

Mangawhai Wastewater Treatment Plant update

– February 2025

Meeting: Council Meeting
Date of meeting: 26 February 2025
Reporting officer: Sue Davidson, General Manager Corporate Services
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Purpose | Ngā whāinga

To update Elected Members and the community on the proposed Mangawhai wastewater scheme comprising Stage 2 treated effluent disposal irrigation consenting and design, the Stage 3 wastewater treatment capacity and effluent quality enhancement designs, the Stage 4 treated effluent subsurface drip irrigation system installation and Stage 5 to convey the treated effluent to the Mangawhai Golf Club.

This report also advises a further \$370,000 needs to be provided for in capital expenditure over the next 3 years, in addition to what has been adopted in the LTP 2024/27.

Executive summary | Whakarāpopototanga

A proposed staged upgrade to the Mangawhai wastewater scheme was presented to Elected Members in October 2023. The proposed stages include consenting, design and implementation of enhancements and upgrades to the wastewater treatment plant, and a new treated effluent irrigation system at the Mangawhai Golf Club. Council approved funding required to complete Stage 1 of the proposed Mangawhai wastewater scheme which focused on optimisation and capacity increase of the treatment plant, and to commence investigations and initial assessments of the golf course irrigation system proposed as part of Stage 2.

The Stage 1 improvements were successfully completed in early 2024, which has resulted in a significant improvement to the wastewater treatment plant's performance and an increase in capacity of around 550 residential connections. The plant currently services around 2950 equivalent residential connections, and the capacity increase resulting from the inDENSE system has raised the overall capacity from 3000 to 3550 equivalent residential connections. This provides sufficient capacity for growth until late 2028/early 2029.

Treated effluent from the Mangawhai wastewater treatment plant is currently conveyed approximately 15 kms to the Brown Farm owned and operated by Council. This farm consists of a large effluent storage dam, and approximately 58 ha of land where treated effluent from the dam is spray irrigated. This system includes controls to manage when irrigation can occur based on wind direction, wind speed, rainfall, and daily limits of total irrigation amounts. The project team have an ongoing programme for monitoring and complete operational improvements to enhance how the farm is managed, and to address ongoing issues related to periodic odours that result from various sources. The Brown Farm has a consented maximum limit for how much treated effluent can be irrigated on an annual basis, and the most recent data shows that the farm will likely reach this limit by mid-2027 (based on the current rate of growth). Staff previously confirmed the preferred option was to send effluent to the Mangawhai Golf Club (which is adjacent to the treatment plant) for subsurface irrigation. Stage 2 assessments of consenting requirements for the golf course irrigation system have been completed, and associated investigations and monitoring are approximately 50% completed. This includes installation of several groundwater monitoring wells, along with a year-long water quality sampling and water level monitoring programme that will inform the irrigation system design and consent application.

Council has an opportunity to work with the golf course on plans to re-contour the practice fairway to enhance and expand a subsurface drip irrigation system which can be installed at the same time. This allows Council to maximise the available capacity for effluent disposal in this location given the ability to input on the size, shape and geotechnical aspects of the new practice fairway creating optimal drip irrigation conditions.

Council has been advised the cost of recontouring will be about \$350,000 and the golf club are seeking co-funding.

It is now proposed that Council proceed with completion of stages 2, 3, 4 and 5 to address capacity limitations at Brown Farm and the design of the next stage of upgrades required for ongoing growth. The future work involves implementation of WWTP capacity and quality upgrades, including additional disposal of treated effluent. Future provision for spray irrigation on areas of the Golf Course can be considered in the next LTP, as the current funding only allows for the completion of stages 2, 3, 4 and 5

A procurement plan is provided in the public excluded section. Due to commercial sensitivity, Council is being asked to confirm the procurement approach in the public excluded agenda of this meeting, to progress this project as outlined in this open report.

Recommendation | Ngā tūtohunga

That Kaipara District Council:

- a) Notes the Mangawhai Wastewater Treatment Plant update - February 2025 report.

Context | Horopaki

The original Mangawhai Community Wastewater Scheme (MWWS) strategy was presented to Council in February 2022. The strategy identified that an investment of circa \$90.5M was required over the next 10 years. Given the significant investment, staff commissioned an independent peer review to assess the master plan and conducted a value engineering assessment.

The consortia were asked to confirm the lowest cost pathway for transitioning the MWWS to meet capacity for growth and enhancement of effluent quality for recycled water use at the Mangawhai Golf Course (Course). The peer review identified alternative upgrades that allow for near-term capacity upgrades with an overall capital cost of \$72M, down from the previous plan which required \$90.5M. The \$72M includes funding for network upgrades, treatment plant upgrades and the proposed golf course effluent irrigation system. This staged upgrade pathway also minimises construction and operational risk in transitioning the treatment plant to provide additional capacity and produce effluent quality suitable for subsurface irrigation.

