Waikato-Hamilton-Waipā Metropolitan Area

Southern Metro Wastewater

Detailed Business Case Summary

Tooku awa koiora me oona pikonga he kura tangihia o te maataamuri

"The river of life, each curve more beautiful than the last"

Hamilton City Council Te kaunihera o Kirikiriroa

Waikato Tainui

Future Proof Te Tau Tītoki

Waikato District Council

Waipā District Council

Waikato Metro Wastewater

Preface

The Waikato-Hamilton-Waipā Metro Wastewater Detailed Business Case (DBC) project is a collaboration between three councils (Hamilton City, Waipā District and Waikato District) and taangata whenua to identify the best future option for managing wastewater for urban communities in the Metro area.

This document is a summary of the Southern Metro Wastewater Detailed Business Case and covers the Southern areas of Hamilton City; the airport and surrounding environs, Mātangi, Tamahere, Tauwhare, Ōhaupō, Cambridge and Te Awamutu. The Northern Wastewater DBC has been prepared separately to consider the needs of Taupiri, Ngaaruawaahia, Horotiu, Hopuhopu, Te Kowhai and the majority of Hamilton City.

This document summarises five sections of a Detailed Business Case: the Strategic Case, the Economic Case, the Financial Case, the Commercial Case and the Management Case. The full Detailed Business Case is available at www.futureproof.org.nz/h2a/metrowastewater.

The DBC investigates and presents a rationale for a new way of delivering long-term wastewater services across territorial boundaries. The work builds on the Waikato Sub-Regional Three Waters Strategic Case (Future Proof, 2019), Waipā District Council – Cambridge Wastewater Indicative Business Case (Waipā District Council, 2019) and the High-Level Waikato Metro Wastewater Assessment (Future Proof, 2020).

A team of specialist consultants were engaged to support delivery of the project including technical investigations and analysis needed to inform the DBC and writing the DBC cases. An independent peer review of the DBC has also been completed to support the overall findings of the DBC.

As at April 2022, the impact of the Government's Three Waters Reform process was unknown. Accordingly, this document has been prepared on the basis of 'business as usual' service delivery structures, noting any proposed structures could transition into new management arrangements if required.

Contents

Introduction

Context

The Waikato-Hamilton-Waipā Southern and Northern Metro Wastewater Detailed Business Cases (DBC) are being jointly delivered through strong collaboration between the Iwi, mana whenua and Waikato, Hamilton and Waipā councils.

The Waikato region has seen and is forecast to continuing seeing tremendous growth and development in commercial, industrial, and residential areas, placing pressure on existing wastewater services and creating further demand for wastewater treatment and management services.

The collaborative relationships established to deliver this project represents the era of co-management in respect of the Waikato River and activities within its catchment and joint recognition of the benefits of "boundaryless" planning to restore and protect the health and wellbeing of the Waikato River and meet the current and future needs of the Metro Area.

Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River (Te Ture Whaimana) is the primary direction setting document for the Waikato River and for activities within its catchment and forms the foundation for this project.

The recommendations in the DBC seek to actively contribute to achieving the vision and objectives set out in Te Ture Whaimana by delivering "best for river" wastewater management solutions, recognising and providing for the unique relationship that taangata whenua have with the awa as well as contribute to the social and cultural wellbeing of the community.

Through the DBC, the parties have identified preferred servicing solutions for wastewater infrastructure and have worked through how these might be planned for, constructed, and funded.

Project Delivery through Partnership

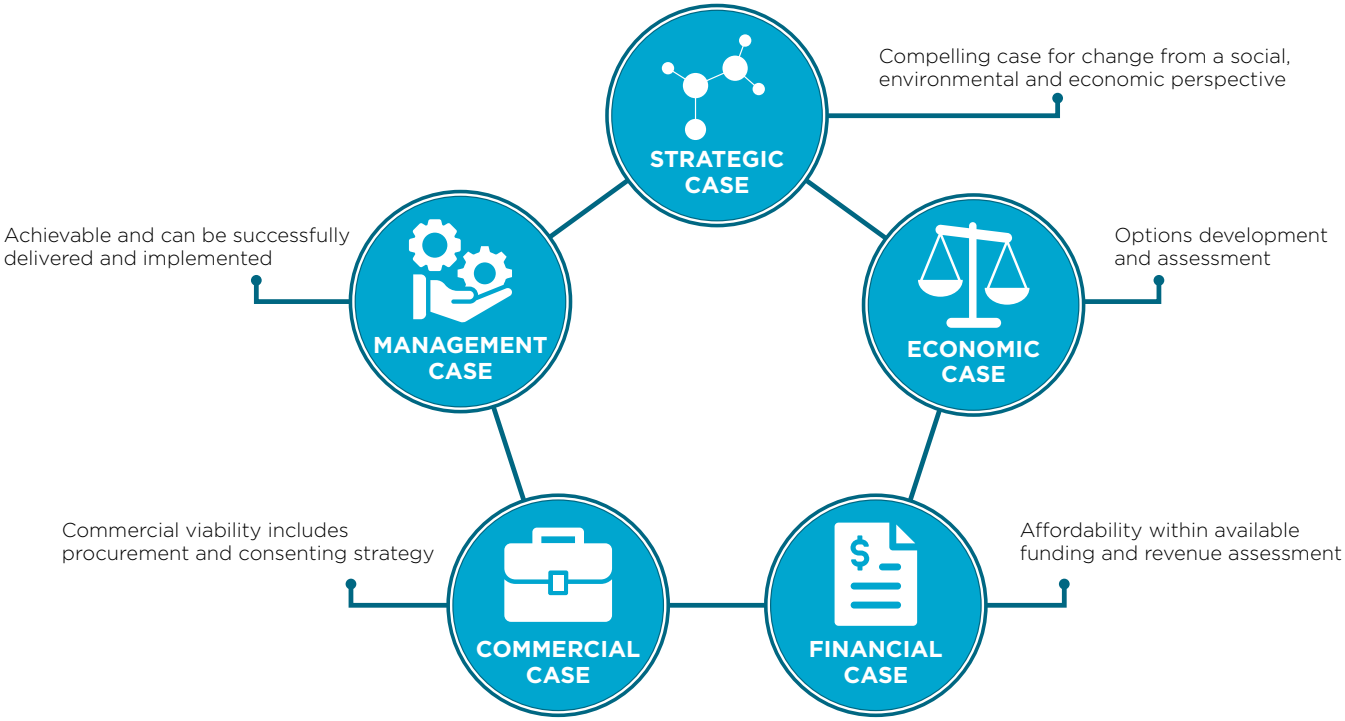
A fundamental principle adopted for this project is giving effect to treaty-based partnerships through strong collaboration, co-design and decision making by council and taangata whenua representatives. This occurred throughout the project at all levels from detailed technical analysis through to overall project governance.

The project governance group made up of elected representatives from each partner group have overseen the project and endorsed or approved the key recommendations and decisions that inform this DBC over the course of the project including:

- Project Vision & Objectives.
- Growth Assumptions.
- Investment Objectives, KPIs and MCA Criteria.
- Treatment Performance Standards.
- Preferred Wastewater Servicing Option.
- Commercial delivery, contracting and packaging approach.
- Funding and financing options.
- Project management, governance and risk management arrangements.

Treasury Better Business Case Model

The DBC has been developed to meet the requirements of the NZ Treasury Better Business Case Model. The Better Business Case Model involves five cases:



- **Strategic Case:** sets out the compelling case for change by identifying current problems, the benefits of addressing the problems and the overarching objectives that are being sought.
- **Economic Case:** sets out the preferred WW servicing solution including the long-listing to preferred option assessments and concept details for the preferred option. The MCA used to assess the WW servicing options consider a range of factors including benefits, cost effectiveness, cultural, environmental and social factors.
- **Commercial Case:** sets out the delivery structure and plans for the procurement arrangements needed to implement the preferred WW treatment solution. This includes procurement strategy and plan, risk sharing, payment mechanisms and contracting considerations.
- **Financial Case:** sets out the preferred funding model and financing strategy. This includes affordability considerations.
- **Management Case:** details the arrangements needed to both ensure successful delivery of the preferred solutions and to manage project risks, while maintaining a focus on delivery of benefits.

Purpose of the Detailed Business Case (DBC)

The DBC recommends long-term wastewater treatment solutions for the Southern Metro Area that give effect to the project vision and objectives.

Project Vision & Objectives

The vision adopted for the DBC is as stated in Te Ture Whaimana

Tooku awa koiora me oona pikonga he kura tangihia o te maataamuri

"The river of life, each curve more beautiful than the last"

...a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.

The DBC has been developed to meet the requirements of the NZ Treasury Better Business Case Model and deliver "Best for River" outcomes.

The "Best for river" definition methodology developed through the Sub-Regional Three Waters Project has been used to develop the project investment objectives and key performance indicators for the DBC.

Investment Objectives

The investment objectives are:

1. Before 2050 municipal wastewater discharges are no longer impacting on the ability of people to swim and collect kai from the Waikato River and connected waterways, thereby contributing to the restoration and protection of the health and wellbeing of the river.
2. The quality and extent of aquatic and terrestrial habitat and biodiversity in and around water bodies is enhanced through the reduction of wastewater treatment and discharge impacts before 2050.
3. Wastewater treatment solutions contribute to restoring and enhancing cultural connectivity/relationships with the river so that, before 2050, marae, hapuu and iwi access to the river and other sites of significance for cultural and customary practice within the Metro Are no longer impeded by wastewater treatment solutions.
4. Maximise efficient use of resources and resource recovery to contribute to net zero greenhouse gas related emissions from wastewater treatment systems before 2050.
5. The wastewater solution provides sufficient capacity to ensure sustainable growth in the Metro Area in accordance with growth projection assumptions for the next 100 years.

Proposals in Summary

The DBC covers proposals for:

- A new Southern Sub-Regional WWTP to service the Hamilton Airport industrial precinct and surrounding areas, Mātangi/ Tamahere and southern Hamilton.
- Construction of a new WWTP at Cambridge.
- Upgrades to the existing Te Awamutu WWTP.
- Improvements to the existing WWTPs at Mātangi and Tauwhare Pā.

Historical context

Taangata whenua within the Metro Area are descended from the Tainui waka. There are seven significant iwi/hapuu groupings: Ngaati Hauaa, Ngaati Korokii- Kahukura, Ngaati Maahanga, Ngaati Mahuta, Ngaati Wairere, Ngaati Tamainupo, and Waikato-Tainui. Cambridge and Te Awamutu include additional mana whenua Ngaati Maniapoto, Raukawa, Ngaati Apakura, Ngaati Hikairo, and Paretekawa.

Taangata whenua view the Waikato River as an ancestor who is a source of sustenance, identity and mana. They belong to, and are part of the River and have an obligation to protect it.

Prior to European settlement, the Waikato River and all its tributaries would have had very high water-quality and would have been mostly free of contaminants. The River would have teemed with life and would have sustained people physically, mentally and spiritually.

In 1858 the Kiingitanga movement began under the first Maaori King Pootatau Te Wherowhero to unite iwi and halt the alienation of Maaori land. In July 1863, British troops crossed the Mangataawhiri Stream, invading Waikato. In 1865, the Crown unjustly confiscated approximately 500,000ha of Waikato-Tainui land. New settlers occupied the confiscated lands, wetlands were drained, and farms and towns developed. The development contributed to economic growth but degraded the health of the Waikato River.

From the time of the Raupatu (the land confiscation), Waikato-Tainui were excluded from decision-making regarding the Waikato River.

Treaty Settlements

From the 1860s onwards, Waikato-Tainui sought justice for their Raupatu claim and protection for the Waikato River. Waikato-Tainui negotiated directly with the Crown and reached settlement of the Raupatu land claim in 1995 and the river claim in 2008.

The Waikato-Tainui Deed of Settlement for the Waikato River received royal assent in 2010. Its aim is to restore and protect the health and wellbeing of the Waikato River for future generations. Under this Settlement the Waikato River includes the river's main stem, from Huka Falls to the Waikato River mouth, and all its tributaries.

Among other redress, the Waikato-Tainui Raupatu Claims (Waikato River) Act 2010 established the Vision and Strategy for Waikato River, Te Ture Whaimana o Te Awa o Waikato as the primary direction-setting document for the Waikato River and its catchment.

Te Ture Whaimana o Te Awa o Waikato sets out the vision, objectives and strategies to restore and protect the health and wellbeing of the River. It is the primary direction-setting document for the Waikato River and its catchments, which includes the Waipā River.

