Wastewater Treatment Plant Upgrade Project Public reports from Committee and Council meetings from 2021

Te Kaunihera-ā-Rohe o Taratahi
CARTERTON DISTRICT COUNCIL

Ordinary Council Meeting Date: Wednesday, 17 March 2021

Wastewater Treatment Plant Upgrade Project Below (Figure 1) is an aerial photo of the lining progress on the 12th of February 2021. The photo shows that the third pond remains at about 80% lined and will not be completed until the 600-pipe outlet has been tested and the end encased in concrete. This was planned for last week.

Pond 2 is approximately 70% lined.

Concrete works being carried out by Brian Perry Civil staff (Figure 2 - post photo the walls have now been concreted). By Friday 12th March all 3 ponds concrete structures will be 90% completed with the remaining anchor blocks (10%) to be done after the 600 pipes have been tested which is now underway.

Figure 2 - 15th Feb 21 – Concrete works to Pond 2

The replacement ephemeral channel is now completed and the pivot area levelled. (Figure 3)

Figure 3: Overview of proposed pivot 2 location

Stage 3 – Pipelines and Pumps The Stage 3 supplier Ordish and Stevens is continuing to fabricate the intake and outlet pipes off site. They have completed a number of on-site works such as backfilling the temporary sediment pond so they can install the reservoirs outlet pipes. The actual installation

of the pipes for the outfall to the river remains on hold while discussions take place with a local hapu to explore exciting potential alternatives to the river discharge option.

Figure 4: 12th Feb showing pump Station intake pipe location.

Wetland Alteration

Below is a photo that was taken recently of the developing wetlands (figure 5). GWRC staff continue to take an interest and carry out regular inspections and fishing where mudfish are found. CDC and GWRC staff met on site with Enviro schools and they are very interested in putting together a program for schools starting in August. Also, Dalefield School has expressed interest in using the new wetland as an opportunity to carry out work as part of this year's environmental program.

Figure 5: Developing Wetlands

Infrastructure and Services Committee Meeting Date: Wednesday, 7 April 2021

6.6 CARTERTON WASTEWATER TREATMENT PLANT UPGRADE PROJECT

1. PURPOSE

The purpose of this paper is to advise the Committee of progress with the Wastewater Treatment Plant Upgrade Project.

2. SIGNIFICANCE

The matters for decision in this report are not considered to be of significance under the Significance and Engagement Policy.

3. WASTEWATER TREATMENT PLANT UPGRADE

We are getting closer to completion of the Wastewater Treatment Plant upgrades with the lining of the three large ponds nearing completion. This is scheduled to be completed by the end of the month although the work is, and has been, heavily weather dependant. Even a gentle wind or rain can delay the preparation or installation. While we wait for the lining to be completed, the pipework, pumps, and electrical work that connect the ponds from the treatment plant and those allowing the treated water out of the ponds is continuing. The earthworks to flatten out the ground for the new centre pivot is complete with construction work of the ponds and most of the pipework being completed by midway through this year.

4. DETAILED PROGRESS

Below (Figure 1) is a recent aerial photo of the reservoir's progress photographed on 24 March 2021 showing the completed earth dam and the three ponds partially lined.

Figure 1: Southern Dam Wall near completion

Since the previous report in 9 September 2020, construction teams have been working on preparing the liner receiving surface, installing lining, pressure testing pipework and, building the concrete outlet structures (Figure 2). An ongoing challenge has been consistently achieving an ultra-high-quality liner receiving surface for the new liner to be laid upon. Viking the specialist lining company working closely with CHB to achieve the necessary surface properties for the receiving surface.

Figure 2: Finishing the concrete works

PIPELINES AND PUMPS

Much of the pipework has been installed up to the new reservoirs and due to delays to completing the reservoirs this next stage of works could not start. From next month Ordish and Stevens will commence installing the pipework into and out of the ponds then continue through the year installing pump chambers, pipework, pumps, electrical and controls that connect with the existing treatment plant. Filling of the new reservoirs and commissioning and testing of the new upgrade will run through 2022.