The revised Mangawhai wastewater scheme upgrade pathway has been refined and presented to Council at a number of briefings going back to late 2023 and updated as work has progressed. The following presents an outline of the latest version of this staged programme and the current status of each stage:

Stage 1 - Mangawhai WWTP
COMPLETE
Optimisation of Mangawhai WWTP
Design inDENSE system
Implement InDENSE system
Stage 2 - Design of Mangawhai Golf Course Irrigation System
Part 1 - Concept Design of Mangawhai Golf Course and Resource Consenting
IN PROGRESS
Programme Management & Technical Overview
Groundwater and wetland water quality monitoring, ecology review, groundwater concept model
Stakeholder Consultation/Engagement Plan
Initial consultation with Golf Course Committee and formation of Working Group
Prepare brief and receive tenders for Golf Course subsurface effluent disposal irrigation consent and concept design
Evaluate tenders for Golf Course subsurface effluent disposal irrigation consent and concept design

Brown Rd farm assessment and remediation works plan
Part 2 - Design of Mangawhai Golf Course and Resource Consenting (Disposal) APPROVAL NEEDED
Programme Management and Technical Overview
Ongoing consultation with Mangawhai Golf Club Committee and Working Group
Testing of Golf Course to confirm irrigation concept designs
Preliminary Design subsurface effluent irrigation discharge system at Golf Course
Consent application development, lodgement and processing (if no environment court process)
Contingency for Additional Investigation (if required)
Stage 3 - Mangawhai CWWTP Upgrades - Detailed Design and Implementation (Capacity, Quality and Disposal) APPROVAL NEEDED
Programme Management & Technical Overview
Tendering of WWTP capacity and quality upgrade design
Preliminary Design of WWTP upgrades
Detailed Design of WWTP upgrades - Convert balance tank to 3rd CASS unit, solids handling, class A effluent, effluent transfer system for Golf Course
Capital Works Estimate
Stage 4 - Golf Course Subsurface Irrigation Systems - Detailed Design and Implementation (Disposal) APPROVAL NEEDED
Technical Director Overview
Procurement and Contract Management for installation of Subsurface effluent disposal irrigation system
Practice Fairway Recontouring (50% KDC contribution to Mangawhai Golf Course)
Detailed Design and Install Golf Course effluent subsurface disposal system
Commission Golf Course effluent subsurface disposal system
Stage 5 - Golf Course Effluent Transfer /Supply System - Implementation (Disposal) APPROVAL NEEDED
Procurement and Contract Management for Construction of effluent transfer and storage system for Golf Course
Construct and Commission effluent transfer and storage system for Golf Course
Future Works (Consideration for the next LTP)
Procurement of WWTP upgrades, Construct, Commission - Capacity Upgrades
Procurement of WWTP upgrades, Construct, Commission - Quality Updates
Surface Spray Irrigation at Mangawhai Golf Course

Discussion | Ngā kōrerorero

Population growth is taking place on Mangawhai, and it is expected to continue throughout the next two decades. The existing Mangawhai Wastewater Treatment Plant has a design capacity for approximately 3,550 connections (residential equivalent). To date, approximately 2,950 connections are served by the Plant, with the plant reaching capacity by mid to late 2028. In addition, the existing effluent disposal system at Brown Farm is expected to reach the consented limit by mid-2027.

In response to the above key drivers, staff confirmed the following staged upgrade/enhancement programme for the Mangawhai wastewater scheme.

Stage 1 - Plant upgrade and optimisation

This stage was completed in early 2024, which included optimisation of the treatment plant and installation of the inDENSE system to provide a short-term increase in capacity. This work resulted in significant improvements to treated effluent quality included solids and nutrient removal. The inDENSE system installation and commissioning was successfully completed, and the capacity has been increased from a maximum of 3000 residential connections to 3550 connections, providing sufficient headroom for growth through to late 2028/early 2029.

As a result of the optimisation and installation of the inDENSE system, the treatment plant's performance has improved, with reductions in the levels of nitrogen, phosphorus and solids. This is important as it further reduces the risk potential effects on the environment for locations where treated effluent is discharged.

Stage 2 – Concept design and consenting of golf course subsurface irrigation system

The project team have completed initial investigations, preliminary high-level options assessments, and commenced ongoing monitoring required for the concept design and consenting of the golf course subsurface irrigation system. This includes installation of groundwater monitoring wells, soil characterisation, desktop and preliminary field assessments. Staff and the project team have also commenced ongoing consultation with the golf course committee to discuss coordination of plans, and review and confirm key objectives. Most recently the project team have received competitive tenders for the next stages of work required to complete Stage 2 - which includes additional testing and monitoring required for the consent and subsurface irrigation system design, development and submission of a consent application, completion of a concept design and tender package for the subsurface irrigation system installation, and oversight of the installation and system commissioning. It is proposed to select preferred service providers and commission this work to start in March of 2025. The goal is to complete this work by mid-2026, which would enable Council to divert treated effluent to the golf course system and reduce the amount sent to Brown Farm.