Te Ture Whaimana is deemed part of the Waikato Regional Policy Statement, and regional and district plans are legally required to give effect to it. The vision, reflected in this DBC is for:

> **"A future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come."**

The ongoing development along the length of the river over the last century has seen an increase in target nutrients and the contamination from industries, communities and farmland and a decline in the health and wellbeing of the awa. The discharge of waste, particularly human waste, to the Waikato River or its tributaries, whether direct or diffuse, is particularly abhorrent to taangata whenua.

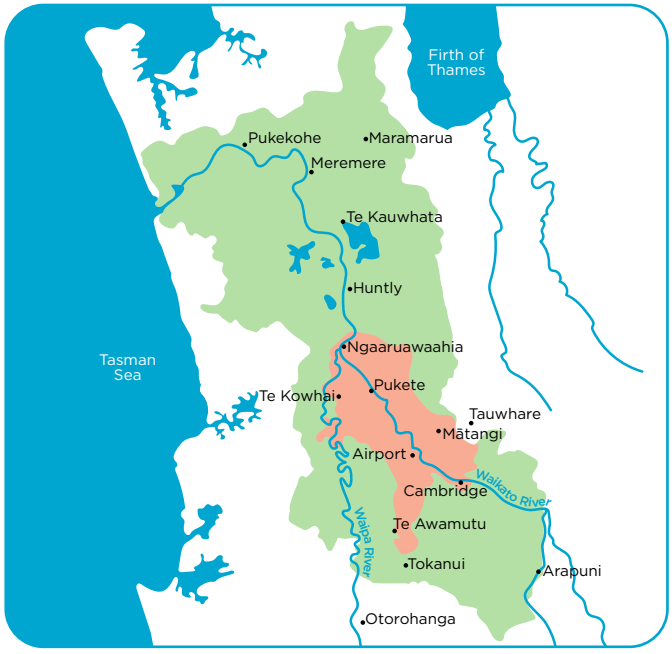
Strategic Case

The Strategic Case

– evaluates the strategic need for the project and the case for change.

The Metro Area is the urban sub-region of the Waikato stretching from Taupiri in the north to Te Awamutu and Cambridge in the south. The Metro Area sits across three local authority jurisdictions (Waikato District, Hamilton City, Waipā District).

Figure 1 – Waikato Metro Area
(highlighted in orange)



Some municipal wastewater treatment plants (WWTPs) in the Metro Area do not always comply with existing resource consent conditions. The majority of municipal wastewater discharge consents will also expire in the next 10 years. System performance across the Metro Area has been variable and, in most instances, plants do not meet the standards needed to uphold Best for River principles and achieve the environmental, cultural and economic aspirations of the sub-region.

Historically, each of the three local authorities in the Metro Area have planned and funded wastewater infrastructure independently from each other. Overall, there has been a lack of integration and a number of short-term investment decisions made, including deferred investment decisions which do not align with Te Ture Whaimana o te Awa o Waikato.

Taangata whenua have largely been excluded from decision-making.

Four problems

Four broad problems in regard to three waters management including wastewater have been identified. The impact of these problems and specific wastewater examples are described.

Problem One:

A lack of integrated catchment management and urban waters long-term planning, founded on: a common vision and agreed future outcomes unconstrained by territorial boundaries; the application of both Maatauranga Maaori and conventional science methods; and appropriate funding provisions.

Impact of Problem One:

A lack of integrated catchment management and planning has resulted in:

- limited opportunities to consider catchment-level outcomes,
- a lack of funding and pipeline certainty which has failed to create competitive supply chain pressures
- a lack of work-force capacity and capability more usually associated with larger-scale entities; and
- a wide variation in Three Waters funding and financing strategies and approaches across the region.

Each council has largely continued to focus Three Waters investment on the needs of their own individual communities in isolation from neighbouring councils. This is evidenced by:

- numerous previous investigations highlighting the servicing challenges in the Southern Metro Area and proposing possible integrated solutions, that have not been implemented.
- the lack of any major cross-boundary wastewater management investment to date, despite it being the most practical approach in some situations. As an example, the township of Horotiu is serviced through the Ngaaruawaahia WWTP but is located closer to the aPukete WWTP.
- Differing approaches between councils to overall asset management (including renewals, replacement, design, funding) across the Metro Area.
- Varying levels of pro-active long-term planning.
- Differing requirements and expectations of treatment performance/standards, operation, maintenance, iwi/mana whenua and stakeholder engagement, monitoring and reporting.
- Different consent standards and requirements.
- Varying levels of compliance with resource consents.
- Multiple wastewater discharges to the river and environment.

These issues are likely to be exacerbated in the future with accelerated and high rates of development and intensification within the Metro Area. Without consistent and aligned land use, wastewater treatment investment will continue to be reactive, addressing short-term, immediate changes to demand within the wastewater network, instead of proactively planning for future demands.

Further, existing wastewater networks and plants are likely to become inundated with flows from unplanned developments. Both outcomes result in the degraded health and wellbeing of the Waikato River and work against the delivery of Te Ture Whaimana.

Problem Two:

Historic land confiscations coupled with inconsistent, short-term regulatory, planning and investment decisions on land use and urban water resource management have contributed to cultural disconnect, degraded water quality, and poor ecosystem health and over-allocated resources.

As a consequence, the relationships and aspirations of communities with the Waikato River, and the ability of Waikato River iwi to exercise mana whakahaere or conduct their tikanga and kawa have been severely compromised.

Impact of Problem Two:

Iwi and mana whenua have not historically been involved in, or empowered to, make decisions in relation to wastewater management. This includes input into the level of investment or involvement with proposed discharge methods. Councils make all decisions through the Long Term Plan (LTP) process.

The lack of proactive decision-making regarding wastewater treatment and land use management has contributed to substandard water quality. Water quality trends at key sites along the Waikato River show a general trend of degradation, as the concentration of contaminants has increased.

Problem Three:

Reactive infrastructure planning practices coupled with light-handed regulation and compliance, and inconsistent management practices, standards and performance expectations has led to variable WWTP performance across the region. This has adversely impacted the health and well-being of the Waikato and Waipā rivers.

Impact of Problem Three:

Land development

The dispersed nature of roles and responsibilities, spread across different councils, means no single entity is currently responsible for monitoring or delivering the performance of the whole system.

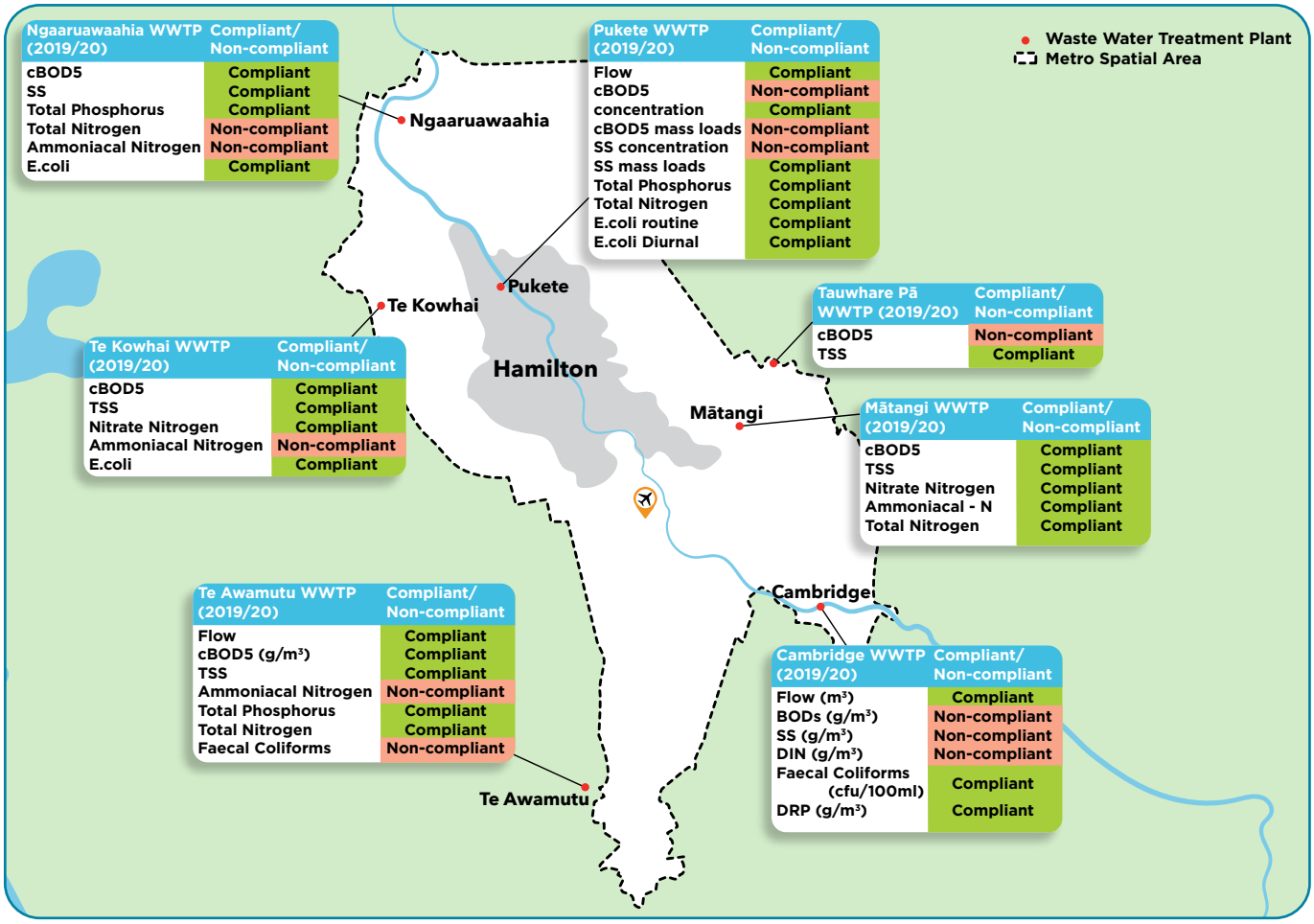
The Metro Area includes several areas either zoned for development, or with significant development potential located on the periphery of existing urban settlements. Many of these areas currently have limited wastewater services. In some cases, no servicing is planned, despite the lack of wastewater services constraining development. This means the land is zoned for development without sufficient long-term servicing solutions, or it prevents land that could unlock significant economic potential from being zoned and developed.

In many cases, population growth exceeded forecast projections, leading to discrepancies between what was expected and what was required in terms of key wastewater infrastructure.

In addition, land use decisions in serviced areas have been made without long-term sustainable servicing solutions compatible with the broader needs of the Metro Area. For example, the Hamilton Airport precinct is undergoing rapid development and is currently serviced through a mixture of small onsite WWTPs and storage and tankered wastewater to the Cambridge WWTP. Other developments in rural zones have been approved based on small, decentralised solutions.

Some recent asset upgrades have been driven by a requirement to meet abatement notice requirements, or by prosecutions, not by what is in the best long-term interests of the River.

Figure 2: Metro Area WWTP Consent Compliance Overview (2019/20)



Light-hand regulation

Under-performing sites are often neglected until enforcement action is taken. Councils are not always proactive in terms of compliance, and approaches to enforcement are inconsistent. This has resulted in varied discharge standards and levels of compliance. In many instances, there has been non-compliance with environmental standards, sometimes over years.

As at today, some existing WWTPs in the Metro Area cannot meet existing resource consent conditions.

Further, some Plan Changes have been approved and adopted without funded and planned infrastructure, resulting in 'plug and play' solutions that exceed existing network capacity.

There is also misalignment between regulatory documents, for example the National Policy Statement (NPS) - Freshwater Management and Plan Change 1 requirements.

Problem Four:

The legacy of under-investment in urban water systems coupled with infrastructure reaching the end of its life, increasing regulatory requirements, environmental expectations, climate change and greater growth demands have created a significant investment deficit. This has resulted in unaffordable current and future costs for new infrastructure, maintenance and operations as well as staffing challenges with the sector.

Impact of Problem Four

There are increasing and competing priorities for a finite amount of council funding. Alongside pressure to minimise rates, investment in wastewater infrastructure (and all infrastructure) has been constrained.

Approximately 12% of wastewater pipelines within the Metro Area are assessed as being in 'poor' or 'very poor condition' with an average age of more than 37 years. Operational and capital expenditure costs associated will increase unless action is undertaken.

There is now significant investment required in the Metro Area to upgrade WWTPs discharging into freshwater, to meet objectives set out in the NPS - Freshwater Management as well as Te Ture Whaimana.

