we will undertake condition and criticality assessments and review the remaining life of the assets to ensure optimum value from the assets is being achieved.

No specific renewal projects for headworks and intake assets are planned over the period of the AMP. However, the general provisions for plant and equipment renewals included in Volume 2 – Treatment Plants is sufficient to cover any planned or unplanned renewals that may occur.

We will need to renew our water extraction consents. We estimate expenditure for the application and consent fees to be $310k in 2018/19, as shown in Table 5. TRC are currently reviewing the Regional Fresh Water Plan and this could impact on the water available from existing surface water takes in the future.

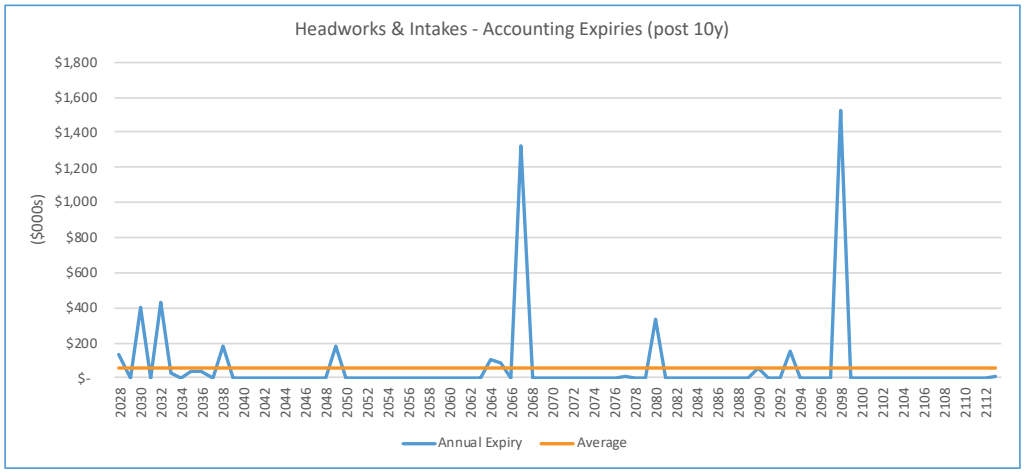
Table 5 Renewal expenditure forecast

Water Headworks & Intakes Renewal Expenditure Forecast ($000)											
Activity	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	LTP Total
WA1081 - Resource Consent Renewals Water	310	-	-	-	-	-	-	-	-	-	310
Total	310	-	-	-	-	-	-	-	-	-	310

The accounting expiries i.e. the dates at which the assets reach their book life expectancy, for the years beyond 27/28 are shown in Figure 1. There are two major items:

- renewal of the NPWTP main inlet line No.1 at $1.3m in 2067, and
- renewal of the NPWTP main inlet line No.2 at $1.4m in 2098.

Figure 1 Accounting expiries post 10y



2.7 Acquisition and Augmentation Plan

Acquisition

We have no major acquisition plans of new headworks and intakes planned over the next 10 years. However we will need to acquire land adjacent to the Oakura observation bore to meet stock exclusion requirements under the NZDWS.

Growth

The Water Master Plan identifies the new water supply assets that will be required to meet future predicted demand. The assets required are summarised in Section 4 of the Water Supply General AMP.

No growth projects for intakes and headworks are planned during the period of the AMP.

Levels of Service

The existing Intake Fish Screen at NPWTP do not meet industry standard and require renewal by June 2019 to prevent fish entering the raw water tank and to avoid any prosecution actions. A provision of $757k in 2018/19 has been made for this work (WA2004).

No headworks and intakes level of service projects are planned during the period of this AMP. However, the Water Master Plan includes a total provision of $25m over the period of the plan to establish a new water source and water treatment plant. Even with successful demand management to reduce individual usage per person per day, as future population growth is realised, the district's total water demand will continue to grow. As such, at some point demand on the current water source will exceed supply capabilities and we will require a new water source to maintain levels of service. Further investigation to identify a suitable water source is required – possible solutions including bore holes or another river supply. The expenditure forecast for this project is outlined in Volume 2 – Treatment Plants and includes provision for any associated headworks and intakes required.