EPHEREMAL CHANNEL RELOCATION WORKS

Relocation of the channel and leveling fully completed and the soils are currently being conditioned, see figure 3.

Figure 3: Soil Conditioning

5. CONSIDERATIONS

5.1 Climate change N/A

5.2 Tāngata whenua

Representatives of Kahungunu and Rangitane Iwi are on the project's advisory group. No further engagement with tāngata whenua is required at this time. Reservoirs discharge is being discussed with Ngāti Kahukuraāwhitia.

5.3 Financial impact

All financial reporting is to the Wastewater Treatment Plant Upgrade Governance Group.

5.4 Community Engagement requirements

Opportunity for the council to engage with the local community at site open days.

5.5 Risks

Risks are reported and reviewed at the Wastewater Treatment Plant Upgrade Governance Group.

6. RECOMMENDATION

That the Committee:

1. Receives the report.

Ordinary Council Meeting Date: Wednesday, 12 May 2021

7.5 ADDITIONAL IRRIGATION TO LAND INVESTIGATION

1. PURPOSE

For the council to approve an unbudgeted expenditure to investigate the suitability of additional land for wastewater irrigation.

2. SIGNIFICANCE

The matters for decision in this report are not considered to be of significance under the Significance and Engagement Policy.

3. BACKGROUND

In September 2014 Carterton District Council submitted the Assessment of Environmental Effects (AEE) to accompany the application for the Carterton Wastewater Treatment Plant (WWTP) discharge consents to Greater Wellington Regional Council (GWRC). The AEE re-iterated the community's, Council's, and GWRC's wish to divert treated wastewater to land in preference to continued discharge to surface water. The Council's long-term vision was stated below: "Carterton District Council's long-term vision for the Dalefield Road WWTP is to discharge all treated effluent to land, except during saturated ground conditions or other unfavourable or unusual circumstances, for the purpose of improving social, environmental and cultural outcomes. The Council's aim is to achieve this in partnership with the wider community and in particular with landowners in the vicinity rather than the Council having to acquire all the land for the purpose. The rate of progress

towards achieving this vision will be governed by the practical realities of achieving suitable arrangements and the ability of the Carterton community to pay for the improvements." The stated intention was for Council to work toward this goal over the lifetime of the consent. Council officers have been progressing this goal and there is now an opportunity to investigate the use of nearby land to extend the irrigation capacity of the wastewater treatment plant.

4. DISCUSSION

At the time of the planned upgrade to the Wastewater Treatment Plant, the total amount of land required to ensure no discharge to the Mangatārere Stream was double that of the exiting Dalefield Farm capacity (approximately 40 hectares). However, the true amount of land required will not be known until the expanded wastewater plant is fully operational. There is a potential option for long term lease of 21 hectares of land near to the existing irrigation area. Prior to entering discussions, suitability of land for irrigation needs to be established. Some land analysis has already been conducted with those results indicating the land is likely to be suitable for irrigation however, wide ranging test pit work has not been undertaken. Officers will need to present to Council a robust analysis of cost beyond land suitability and include the variation to consent estimations, pump and pipework costs, operational costs, and any potential income offsets from crop sales. Once this information is known lease arrangements can be discussed with the landowner and the final option presented to Council for a decision. The investigation work has not been budgeted for and officers are requesting an unbudgeted expenditure of up to $100,000 to complete this work. If approved, the investigative work will commence immediately and aim to be concluded in the next couple of months.

5. CONSIDERATIONS

5.1 Climate change

There are no climate considerations for unbudgeted expenditure.

5.2 Tāngata whenua

No considerations at this time.

5.3 Financial impact

The additional expenditure will be loan funded.

5.4 Community Engagement requirements

None for the investigation. If the current resource consent conditions are to change, or a new consent sought, that may result in the requirement for consultation.