Land drainage and flood protection may not be able to cope with more intense and frequent rainfall events, one of the key climate change risks for the reqion. Consequently, wastewater networks may be overloaded by increased inflow, leading to potential wastewater overflows. Meanwhile, community expectations regarding environmental regulations continue to increase.

Other issues

Wet industry

At present, Metro Area councils do not specifically plan for, or design infrastructure, to include capacity for new wet industry (high water use) activities. This DBC, alongside relevant land-use planning projects, represents an opportunity to implement more integrated and considered infrastructure planning approaches.

Partnering with private industry

Currently several industries in the Metro Area own and operate private WWTPs. This is typically due to the high strength flows they produce and the inability for municipal plants to accommodate these flows. Private facilities include Fonterra Hautapu, Fonterra Te Rapa, Fonterra Te Awamutu, AFFCO and WTTPs at the Hamilton Airport.

Private facilities could benefit by partnering with councils to manage water and wastewater demand holistically for the catchment, including potential resource recovering and re-use opportunities.

In summary

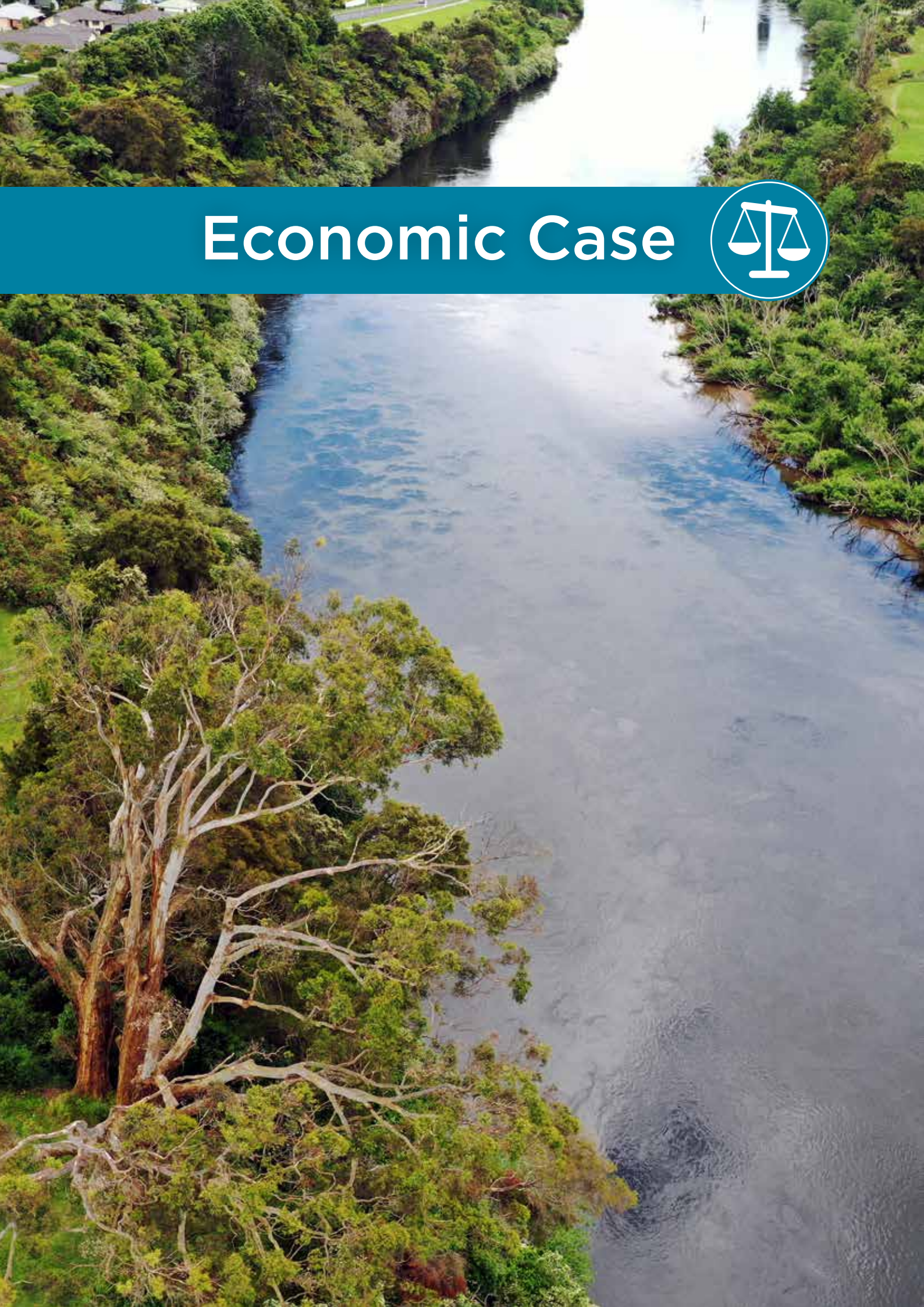
Decisions relating to infrastructure, land use and development have contributed to a current state where:

- the water quality of the Waikato River is significantly degraded.
- Three Waters infrastructure in the Metro Area is inefficient, aging, has lacked adequate investment and ongoing maintenance, and no longer fit-for-purpose.
- there is uncertainty about the abilities of individual councils to fund infrastructure, maintenance and operations for future growth to achieve compliance.
- under existing funding arrangements, ratepayers will not be able to afford to fund appropriate infrastructure in the future.
- developers in some areas are providing their own, site-specific infrastructure leading to fragmented networks and services that are complex to manage and renew.

Future growth pressures, environmental expectations and increased regulatory requirements are likely to exacerbate these issues.

Without a co-ordinated and boundaryless approach, involving all three councils and taangata whenua, the poor state of existing Three Waters infrastructure will limit economic growth and further contribute to environmental degradation of the Waikato River.

Economic Case

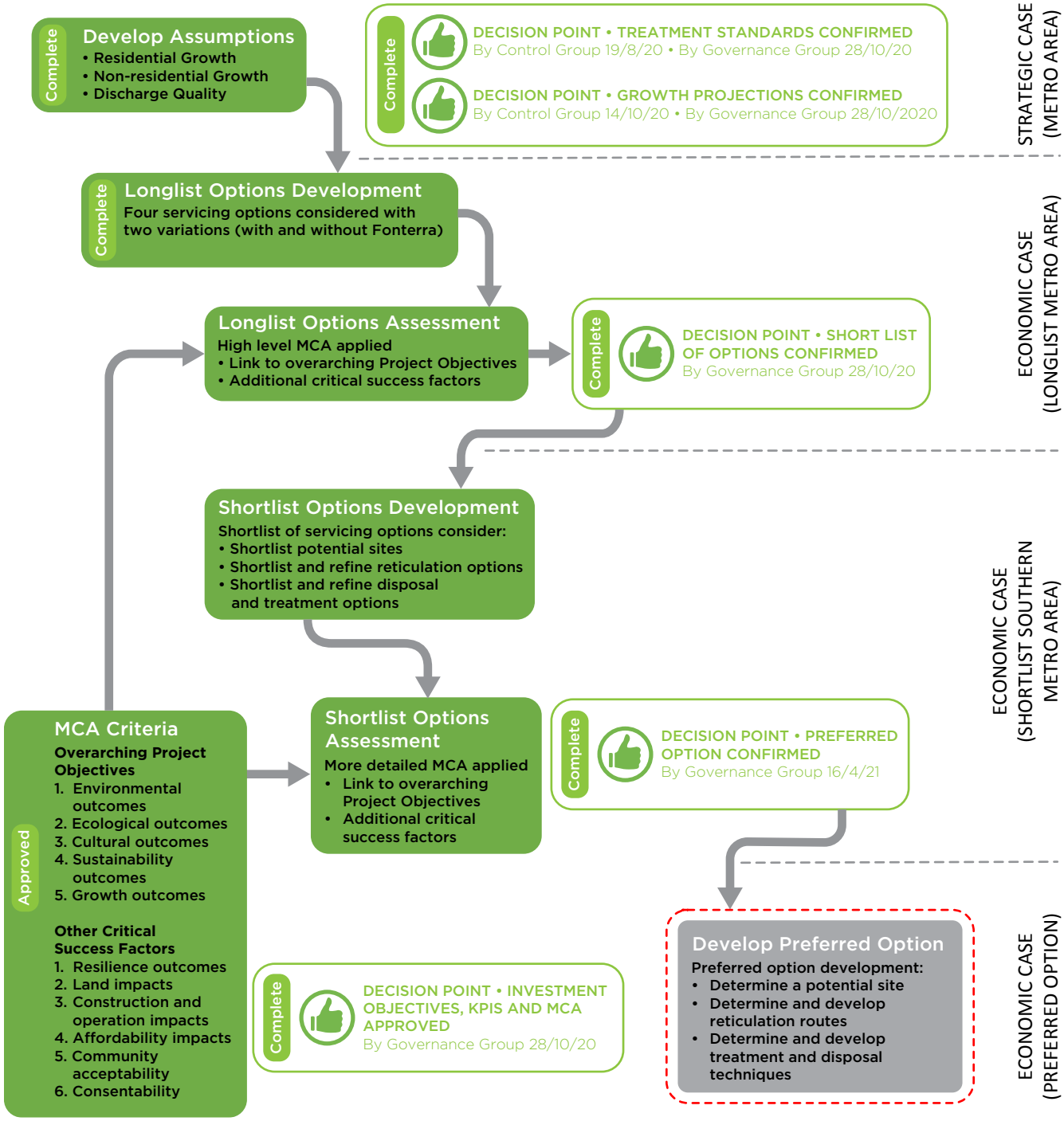


The Economic Case

– to identify the proposal that delivers best public value including wider social and environmental effects.

The Economic Case builds on the Strategic Case and describes the process to develop and evaluate the longlist and shortlist options and details the preferred option. Figure 3 outlines the process used to develop and identify the preferred option and shows the key decisions made throughout the project.

Figure 3 – Key Decisions – Option Development

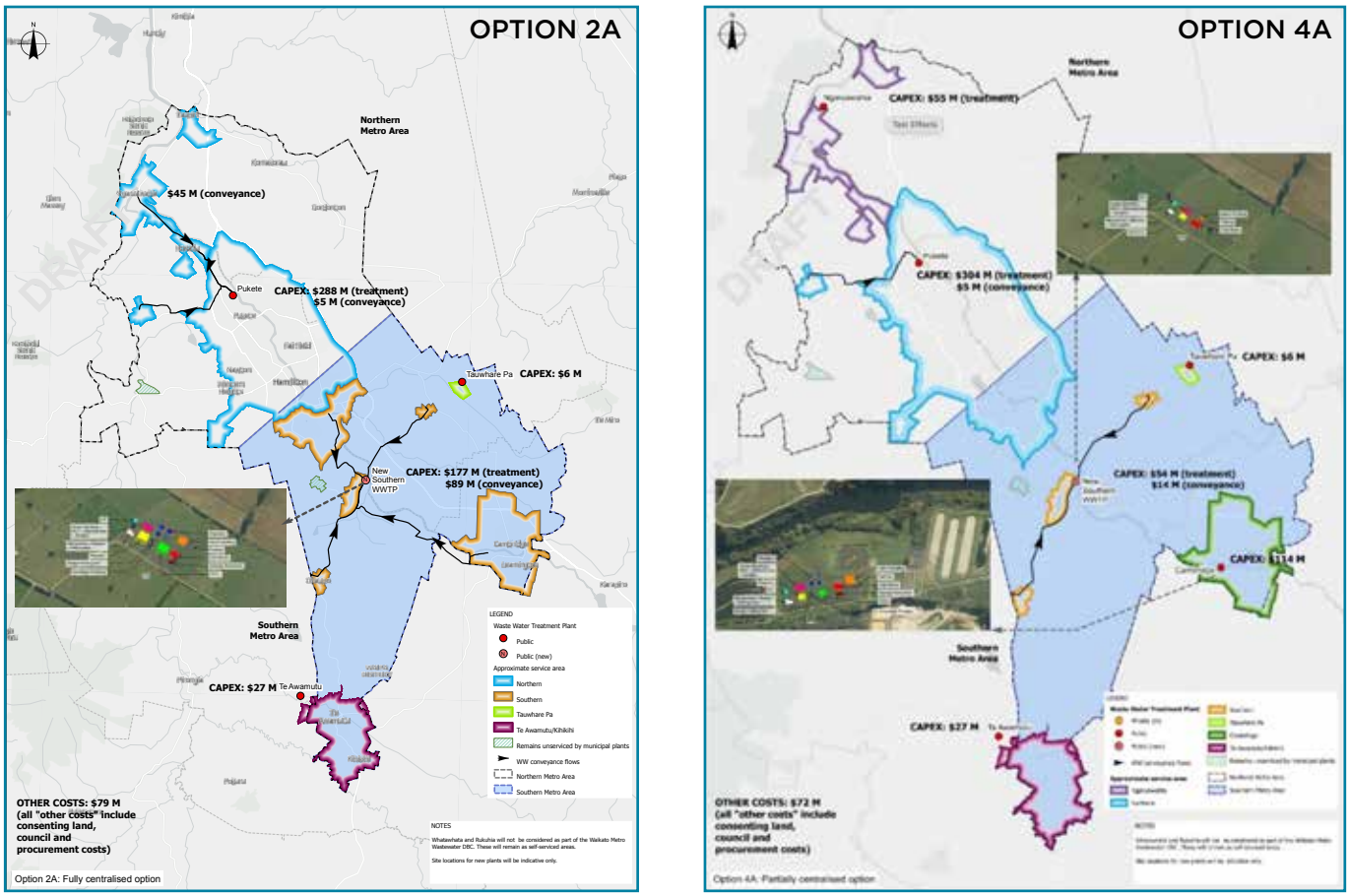


Shortlist development and assessment

Eight longlist options for the full Metro Area were developed for this DBC. The longlist Multi-Criteria Analysis (MCA) and risk assessment identified two options for shortlisting:

- **Option 2A - Three Plant Option** – Involving upgrades and expansion of the Pukete WWTP to service the Northern Metro area (including Taupiri, Ngaaruawaahia, Te Kowhai, Horotiu and majority of Hamilton); a new southern plant to service the Southern Metro area (including South Hamilton, airport area and environs, Cambridge) and the Te Awamutu WWTP.
- **Option 4A - Five Plant Option** – Involving treatment plant upgrades at Ngaaruawaahia, Pukete, Cambridge and Te Awamutu and a new southern plant to service the Airport area and environs.

Figure 4 – Overview of Short-listed WW Servicing Options



The short-listed options were developed further (in particular the Southern Sub-Regional WWTP) and assessed in more detail. This work determined that:

- Both options achieved similar outcomes in relation to the investment objectives and Best for River outcomes.
- Both were assessed as having a similar ability to be successfully consented and implemented.

- Option 4A had a capital cost estimate[1] of $652 million compared with Option 2A ($716 million[2]). These included capital costs for wastewater plant investments for the northern and southern Metro areas to accommodate projected growth out to 2061. Conveyance networks to new treatment plants as well as consenting, procurement, land purchase, make good and council construction overheads were also included.
- A Net Present Value (NPV) assessment on the short-listed options identified that Option 4A had an NPV estimate of -$1,096 million compared with Option 2A (-$1,212 million). Assumptions included capital cost inflation of 3%, operating cost inflation of 2%, costs modelled to 2071 and 5% discount rate.

Option 4A was assessed as more affordable than Option 2A as it gives project partners the potential to defer some capital costs in the first and second decades (2031 and 2041) as well as stage delivery of wastewater servicing for the Hamilton Airport environs and South Hamilton.

Preferred option

The preferred option for the Southern Metro Area is a refinement of Option 4A.
This option consists of:

- The adoption of minimum treatment performance standards across all plants, over time.
- A new Southern Sub-regional WWTP to service the airport area and environs (including Mātangi/ Tamahere commercial area) and southern Hamilton. Development of the plant will be staged to meet demand. Land discharge is proposed for Stage 1 with a move toward a discharge to water in Stage 2 and beyond as flows increase.
- Retaining and upgrading the Tauwhare Pā WWTP and land discharge to service local growth with the potential to be reticulated to the new southern WWTP or HCC network in the future.
- A new WWTP at Cambridge to achieve the adopted minimum treatment standards with discharge to the Waikato River.
- Retaining and upgrading the Te Awamutu WWTP to achieve improved treatment standards and cater for growth. Continued discharge via rock channel to the Mangapiko Stream is assumed.
- Improvements to the existing Mātangi WWTP until the wastewater is conveyed to the new southern WWTP in around 2040.
- Tamahere commercial hub to continue to utilise on-site wastewater treatment and discharge systems until 2040 when Mātangi is diverted to the Southern WWTP.
- Ōhaupō continuing with private on-site wastewater systems.

The preferred option for the Northern Metro Area is being considered as part of the Northern Metro WW DBC.

Key features of the preferred option (i.e. indicative treatment plant locations, areas served and total capital cost estimates) are shown in Figure 5. Specific details of the areas and population equivalents served by each plant are included in Table 1.

1 Capital Cost estimates for WWTP and Conveyance are estimated by Beca and are P50 AACE Class 5 cost estimate; expected accuracy of -30% to +50%. In addition, other costs including procurement, consenting, council resources, land acquisition have also been included and are provided by others.

2 Total 2021 dollars out to 2061 and unadjusted for inflation.

Figure 5 – Preferred Option Overview – Key features and overview of staging of Southern Sub-Regional WWTP

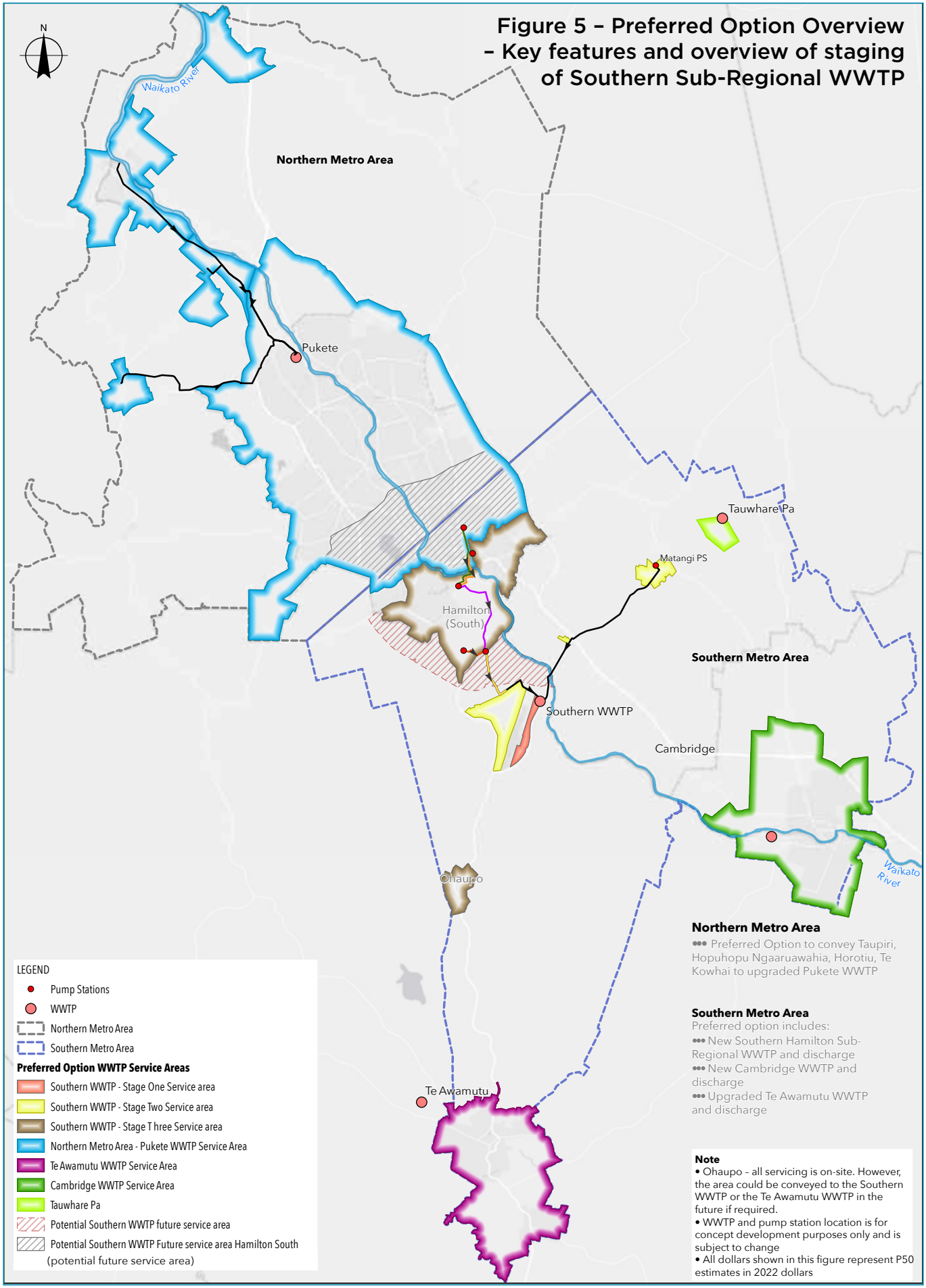


Table 1 – Summary of Preferred Option Service Areas over time

WWTP	Locations served	Population equivalent serviced by capacity available at the following dates					Notes
		2031	2041	2051	2061	Ultimate**	
Mātangi WWTP	Mātangi Village	150	Transfer to Southern WWTP				
Tauwhare Pā WWTP	Tauwhare Pā	619	619	619	619	889	2031 projection includes for additional 500 PE at Tauwhare Pā from current estimates. Ultimate includes allowance for Tauwhare Village (270PE).
New Southern Sub-Regional WWTP	Airport area and environs	4,000	6,000	17,852	17,852	17,852	Assumptions are based on ~85ha of developed dry industrial land being serviced at 2031; ~140ha of dry industrial land being serviced at 2041. Assumptions includes flows from wet industrial land use from 2051*
	Mātangi/ Tamahere	Existing standalone facility	464	464	464	1,035	Includes servicing Tamahere commercial area (does not include Tamahere residential area).
	Hamilton South: Hillcrest, Riverlea, Glenview, Peacocke	Serviced through Pukete WWTP			59,626	75,366	DBC assumes diversion to new WWTP at 2061. Additional PE in "ultimate" horizon is based on infill in these areas from 2020 Metro Spatial Plan.
	Southern Links Area	Not Serviced				35,000	Ultimate forecast includes allowance for Southern Links
	Sub-Total	**4,000**	**6,464**	**18,316**	**77,942**	**129,253**	The Stage 3 WWTP can operate from 40,000 Population equivalent demand level
Cambridge WWTP	Cambridge	32,940	37,801	42,892	45,031	57,649	Assumptions includes for flows from wet industrial land use for small area
Te Awamutu WWTP	Te Awamutu	27,989	30,905	34,982	36,001	42,011	
No WWTP	Ōhaupō	Not serviced	All servicing is on-site.				However, the area could be conveyed to Southern WWTP or Te Awamutu in future if required.

**WWTP estimates do not include for servicing "ultimate" populations, however the sites have been sized to ensure that adequate footprint area is available to deliver further capacity in the future

As part of refining the preferred option, further consideration was given to the sizing, staging and cost estimates for the Southern Sub-Regional WWTP as shown in Table 2.

Table 2 – Southern Treatment Concept Staging (note that these are further refined in the Financial Case)

Indicative Year	Date	Stage Description		Assumed Areas Served	Total Stage Built Capacity	Starting Demand
1-3	2022-2024	Stage 1	Pre-Implementation: Land acquisition, designation, consenting, master planning	Land and designation assumed to serve all stages		
3-5	2024-2026	Stage 1	WWTP: SBR with discharge to land including procurement and Council overheads and land discharge extension	Airport precinct (no allowance for wet industry)	1,000 m^3/day (5000 PE)	400 m^3/day (2,000 PE)
19 - 21	2040-2042	Stage 2	WWTP & Discharge: MBR with discharge to Waikato River. Includes conveyance from Mātangi to plant, outfall pipeline and structure to river, operator building, sludge dewatering facility.	Airport precinct growth (excluding wet industry) and Mātangi/ Tamahere Commercial areas	1,900 m^3/day (9500 PE)	1,200 m^3/day (6,000 PE)
29-31	2050-2052	Stage 2	WWTP Upgrade: Additional reactors and membrane equipment	Airport precinct growth, wet industry and Mātangi/ Tamahere Commercial areas	3,600 m^3/day (18,000 PE)	3,600 m^3/day (18,000 PE)
39-41	2060-2062	Stage 3	WWTP: MBR with Energy Recovery (Primary Sedimentation and Digestion) with discharge to Waikato River. Includes conveyance from Southern Hamilton, major increase in treatment capacity.	Airport precinct (with wet industry), Mātangi/ Tamahere Commercial, Southern Hamilton	15,600 m^3/day (78,000 PE)	15,600 m^3/day

Capital Costs

The capital costs were developed by Beca based on scope prepared by GHD and Beca for each project. They are P50 cost estimates and include a 20-30% risk allowance on the capital costs[3]. P95 estimates for the Southern WWTP have also been prepared and are included in Appendix B of the Preferred Option Report. An allowance of 10% for procurement and council overhead costs has been added to the capital cost estimates for inclusion in the Economic and Financial Cases.