Stage 3 – Preliminary and detailed design of wastewater treatment capacity and effluent quality upgrades, and the golf course effluent transfer system

Council need to get competitive tenders for the preliminary and detailed design of the capacity and effluent quality upgrades for the Mangawhai wastewater treatment plant, and the treated effluent transfer and storage system for the golf course irrigation scheme. These upgrades are required to provide capacity for growth occurring beyond 2028, and to also ensure that the effluent quality meets requirements for un-restricted irrigation use at the golf course. The new effluent transfer system is required to send treated effluent to the golf course for subsurface irrigation, and reduce the amount sent to Brown Farm. Stage 3 will be completed in parallel with Stage 2 to ensure system design and consenting coordination. It is proposed to select preferred service providers and commission this work to start in March of 2025.

Stage 4 – Construction and commissioning of the treated effluent transfer system and subsurface irrigation system

The project team propose to develop construction service and equipment supplier tenders as part of completing Stages 2 and 3 above. This includes construction services and supplier contracts for the effluent transfer and subsurface irrigation systems. The details of this are subject to completion of the designs and consents, but cost estimates have previously been developed to inform the funding request requirements. It is estimated that construction will commence on the subsurface irrigation system on the practice fairway by late 2025 and will be done in coordination with plans for re-contouring sections of the golf course where the system will be installed. This system will not be connected and lived until mid-2026, when it is expected that Council will have approved consents for subsurface irrigation discharge of treated effluent.

Stage 5 – Construction and commissioning of effluent transfer system and storage tank

The work involves installation of the treated effluent pumps at the WWTP, rising main and installation of the storage tank at the Mangawhai Golf Course to enable use of the subsoil irrigation installed in the Practice Fairway. The effluent transfer system design and construction tendering will be completed by the end of 2025, providing sufficient time to construct and connect to the subsurface irrigation system by mid-2026.

Future Works

The work involves implementation of WWTP capacity and quality upgrades, including additional disposal of treated effluent. Future provision for spray irrigation on areas of the Golf Course can be considered in the next LTP, as the current funding only allows for the completion of stages 2, 3, 4 and 5.

Governance Group

This is an important project for Kaipara District Council. Given the historical community interest in it, a separate governance group is a current consideration. This governance group would be separate to Council's elected members, however, the Mayor or Councillors could be included in the membership of the group, and a suitably qualified external member could Chair the group. Staff are currently in the process of forming this governance group to oversee the proposed next stages of delivery of this programme.

Procurement

The Council's procurement manual recommends where the procurement is outside the Council's Procurement Policy, then the variation needs to be approved by the Chief Executive if under \$500,000 or Council if above this amount. This approval is consistent with procurement manual, where it allows a direct appointment where:

- the required goods or services are available from only one source or only one supplier has the capability and capacity to deliver in the time required
- continuity of advice is required

A procurement plan is included in the public excluded section.

Financial implications

Council Long Term Plan FY (\$, 000)	2024/25	2025/26	2026/27	Total
Mangawhai Golf Course WW Irrigation	\$ 800	\$ -	\$ -	\$ 800
Mangawhai WW effluent disposal system	\$ 1,000	\$ 1,000	\$ 2,000	\$ 4,000
Mangawhai WWTP Upgrades	\$ -	\$ 500	\$ 500	\$ 1,000
Mangawhai Networks and PS Capacity	\$ -	\$ 1,000	\$ 2,000	\$ 3,000
Total	\$ 1,800	\$ 2,500	\$ 4,500	\$ 8,800

	2024/25	2025/26	2026/27	Total
Forecast Spend Profile	\$ 600	\$ 4,370	\$ 4,200	\$ 9,170
Forecast Spend versus Long Term Plan	- \$ 1,200	\$ 1,870	- \$ 300	\$ 370

This plan requires spend greater than allocated in the current Council Long-Term Plan (LTP) by approximately \$370,000. This proposed spend is proposed to be brought forward from future years to mitigate the risk associated with the current effluent disposal system at Brown Road Farm.

Risks and mitigations

There is a risk not proceeding with stages 2, to 5, where the option to dispose of the treated wastewater on specific areas of the Mangawhai Golf Course may be lost and Council having very limited alternative options.

Significance and engagement | Hirahira me ngā whakapāpā

The decisions or matters of this report are considered to have a low degree of significance in accordance with Council's Significance and Engagement Policy and the projects have already been

through consultation as part of the Long Term Plan. No feedback is required, and the public will be informed of Council's decision via the agenda and minutes publication of this meeting, on the website and through other channels if appropriate.

Attachments | Ngā tapiritanga

	Title
A	Mangawhai Wastewater Scheme Stage 1 and 2 Approval, October 2023
B	Mangawhai Wastewater Treatment Plant Update - Council Briefing, November 2024