The Water Master Plan includes options and cost estimates for other level of service projects beyond the period of the AMP, including an option to investigate the potential storage capacity options at Lake Mangamahoe. Prior to any work occurring, a more detailed feasibility study is required to confirm that this it is practicable and cost effective. Any work would also be subject to permission from TrustPower as the owner of the dam.

The Capex forecast for level of service projects is summarised in the Table 6.

Table 6 Level of service expenditure forecast

Water Headworks & Intakes Renewal Expenditure Forecast ($000)											
Activity	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	LTP Total
WA2004 - Renew Intake Fish Screens at NPWTP	757	-	-	-	-	-	-	-	-	-	757
Total	757	-	-	-	-	-	-	-	-	-	757

2.8 Disposal Plan

Disposal is the retirement or sale of assets when they become surplus or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

- Under-utilisation
- Obsolescence
- Provision exceeds required level of service
- Replacement before end of predicted economic life
- Uneconomic to upgrade or operate
- Policy changes
- Service provided by other means (e.g. private sector involvement)
- Potential risk of ownership (financial, environmental, legal, social)

No asset disposals are planned over the 10 year AMP period.

2.9 Annual Work Plan

We will base our detailed work plans for Annual Plans on the asset renewal forecasts included in section 2.6 and the augmentation projects identified in section 2.7.

3. RISK MANAGEMENT PLAN

3.1 Critical Assets

We have not yet conducted criticality ratings for intakes and headworks assets; therefore, there is currently no data recorded in EAM. **This is an asset data integrity issue and is recorded as an action in Section 5 – Improvement and Monitoring Plan.**

Following asset criticality assessment, we will develop a focused management plan to ensure the integrity and resilience of critical assets. **This is recorded as an action in Section 5 – Improvement and Monitoring Plan.**

3.2 Risk Assessments

Details of our Risk Management Framework are included in section 6.2 of the Water Supply General AMP volume and section 7 of the Asset Management Strategy.

3.3 Infrastructure Resilience Approach

The Water Master Plan considers opportunities to improve asset resilience when planning for construction of new assets to meet growth projections and maintain levels of service. Once we have completed asset condition and criticality assessments, we will undertake further resilience planning to identify any potential improvements.

Following on from ex-cyclone Gita which damaged one of our trunk mains crossing a pipe-bridge in February 2018 and the Havelock North Water Inquiry; the importance of our water network has been highlighted. This has caused us to consider the resilience of our water assets based on cost versus risk assessments. Section 6.3 of the General Water Supply volume gives details the items selected for investment in improving asset resilience.

4. FINANCIAL SUMMARY

The Capex forecast for headworks and intakes is shown in Table 7.

Table 7 Capex forecast summary

Headworks Expenditure Forecast ($000)											
Activity	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	LTP Total
Renewals	310	-	-	-	-	-	-	-	-	-	310
Service Level	757	-	-	-	-	-	-	-	-	-	757
Growth	-	-	-	-	-	-	-	-	-	-	-
Total	1,067	-	-	-	-	-	-	-	-	-	1.067

The Opex forecast for operations and maintenance is included in the overall Opex forecast for Water Supply detailed in the LTP. It is also included in the Water Supply General Volume.

5. IMPROVEMENT AND MONITORING PLAN

Our general Asset Management Maturity Improvement Plan is included in the Asset Management Strategy.

General improvements to Water Supply assets are included in the Water Supply General Volume.

The specific areas of improvement identified for headworks and intakes assets are listed in Table 8.

Table 8 Improvements summary

No	Improvement Area	Owner	Start Date	End Date
1	Assess asset condition and record results in EAM	Asset Operations Planning Lead	Jul 2018	Jun 2020
2	Assess critical spares and procure any required components	Manager Three Waters	Jul 2018	Jun 2019
3	Assess criticality of assets and record results in EAM	Asset Operations Planning Lead	Jul 2018	Jun 2020
4	Produce focused management plan for those assets identified as critical	Manager Three Waters	Jul 2018	Jun 2020

2018-2028 WATER SUPPLY ASSET MANAGEMENT PLAN

He Rautaki Whakahaere Rawa mō Te Wai Whakarato

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VOLUME ONE | PUKAPUKA TUATAHI