Table 3 – Capital (delivery) costs

Programme Capital Costs ($000's, 2021 Dollars)						
Project	**2022-31**	**2032-41**	**2042-51**	**2052-61**	**2062-71**	**Total**
Southern WWTP & Conveyance	29,900	40,260	16,500	150,150	-	236,810
Cambridge WWTP	115,720	4,290	6,050	10,780	-	136,840
Te Awamutu Upgrades	20,900	-	11,000	-	-	31,900
Mātangi WWTP Interim Upgrade	550	-	-	-	-	550
Tauwhare Pā WWTP upgrade	2,200	-	-	-	-	2,200
Total Capital Expenditure	**169,270**	**44,550**	**33,550**	**160,930**	**-**	**408,300**

3 The Economic Case sets out the details of the contingency allowance. The cost estimates are deemed to be Class 5 estimates as per the AACE Cost Estimate Classification System and have an expected accuracy range of -30% / +50%.

The 2022-31 estimates for the Southern WWTP in Table 3 include for land purchase, designation and consenting processes. The costs for trunk and local conveyance from the airport area to the Southern WWTP are not included.

The estimates for Te Awamutu are based on the funding included in the Waipā DC 2021-2031 LTP and provisional estimates of the costs of further upgrades. These estimates do not reflect the level of investment likely to be required to achieve the agreed treatment standards. The costs associated with achieving the agreed standards will need to be evaluated as part of future Te Awamutu WWTP consenting and upgrade projects.

Operating and Maintenance Costs

Operating and maintenance costs will be incurred once the new WWTPs are operational, and upgrades have been completed at the existing WWTPs. Over time the total operational costs increase as flows increase. These costs cover power requirements, staff costs, maintenance costs, and finance costs.

Periodic renewal costs reflect the replacement of assets as they reach the end of their useful lives. Periodic renewal costs outside of the estimated 80-year asset lives were not included. Civils and structures are assumed to have an 80 year asset life while electrical and mechanical components are assumed to be refreshed every 20 years which is considered standard for assets of this nature.

An overview of the annual estimate for ongoing costs is provided in Table 4.

Table 4 – Ongoing costs summary

Programme Ongoing Costs (annual, $000's, 2021 Dollars)					
Programme cost	**2031**	**2041**	**2051**	**2061**	**2071**
Southern WWTP operating costs	544	672	2,050	2,050	7,400
Cambridge WWTP operating costs	2,040	2,340	2,660	2,790	2,790
Te Awamutu WWTP operating costs	2,600	2,800	3,200	3,300	3,300
Tauwhare Pā WWTP operating costs	40	40	40	40	40
Hamilton South conveyancing operating costs	-	-	-	800	800
Mātangi conveyancing operating costs	-	102	102	102	102
Total operating costs	**5,224**	**5,954**	**8,052**	**9,082**	**14,432**

The estimates for Cambridge are based on achieving the treatment quality standards agreed through this DBC project.

Actual demand and timing of servicing from each area will likely vary from the assumptions used in the DBC. The triggers used to inform staging and implementation of the new plant will need refinement to reflect updates to the Hamilton and Metro Growth Strategies currently under review, and through more detailed assessment of network capacity constraints.

For example, the actual demand from the airport area and environs may be significantly lower than those used for the DBC which have assumed some wet industrial activity post 2051. The timing and extent of Hamilton (and other areas such as Southern Links) diverted to the new plant will likely vary from the assumptions used in the DBC. The diversion may occur much earlier than 2061 and the extent may vary based on growth, and network and Pukete WWTP constraints.

It is recommended that demand assumptions are revisited and confirmed as part of implementing the new Southern Sub-Regional WWTP in the immediate to short term.

Financial Case

The Financial Case

– sets out the allocation of costs, funding requirements, preferred funding and financing solutions and affordability impacts.

There are financial risks and challenges in delivering a complex, long-term programme of works. They include:

- **Long-term programme:** The accuracy of cost estimates is likely to reduce the further out they are being forecast. The timing of elements of capital expenditure could change based on population growth, further reducing levels of certainty.
- **Level of design work to support costings:** Detailed design work has not yet been undertaken and this constrains the accuracy of cost estimates. Costs will be refined as the design work is progressed.
- **Three Waters Reform programme:** The Three Waters Reform programme may change the way wastewater projects and services are delivered and could affect funding and other assumptions.

Cost allocation

Projects will service communities across boundaries and costs will be allocated between councils. Allocation will be undertaken on a beneficiary-pays basis. This means costs will be split between councils depending on the proportion of people served and the time over which they are served. Beneficiaries of the projects are the ones who will ultimately pay for them.

Cost allocation methodologies have been developed for each component. An overview of those methodologies is on the next page.

The cost allocation methodology used for the Southern Sub-Regional WWTP is for illustrative purposes. The actual cost allocation methodology will need to be negotiated and confirmed.

In developing the DBC, the councils have agreed that WWTP capital costs be allocated between the councils based on one of the following three formulations:

- Proportion of population equivalents serviced by the WWTP; or
- Each council's proportion of the population equivalents in the full Metro Area; or
- A connection fee and/or ongoing service charges for connected communities based on population equivalents served.

The options are designed to be proxies for the proportion of beneficiaries served.

The final methodology and cost allocations (including assumptions) will be agreed between the relevant councils prior to the commencement of construction, including adjustments to reflect the period of access for different beneficiaries (i.e. where a community is not immediately connected to the WWTP), and the value of the assets able to be reused for each upgrade.

Table 5 – Cost Allocation Methodology

Component	Methodology
Local reticulation – capital costs	Costs for upgrades or new local reticulation (where applicable) are proposed to be met by the relevant council (or developer) on the basis that only beneficiaries within the territory would benefit from the works. The relevant council is expected to recover these funds as additional properties are connected.
Conveyance - capital costs	Costs for upgrades or new conveyancing are proposed to be met by the council relying on the conveyancing for connection. This is because the beneficiaries of the conveyancing would be located within that district (e.g. the capital cost of new pipes to connect Mātangi would be expected to be funded by Waikato District Council).
Conveyance - operating costs	As per conveyance capital costs, conveyance operating costs are proposed to be met by the council that is using the conveyancing.
WWTP - capital costs (upgrades and new plants)	WWTP capital costs are proposed to be allocated between the councils based on one of the following two formulations: • For a project with only one stage, the level of Population Equivalent flow demand from users in the district serviced by the project over its useful life, compared to the level of Population Equivalent flow demand from users over its useful life; or • For a project with multiple stages the proportion of capital costs for each stage will be allocated based on the level of Population Equivalent demand from users in its district by that stage of the project over the useful life of that stage's assets, compared to the level of Population Equivalent demand from users over the useful life of that stage's assets. For a project with multiple stages there will be a need to account for the reuse of assets from prior stages of the project. In this case, immediately prior to each future stage being commissioned an assessment of the reusable value from prior stages will be undertaken. The reusable asset valuation will be used in the following ways: i. added to the capital costs of the new stage and allocated using the same methodology set out above; ii. used as the basis for compensation of the council(s) that has funded the prior stage of the project. This compensation could be delivered using a rebate to the council or by netting off the council's share of the reusable asset value from their funding obligations for the new stage of the project.
WWTP - operating costs	WWTP operating costs are proposed to be allocated based on the proportion of Population Equivalent demand serviced by the WWTP, as a proxy for the distribution of beneficiaries. The calculation of the respective proportions will need to be updated regularly to reflect changes in the number of Population Equivalent demand in each district. The expectation is that the proportions will be estimated every three years (i.e. to align with Long Term Plan (LTP) cycles), and then confirmed at the start of each financial year as part of the Annual Planning process.
Land and consenting costs (Southern WWTP)	Given the land and consenting costs will benefit all stages of the project, land acquisition, planning, and consenting costs for the Southern WWTP are proposed to be shared pro-rata according to the estimated final state of wastewater flows in 2061. The base case timing assumes that Hamilton South will have been connected to the Southern WWTP by this point.

Based on the methodologies in the table above, here is a breakdown providing an indication of each council's share. Note that the allocations for the Southern Sub-Regional WWTP use the growth assumptions agreed for this DBC project and will need to be reviewed as part of project implementation.

Table 6 – Council Cost Allocation

Cost allocation for each Project ($000s, real)							
Project	**Council**	**2022-31**	**2032-41**	**2042-51**	**2052-61**	**2062-71**	**Total**
Southern WWTP*	HCC	15,300	-	-	119,627	-	134,927
	Waipā DC	14,481	29,204	18,296	(5,069)	-	56,911
	Waikato DC	119	3,796	(1,796)	(158)	-	1,962
	Total	**29,900**	**33,000**	**16,500**	**114,400**	**-**	**193,800**
Mātangi conveyancing costs	Waikato DC	-	7,260	-	-	-	7,260
Hamilton South conveyancing costs	HCC	-	-	-	35,750	-	35,750
Southern WWTP (incl. conveyance)	**Total**	**29,900**	**40,260**	**16,500**	**150,150**	**-**	**236,810**
Cambridge WWTP	Waipā DC	115,720	4,290	6,050	10,780	-	136,840
Te Awamutu Upgrades	Waipa DC	20,900	-	11,000	-	-	31,900
Mātangi and Tauwhare Pā Upgrades	Waikato DC	2,750	-	-	-	-	2,750
Total	**169,270**	**169,270**	**44,550**	**33,550**	**160,930**	**-**	**408,300**

* A negative figure represents a rebate to the council due to the reuse of assets that it has already paid for under the previous stages. Please see Table 5 for further detail on Cost Allocation Methodology.

Operating costs	Council	2031	2041	2051	2061	2071
Southern WWTP	HCC	-	-	-	1,670	6,027
	Waipā DC	544	624	1,998	365	1,318
	Waikato DC	-	48	52	15	55
	Total	**544**	**672**	**2,050**	**2,050**	**7,400**
Cambridge WWTP	Waipā DC	2,040	2,340	2,660	2,790	2,790
Te Awamutu	Waipā DC	2,600	2,800	3,200	3,300	3,300
Tauwhare Pā	Waikato DC	40	40	40	40	40
Southern Hamilton Conveyance	HCC	-	-	-	800	800
Mātangi Conveyance	Waikato DC	-	102	102	102	102
Total		**5,224**	**5,954**	**8,052**	**9,082**	**14,432**

The cost allocation for the Southern Sub-Regional WWTP in 2022-31 reflects:

- the allocation of land and consenting costs allocated between the councils based on the estimated final state of wastewater flows in 2061; and
- The stage 1 build costs which are predominantly allocated to Waipā based on the population equivalents served.

There is potential for Waikato Regional Airport Limited (WRAL) to provide funding for the project. This could influence cost allocation and Waipā's funding requirements for stage one.

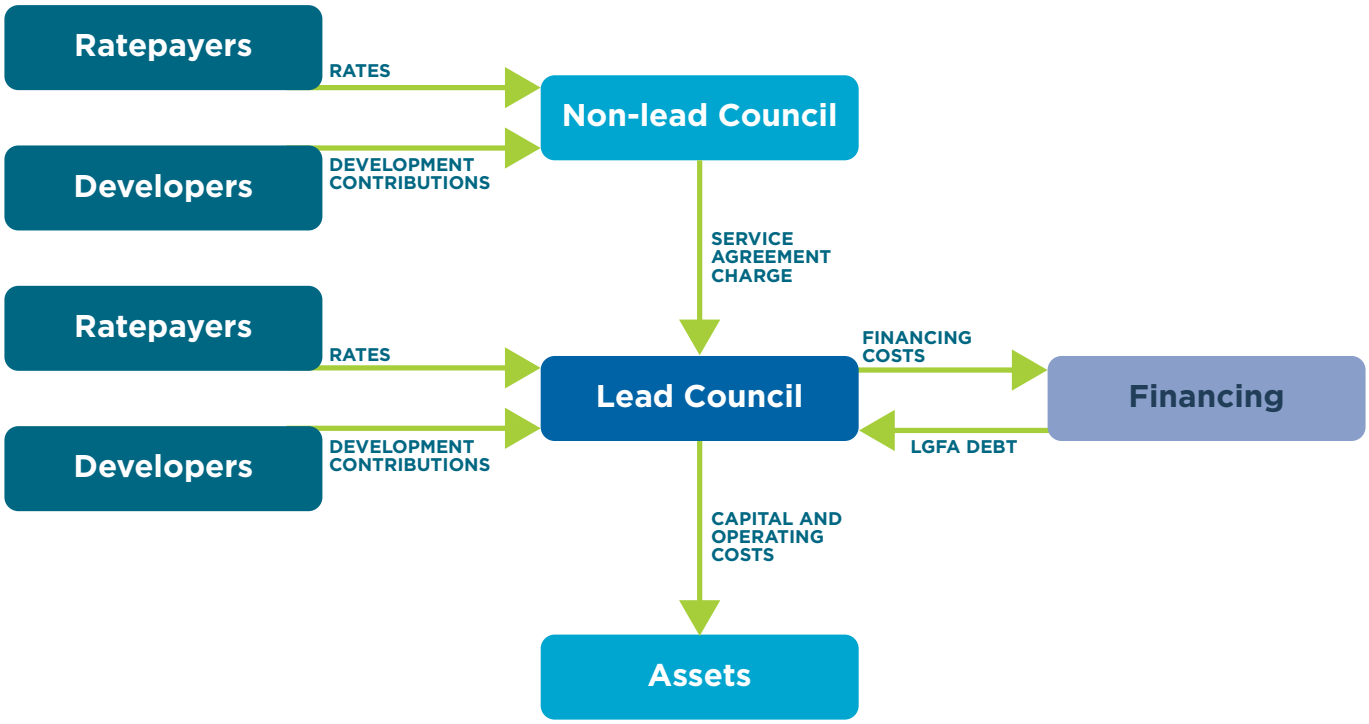
Financing

The individual programme projects will be delivered by a single council (the "Lead Council"). In the case of the Southern Sub-Regional WWTP, the Lead Council will deliver the project on behalf of the partners. The Lead Council will utilise its existing resources, policies and procedures for project delivery. Under the Lead Council model there is optionality regarding how each programme is financed:

- Financing for each council's share of the capital costs is raised by each respective council and (where relevant) passed through to the Lead Council.
- Financing of the full project cost is proposed to be undertaken by the Lead Council and where costs have been allocated to other councils (the Non-Lead Council), costs (including financing costs) are proposed to be recouped through a service agreement. Provision for recasting costs as the projects progress and delivery timing based on growth forecasts will need to included in the service agreements. Of the different projects, this arrangement is most relevant to the Southern WWTP.
- The Non-Lead Council is expected to meet the service payment through applying its preferred funding tools to the communities that benefit from the project within its respective territorial boundaries.

An overview of the proposed structure is provided below.

Figure 6 – Funding and financing flows



Funding will be required to smooth and spread the delivery phase costs across the life of the Projects. An evaluation of funding and financing options available to councils was undertaken and assessed. Based on this, the preferred approach is for each council to leverage its existing funding tools (i.e., general rates, targeted rates, development contributions etc) as per existing policies. These are outlined in Table 7 below.

Table 7 – Long list of funding and financing options

Council	Current funding approach	Current financing approach
HCC	General Rates and Development Contributions	Generally debt funded through the LGFA
Waipā DC	Targeted Rates and Development Contributions	Generally debt funded through the LGFA
Waikato DC	Targeted Rates and Development Contributions	Generally debt funded through the LGFA

Responsibility for collecting rates and development contributions will remain with respective councils who will also determine which funding tools are utilised for each project.

Affordability

A high-level affordability assessment was undertaken based on an assessment of:

- The burden on ratepayers to fund the additional general and/or targeted rates;
- The cost to developers of development contributions; and
- The debt headroom under the current relevant Local Government Funding Agency (LGFA) covenants for each council.

This assessment indicates the work is affordable for each council. However, this should continue to be tested against the financials risks and complexities. An estimated rating impact as well as a high-level rates affordability assessment are outlined below.

An overview of the estimated annual impact (i.e. the incremental increase in rates per ratepayer) of the programme on ratepayers is provided in the following table.

Table 8 – Estimated rating impact

Year	2031	2041	2051	2061	2071
HCC – General Rate	$112	$88	$75	$386	$612
Waipā DC – Southern WWTP Targeted Rate	$403	$874	$468	$282	$304
Waikato DC – Southern WWTP Targeted Rate	-	$2,153	$1,631	$1,257	$1,266
Waipā DC – Cambridge WWTP Targeted Rate	$520	$394	$368	$352	$331
Waipā DC – Te Awamutu WWTP Targeted Rate	$260	$300	$315	$287	$276
Waikato DC – Mātangi & Tauwhare Pā Targeted Rate	$110	$466	$435	$404	$371

An overview of the affordability of these rates increases is provided in the table on the next page. The assessment is based upon the 5% affordability threshold that was identified in the 2007 COVEC report into rates affordability. Ratepayer affordability has been assessed based on adding the average rating impact for a ratepayer to the average household rates bill as provided by the councils. At the date of this document, Waikato District Council did not participate in this rating survey.

Table 9 – High-level rates affordability assessment

Council	Median Household income (2021)	Affordability threshold (5%)	Average rates per household	Average additional project rating impact	Total rating burden	Affordability check
HCC – Southern WWTP	$77,485	$3,874	$2,770	$499*	$3,269	✓
Waipā DC – Southern WWTP			$3,092	$466	$3,558	✓
Waikato DC – Southern WWTP			$2,659	$1,577	$4,226	-
Waipā DC – Cambridge WWTP			$3,092	$393	$3,485	✓
Waipā DC – Te Awamutu WWTP			$3,092	$288	$3,380	✓
Waikato DC – Mātangi & Tauwhare Pā upgrade			$2,649	$357	$3,006	✓

* Average additional project rating impact calculation only considers years 2061 and 2071 for HCC i.e. after Hamilton South switches to using the Southern WWTP. The additional rating impact would not be applied to Hamilton North.

Table 9 demonstrates that the rating impacts generally fall within the affordability thresholds set out by COVEC based on the average additional project rating impact for each council's ratepayers. The exception to this is the Waikato DC – Southern WWTP rating impact which is above this threshold by 9%. This is primarily driven by the costs of conveyancing from Mātangi to the Southern WWTP, with the relative rating impact reducing as further growth comes online in the future. It should be noted that there are likely other costs that would need to be considered in more detail prior to implementing an increase in rates, such as additional water related costs, mortgage servicing costs and other cost of living increases.

Under current council policies, HCC uses a general rate whereas Waikato DC and Waipā DC use a targeted rate. To provide a complete picture of the ratepayer affordability, Pukete upgrade costs would also need to be included in HCC's rating impact assessment. This will be considered as part of the Northern Metro Wastewater DBC and the high level rates affordability assessment revisited.

An affordability analysis for each council determined if the financial impact would see any council breaching its LGFA debt-to-revenue financial covenants.

Development contributions

The size of development contributions was estimated using the following approach:

- An assessment was undertaken on the portion of costs the Lead Council would need to recover.
- An estimate was made of the portion of the project attributable to growth. The increase in Population Equivalent demand over the forecast operational life of the project was used as a proxy for growth.
- Following this, a calculation was made to determine the pro-rata allocation of these costs to the amount attributable to growth. It was assumed this amount can be recovered from development contributions.
- A financing charge was applied based on the respective interest rates for each council and solved for a level of development contribution that recovers the cost allocated to growth over the life of the project.

This analysis assumes no financial contributions will be received from WRAL. The estimated development contribution per Household Unit Equivalent (HUE) of demand for each of the councils is provided in the table below. Population data has been divided by 2.5 to convert it into HUE's.

Table 10 – Estimated Development Contributions (per HUE of demand)

Council	2031	2041	2051	2061
HCC – Southern WWTP	-	-	-	-
Waipā DC – Southern WWTP	$9,728	$9,728	$9,728	$9,728
Waikato DC – Southern WWTP (Mātangi and Tamahere Commercial)	-	-	-	-
Waipā DC – Cambridge WWTP	$7,327	$7,327	$7,327	$7,327
Waipā DC – Te Awamutu WWTP	$2,162	$2,162	$2,162	$2,162
Waikato DC – Mātangi & Tauwhare Pā	$6,261	$6,261	$6,261	$6,261

No development contributions are shown for HCC or Waikato DC for the Southern WWTP as the plant will only be servicing existing HCC and Waikato DC communities during the time period to 2061. The development contributions compare reasonably to existing levels, falling near the middle of existing wastewater charges for the councils.

Net Present Value (NPV)

A NPV for the overall programme has been determined to understand the current value of all future cash flows. This measure can be used to test the sensitivity of the Programme to changes in the underlying assumptions (e.g. inflation or changes to costs).

The estimated NPV for the Southern Metro WW Programme and conveyance programme -$344.1 million based upon the capital and ongoing costs (Table 3 and 4) and a 5% real discount rate (as per the New Zealand Treasury guidance). Sensitivity analysis was carried out to understand the potential impact on the NPV as a result of several key risks eventuating. The risks include changes to inflation, operating costs and capital costs.

Results indicate the impact of changes to inflation, capital and operating costs are relatively minor in the context of the overall NPV. This is primarily because most of the capital and ongoing costs are expected to be incurred later in the Programme and are therefore heavily discounted as part of the NPV analysis. Accordingly, there is still expected to be a material impact on affordability if there are significant cost overruns.

Debt to revenue ratios

The estimated impact on the debt to revenue ratio for each of the councils over the next 10 year LTP period was assessed. Debt forecasts were not available beyond this period.

The councils are forecast to remain within the debt to revenue caps after allowing for the impact of the Programme over the next 10 years, although HCC do get close to breaching their debt limit.

A sensitivity analysis on the debt to revenue ratios was completed by applying changes to inflation and capital costs. The analysis identified that HCC and WDC are not significantly impacted in the next 10 years due to the comparatively small capital expenditure. Waipā's debt does increase, this is relatively minor in scale compared to their current debt portfolio.

Funding and financing

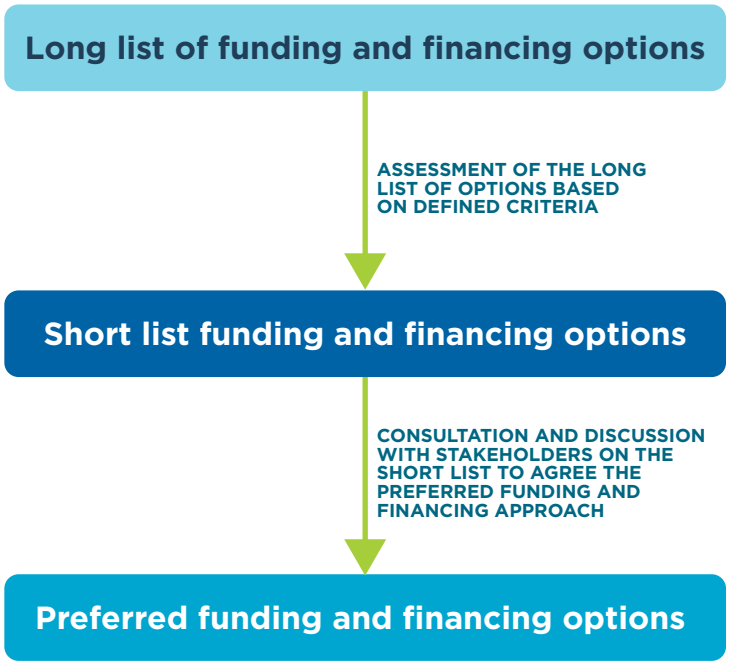
A range of funding and financing options have been considered, detailed below:

Table 11 – Long list of funding and financing options

Funding Options		Financing Options	
Council funding	General rates	**Debt**	LGFA
	Targeted rates		Bank debt
	Development contributions[4]		Bespoke Crown loan
Crown funding	Specific Crown fund		Crown DMO lending
	Crown operational subsidy/ assistance		Bonds/private placements
Direct funding	User pays		Subordinated/convertible instruments
	Long term commercial arrangements	**Equity**	Council equity
Value capture	IFF levy		Crown equity
	Negotiated contribution		Iwi equity
	Private sector partnering		Private equity[4]
	Public sector partnering		

The process taken to identify the preferred funding and financing option is outlined in Figure 7 below:

Figure 7 – Funding and financing option assessment process



[4] Inclusive of trade waste and bulk supply arrangements.

The preferred funding and financing solution was determined following engagement with each council. The preferred solution was to leverage the current funding and financing approaches for each council (i.e., aligned to the relevant revenue and financing policies) with each council responsible for determining and implementing its preferred funding and financing approach.

Sub-regional approach

The DBC also examined the impacts of a sub-regional approach to wastewater cost allocation. This helps understand the level of charging required to distribute costs equitably across the Metro area.

Under this scenario, costs and beneficiaries from the Northern Metro area are included in the analysis so that rates are harmonised across the Northern and Southern Metro areas. Costs of $393.1 million for the construction of the Pukete and Ngaaruawaahia WWTPs are included in the analysis. These costs will be updated based on the work from the Northern Metro WW DBC but have been used to provide an initial assessment for the Southern Metro DBC. The costs exclude buffer storage, treated water reuse and outfall replacement costs. It is expected that the Northern Metro area wastewater capital costs will increase from those used in this assessment and therefore will be recalculated as part of the Northern Metro DBC.

The role of Waikato Regional Airport Ltd (WRAL) has been considered. WRAL is open to contributing to a Southern WWTP if it would meet their needs (timing and scale). Their contribution could be through contribution of land, and/or direct financial support. There is likely to be a need for an interim wastewater servicing solution at the airport until the Southern WWTP is operational. The costs of an interim servicing solution have not been included within the preferred option.

Commercial Case

The Commercial Case

– considers the approach to packaging and contracting options, the procurement plan, potential for risk-sharing and the planned contractual arrangements.

Procurement

Councils will be encouraged to follow Government Procurement Rules. Procurement for all projects will be undertaken via competitive tender to ensure market tension and drive value for money.

A detailed procurement plan will be prepared for each package of works. A cross-functional tender evaluation team will evaluate the bids and recommend a preferred supplier. An independent Probity Auditor will shadow the tender process.

Contracting models

A number of contracting models have been considered.

Table 12 – Contracting options long list

Contracting Model	Description
1) Construction only (traditional)	Private contractor is contracted to develop the facility. All design work is completed prior to the tender and a detailed specification is provided to bidders. Financing is managed by the procuring entity.
2) Design and build (D&B)	Private contractor is responsible for design and construction. Procuring entity will prepare the functional and technical performance requirements that are used in the tender process to guide developer design. Financing is managed by the procuring entity.
3) Managing Contractor	Single managing contractor engages with the procuring entity and undertakes the procurement process on its behalf. The managing contractor enters into a contractual arrangement for each of the proposed packages.
4) Alliances	Collaborative model that will bring together the procuring entity and other parties, including contractors and designers, to deliver a 'best for project' outcome. Pain / gain share arrangements where costs below and above target are shared between parties.
5) Design, build, operate and maintain (DBOM)	Private contractor is responsible for design and construction as well as long-term operation and maintenance services. The procuring entity secures the financing independently and retains operating demand risk.
6) Design, build, finance, operate and maintain (DBFOM)	Concession style arrangement where responsibilities for designing, building, financing, operating and maintaining are bundled together and transferred to a private sector consortium. This model is similar to a number of Public Private Partnerships (PPPs) that have been completed in NZ with a large degree of risk transfer passed to the private sector.
7) Private Provision	Development of the facility is outcomes based with the private sector engaged to provide all aspects of work including design, construction, operation and maintenance. The private sector also takes responsibility for approvals and management. The procuring entity would use the facility under a service agreement.

The methodology for selecting the preferred option used an iterative process, where the long lists were objectively filtered to a short list and preferred option based on Multi Criteria Analysis (MCA).

The preferred contracting, packaging and procurement strategy for each of the Projects is outlined below:

New Southern Sub-Regional WWTP

The procurement strategy is focused on stage one only. The preferred strategy is to tender two separate work packages; a main plant works (and a separate conveyancing package. It is proposed to tender both using a traditional 'construction only' contract. HCC's procurement methodology and Procedure Policy will apply.

New WWTP at Cambridge

The preferred strategy is to tender two separate work packages; an enabling works package and a main plant works package. It is proposed to tender both using a traditional 'construction only' contract. Waipā's Procurement Policy and Manual will apply.

Upgrades to the existing Te Awamutu WWTP

The preferred strategy is to tender a single work package using a 'construction only' contract. Waipā's Procurement Policy and Manual will apply.

Improvements to the existing WWTPs at Mātangi and Tauwhare Pā

The preferred option for the Mātangi and Tauwhare Pā upgrades is to tender a single work package using a 'design and build' contract. WDC's Procurement Policy will apply.

Contracts used will be the New Zealand Standard form contracts. The Lead Council will own the wastewater assets as an asset on their balance sheet. There is not anticipated to be any off-balance sheet treatment under the 'construction only' or 'design and build' contracting structures. Assets underpinning delivery of the services will be held on the balance sheet of the Lead Council.

Management Case

The Management Case

– covers the management, governance and risk management arrangements.

Project delivery

Given the Projects will be undertaken at different times, locations and by different parties, strong collaboration between the respective councils, iwi and mana whenua will be required to successfully deliver the strategic outcomes agreed in the DBC. A Memorandum of Understanding (MoU) is intended to be entered into shortly after the finalisation of the DBC to capture these requirements.

The MoU outlines the parties' continued commitment to cooperation, collaboration and delivery of the strategic outcomes. It is expected items agreed in the MoU could transition into a three waters entity given the potential for significant structural change to three waters services delivery in New Zealand as a result of the Three Water Reform Programme.

Individual projects will be delivered by a single council (the Lead Council) on behalf of all partners. Lead Councils will retain oversight of core project delivery functions and will be responsible for consenting and planning, procurement, construction management and asset management. While Lead Councils will undertake consenting applications, any cost savings or joint benefits from a global approach must be considered.

Resourcing for each project will also be managed by Lead Councils.

The proposed Lead Councils for each project are outlined in Table 13 below:

Table 13 – Project Lead Councils

Project	Lead Council
Southern Sub-Regional WWTP	Hamilton City Council Te kaunihera o Kirikiriroa
Southern Hamilton Conveyance	Hamilton City Council Te kaunihera o Kirikiriroa
Cambridge WWTP	Waipā DISTRICT COUNCIL
Te Awamutu upgrades	Waipā DISTRICT COUNCIL
Mātangi and Tauwhare Pā upgrades	Waikato DISTRICT COUNCIL
Mātangi / Tamahere Conveyance	Waikato DISTRICT COUNCIL

Governance

The proposed joint governance structure will ensure strategic directives are being followed by Lead Councils and that opportunities for collaboration and integration are captured. The Project Partnership Group (PPG) will provide direct oversight but cannot make decisions on behalf of their home organisations.

The Programme Director will be independent of all partners, will sit across the whole programme and report to the PPG. The Programme Director will be the key intermediary between the individual projects and the PPG.

Figure 8 – Governance and delivery structure

Risk recording and reporting

The following top risks have been identified. Risks will continue to be updated as work progresses.

Table 14 – Top Risks

Risk Description	Cause	Controls	Likelihood	Consequence	Residual Risk Rating	Risk Treatment	Action Plan
The recommended DBC projects cannot be funded leading to the projects being delayed, not proceeding or lower standards being adopted.	- **Competing priorities leading to unwillingness to fund the Projects.** - **Insufficient financial headroom for councils to fund the Projects.** - **Cost increases or affordability the ability to secure funding or financing.** - **Lack of integration, coordination and planning at a sub-regional level.**	- Staging for the Southern WWTP. - Traditional approach to financing. - Lead Council structure agreed in principle and to be confirmed through MOU. - Funding to commence implementation of projects recommended in the DBC included in LTPs.	Likely (3)	**Catastrophic (5)**	Very High Risk (15)	Mitigate	- MoU signed by project partners which confirms principles agreed in the DBC including approach to ownership, funding and financing. - Establish governance and delivery structure recommended in the DBC for the programme. - Ensure appropriate joint engagement between councils/partners occurring throughout project. - For Southern Plant, HCC to enter into service agreement with Waipa DC to contribute toward funding the plant.
Costs to implement recommended DBC projects are significantly higher than estimates further impacting on affordability and leading to the project being delayed, not proceeding or lower standards being adopted.	- **Increasing land costs, high contractor demand, limited providers, increasing costs of key materials, supply chain disruption or poor risk allocation in the construction contracts.**	- Monitor market conditions. - Procure works and services as early as possible to reduce impact and likelihood of escalation. - Undertake a procurement methodology that attracts multiple tenderers. - Sensitivity assessments completed as part of the DBC to assess the effect of changing inflation rates and operating and capital costs. - Recommended immediate initiation of key projects in the DBC.	Likely (3)	**Catastrophic (5)**	Very High Risk (15)	Accept	- Complete site selection, land acquisition, consenting and designation processes early as recommended in the DBC. - Early contractor engagement and identification of preferred procurement method. - Procure works and services as early as possible to reduce impact and likelihood of escalation. - Undertake a procurement methodology that attracts multiple tenderers.
The recommended DBC projects do not meet partner expectations which may impact ability to implement the recommendations, consentability and adversely impact relationships.	- **Lack of meaningful engagement with relevant groups throughout project delivery.** - **Mana whenua/ iwi views not reflected in Governance discussions and decision making.** - **Differing priorities/points of view on level of treatment and discharge methods.** - **Insufficient budget available to deliver "best for river" outcomes in timeframes that are acceptable to partners.**	- Project has been co-designed and developed by the partners and this approach will be built on through the project pre-implementation and implementation phases. - Metro WW Project vision and objectives embed Te Ture Whaimana and incorporate iwi/mana whenua values and aspirations (e.g. Iwi Env Plans, Economic Aspirations. - Recommended governance and project delivery structure provides partner representation at senior level.	Likely (3)	**Major (4)**	Very High Risk (12)	Mitigate	- MoU signed by project partners which confirms principles agreed in the DBC including minimum wastewater treatment standards and project governance structure - Establish governance and delivery structure recommended in the DBC for the programme. - Review & implement communications and engagement plan for each project including specific provision for iwi/mana whenua engagement and partner councils (at multiple levels). Project engagement and delivery approaches to incorporate co-design to solutions and seek mutual agreement.

Risk Description	Cause	Controls	Likelihood	Consequence	Residual Risk Rating	Risk Treatment	Action Plan
Resource consents and designations for recommended wastewater projects cannot be secured or the costs to deliver a consentable solution are prohibitive.	- **New activity and discharge to the Waikato River (considered in isolation) is not consistent with the Te Ture Whaimana, NPS FM, and other policy (incl. current NES for Sources of Human Drinking Water and land application requirements).** - **Other WWTPs consent renewal timeframes do not align.** - **Legislative change Vision and Strategy and legislative change.**	- Collaborative approach to delivering the project that involves equal Iwi / TLA representation. Project Governance Group. - Having regulator involved in the project to offer advice. - Utilise the technical teams involved in Cambridge WW Consenting, PC1 Healthy Rivers Processes and Pukekohe WW consenting and leveraging off of that work. - Consenting Strategy - consistent with the current Vision & Strategy for the river. Identification of alternative consenting pathways to link to other discharges.	Likely (3)	**Catastrophic (5)**	Very High Risk (15)	Mitigate	- Secure the site for new Southern WWTP. - Thoroughly explore beneficial re-use opportunities to avoid or reduce the need for water based wastewater discharges. - Look for mechanisms to link discharge activities across the broader catchment in order to clearly demonstrate betterment despite a new WW discharge. - Ensure appropriate treatment standards are adopted including WRP, TTWM, Iwi Mgmt. Plans etc. - Develop and implement appropriate engagement strategies and plans, including project governance, and technical advisory groups. Ensure consistent messaging across related projects and workshops.
Reform of the Three Waters sector impacts the ability or committment to implement the DBC programme recommendations.	- **Potential views that all work should be deferred until clear decisions on sector reform resulting in slowing down of critical infrastructure investment.** - **If reform occurs, the 'actors' involved in project delivery may change and impact on project prioritisation and delivery.** - **Principles and obligations agreed in the MoU are not carried over to a new water entity that is set up as a result of the planned sector reform.**	- The preferred options were prepared on the basis of 'business as usual' - The recommended programme and project delivery structures aim to maintain optionality and flexibility to transition to a new structure if required. - Agreements clearly documented in the MoU and DBC so knowledge transfer can occur to the new water entity.	Likely (3)	**Major (4)**	Very High Risk (12)	Mitigate	- Continue to implement recommendations in the DBC and MoU in line with proposed implementation schedule. - Accelerate implementation of the recommended projects.
Inability for councils to move to integrated delivery of programme results in uncoordinated delivery of the overall programme results in misalignment of objectives and 'Best for River' principles.	- **Misalignment of objectives and commitment of resources from Sub-regional Partners.**	- MoU to include agreement on minimum performance standards and project governance and delivery structures. - Benefit Management reporting and monitoring processes recommended in the DBC. - Compliance with consent requirements.	Likely (3)	**Major (4)**	Very High Risk (12)	Mitigate	- Include agreement upfront in the MoU. - Ongoing joint visibility through the governance structure and reporting processes recommended in the MoU.

Operational changes

Workforce and operating model review

The potential to increase overall system and workforce capacity, capability and resilience is one of the benefits of the recommended programme.

The broader Metro Wastewater programme (including the Northern Metro Area) will facilitate a review of the operating model for wastewater facilities across the Metro area and is expected improve the ability to attract, retain, grow and share skills and resources across sites.

New Southern Sub-Regional WWTP

Stage one of the Southern Sub-Regional WWTP is relatively small compared to HCC's existing Pukete plant and operationally, the scale and technology will be comparable or more straight-forward than existing assets. For stage one, new staff will be required to manage the facility and discharge system as well as monitoring and compliance.

New WWTP at Cambridge

The proposed new membrane plant will be more complex than the existing one and staff will need training, alongside the design team.

Upgrades to the existing Te Awamutu WWTP

The scale and technology of the upgrades will not fundamentally change the nature of operations in the first 10 years.

Improvements to the existing WWTPs at Mātangi and Tauwhare Pā

The scale and technology of the upgrades is comparable to existing assets.

Project Plan and Milestones

Southern Sub-Regional WWTP

The Southern Sub-Regional WWTP is expected to be delivered in three key stages with the following staging triggers:

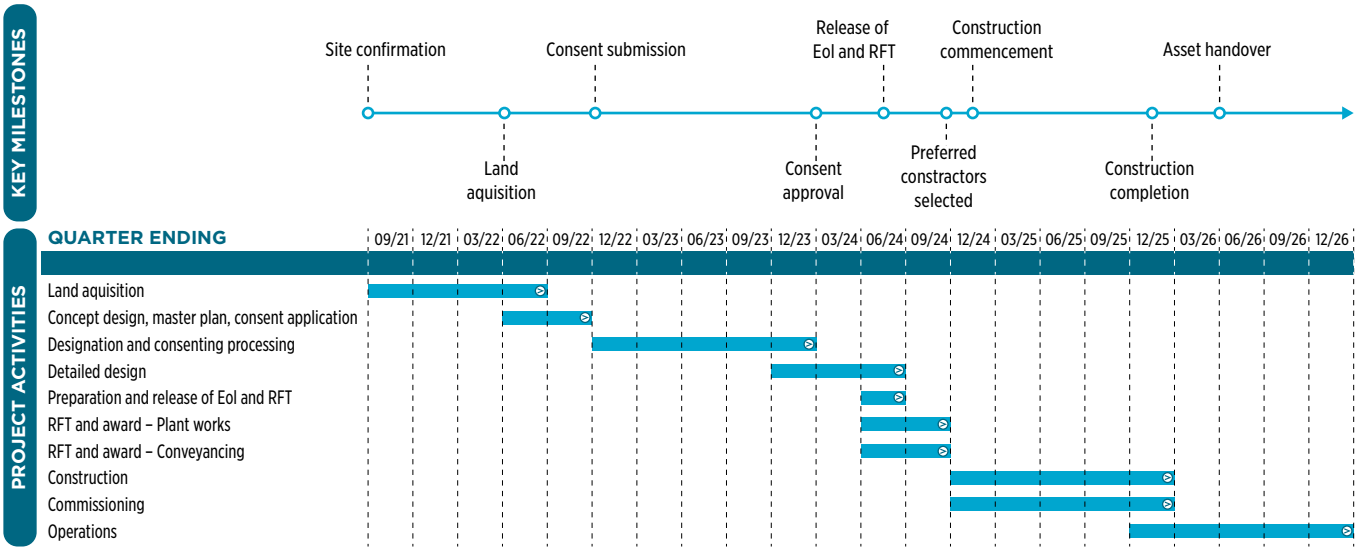
- Stage one: 400 m^3/day - 1,200m^3/day capacity (2021-2025). The trigger to move to stage two will occur when >80% of capacity is utilised or the cost of conveyance upgrades within the Hamilton network exceeds the alternatives.
- Stage two: 1,200m^3/day - 15,000m^3/day capacity (expected 2030-2039 but driven by growth and demand). The trigger to move to stage three will occur when Pukete WWTP capacity is reached (for existing southern Hamilton flows) or the cost of conveyance upgrades exceeds the alternatives.
- Stage three: 15,000m^3/day + capacity (expected 2060+ but driven by growth and demand in particular from Hamilton).

The high-level project schedule for the Southern Sub-Regional WWTP is provided on the next page.

Table 15 – Key Milestones – Southern Sub-Regional WWTP

Key Milestones (Stage 1 only)	Start Date	End Date
Pre-implementation activities: land acquisition, preliminary design, consenting and designation processes	**November 2021**	**November 2023** (24 months to complete)
Detailed design includes preparation EOI/RFT	**November 2023**	**May 2024** (7 months to complete)
EOI released (Main plant works and conveyancing)	**April 2024** (undertaken in parallel with detailed design)	**May 2024** (2 months to complete)
RFT and award – Main plant works	**June 2024** (8 months after consent issued – assuming consent issued in October 2023)	**September 2024** (Preferred contractor selected 4 months after RFT is released)
RFT and award – Conveyancing	**June 2024** (8 months after consent issued – assuming consent issued in October 2023)	**September 2024** (Preferred contractor selected 4 months after RFT is released)
Construction	**November 2024** (2 months after preferred contractor selected)	**November 2025** (1-year construction period – excludes 2 months commissioning period)

Figure 9 – Key Milestones – Southern Sub-Regional WWTP



Cambridge WWTP

The Cambridge WWTP will be constructed during 2022-2026 and is expected to be upgraded during 2040-2049 to provide more capacity. Key stages are as follows:

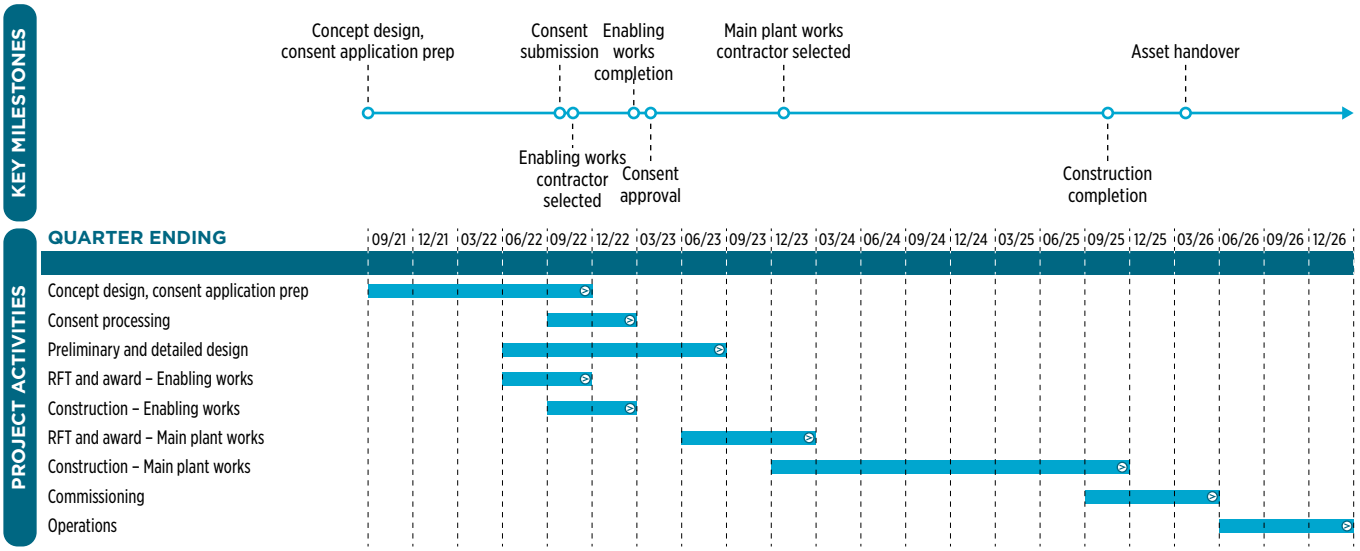
1. Initial construction works: Approximately 7,500 m^3/day capacity (2024-2026).
2. Subsequent upgrades: Approximately 9,000 m^3/day capacity (expected 2040-2049). Upgrade trigger when >80% of existing capacity is utilised.

The high-level project schedule for the Cambridge WWTP is provided below:

Table 16 – Key Milestones – Cambridge WWTP

Key Project Milestone	Start Date	End Date
Concept design, consent application preparation	**June 2021**	**July 2022**
Consent processing	**July 2022**	**December 2022** (5 months)
Preliminary and detailed design	**June 2022** (before consent sign off)	**May 2023** (12 months to complete)
RFT and award – Enabling works	**June 2022**	**August 2022** (2 -month procurement period)
Construction - Enabling works	**August 2022**	**December 2022** (4-month construction period)
RFT and award – Main plant works	**June 2023**	**October 2023** (4-month procurement period)
Construction - Main plant works	**October 2023**	**August 2025** (22-month construction period)
Commissioning	**August 2025**	**January 2026** (5-month commissioning period)

Figure 10 – Key Milestones – Cambridge WWTP



Mātangi Upgrades

Minor upgrades to the Mātangi WWTP will be undertaken during 2021-2023 with the plant expected to transfer to the Southern WWTP or the HCC network in 2040-2049. Should denser residential or commercial development occur in Mātangi prior to 2040 (e.g. private plan change), the timing of the upgrades could be reviewed.

Tauwhare Pā Upgrades

The existing Tauwhare Pā WWTP will undergo a performance evaluation with concept for expansion developed over 2021-2023. The intention is to implement expansion when development occurs. The trigger for this will be a developer agreement or the need for improved system performance and reliability.

Ōhaupō

Ōhaupō is expected to continue with household treatment and disposal on site as per the existing arrangements. This will continue until on site environmental performance is no longer acceptable or additional demand dictates the need for centralised treatment.

Next steps

Formal approval from the Partners to progress the implementation of the preferred option recommended in this DBC is required.

The immediate next steps are outlined below:

1. Finalise and enter into the MoU.
2. Establish the proposed governance structure, including the PPG and the Programme Director.
3. Progress with the proposed project plans. The initial activities are outlined below:
    a) Southern Sub-Regional WWTP:
        i. Continue discussions with the Waikato Regional Airport regarding interim arrangements.
        ii. Finalise the preferred site.
        iii. Acquire the land for the WWTP.
        iv. Complete plant and discharge master plan, design, and consent applications.
    b) Cambridge WWTP:
        i. Continue progressing the activities that are already underway:
            1) Consenting.
            2) Technical investigations.
            3) Engineering design and construction.
4. Councils to reflect recommendations into next Long Term Plans and Asset Management Plans.

Abbreviations and Reference Information

Abbreviations

DBC	=	Detailed Business Case
HCC	=	Hamilton City Council
HUEs	=	Household Unit Equivalents
KPIs	=	Key Performance Indicators
LGFA	=	Local Government Funding Agency
MCA	=	Multi-Criteria Assessment
MBR	=	Membrane Bioreactor
NPV	=	Net Present Value
PE	=	Population Equivalent demand
PPG	=	Project Partnership Group
SBR	=	Sequencing Batch Reactor
WDC	=	Waikato District Council
Waipā	=	Waipā District Council
WRAL	=	Waikato Regional Airport Limited
WW	=	Wastewater
WWTP	=	Wastewater Treatment Plant
LTP	=	Long Term Plan
PPP	=	Public Private Partnership
RFI	=	Request for Information
EOI	=	Expression of Interest
NPS	=	National Policy Statement

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In general, the double vowel has been adopted in this document to represent the long vowel sound in te reo maaori in accordance with Waikato-Tainui dialect. However, macrons have been used also been used to reflect the preference of different hapuu and iwi where appropriate.

Hamilton City Council
Te kaunihera o Kirikiriroa

WAIKATO TAINUI

Future Proof
Te Tau Tītoki

Waikato District Council

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WAIKATO METRO WASTEWATER