5.5 Risks

There are no risks associated with undertaking the investigation, although if the land is proven to be unsuitable the expenditure will not result in the discharge area being expanded.

6. RECOMMENDATION

That the Council:

1. Receives the report.

2. Agrees to the unbudgeted expenditure of up to $100,000 to investigate the suitability of additional land near Daleton Farm for wastewater discharge.

MOVED

That the Council:

Receives the report.

Cr Jill Greathead / Cr Steve Cretney
CARRIED

Infrastructure and Services committee Meeting – Date Wednesday 4 August 2021

6.6 WWTP UPGRADE

1. PURPOSE

For the committee to be advised of progress with the Wastewater Treatment Plant (WWTP) Upgrade Project.

2. SIGNIFICANCE

The matters for decision in this report are not considered to be of significance under the Significance and Engagement Policy

3. WWTP UPGRADE OVERVIEW

Since the previous report on stage 2 progress, two of the deferred storage ponds now have been lined. The third central pond requires a small section to be covered in. Following remedial work on the liner and anchor trench the specialist liner integrity testing team from South Australia can come and complete the testing. In the meantime, they have been put on hold.

Sections of the work for stage 3 has progressed during pockets of suitable periods between less desirable winter conditions. But we are still within the timeframe of our consents to have the reservoirs operating. Once the physical works on the site are completed the upgraded plant will be commissioned.

4. PROGRESS

Below ***Figure 1*** is an aerial photo of the reservoir's progress photographed on 9th July 2021 showing the completed earth dam and the three ponds still partially lined and identifies the section to be lined once earthworks remedial action is taken by CHB on the anchor trench. ***Figure 2*** shows the grass though patchy is managing to establish itself on the embankment crests with the aid of the eco-friendly turf reinforcement matting.

Figure 1: Southern Dam Wall near completion

Figure 2: Topsoil and grassing of crests

5. STAGE 3 – PIPELINES AND PUMPS

The pump station building south of the proposed pump's chamber location has now been erected. ***Figure 3*** shows the building prior to the roof being installed and also the completed transformer. Work is proceeding on the installation of the headworks which includes SS pipework, valves, actuators (automation), power and communications cabling shown in ***figure 2***. The valve pad splits the flows received from the new reservoirs to the two deficit irrigation applicators.

The intake main pipeline has now been installed along the length of the northern pond walls and is ready for the three individual intake pipes to be installed. Once these and the 2 new pumps are installed in the new wet well the ponds could be filled from the existing WWTP (also upon completion liner integrity testing). However, this won't be practicable until the outlet pipework and pumps has been installed along with the emergency outfall.

The control building has now been fully erected and is ready to receive the controls which have all been pre purchased to mitigate delivery delays.

Figure 2: Valve pad.

Figure 3: Control Building and 300KVA Transformer.

6. NEXT STEPS

Over the following months, weather permitting all the outlet pipework, pump station headworks and pump station will be installed.

7. CONSIDERATIONS

7.1 Climate change

N/A

7.2 Tāngata whenua

Representatives of Kahungunu and Rangitane Iwi are on the project's advisory group. Formal meeting held a on the 17 June 2021 at the council premises.

Reservoirs discharge is being negotiated with Ngāti Kahukuraāwhitia.

7.3 Financial impact

All financial reporting is to the Wastewater Treatment Plant Upgrade Governance Group.

7.4 Community Engagement requirements

There is opportunity for the council to engage with the local community at site open day once ponds are fully lined. Regular project updates now available on council web site along with visual presentation at the council's info counter.

7.5 Risks

Risks are reported and reviewed at the Wastewater Treatment Plant Upgrade Governance Group

8. RECOMMENDATION

That the Council/Committee:

1. **Receives** the report

Infrastructure and Services committee Meeting – Date Wednesday 29 September 2021

6.7 WASTEWATER PONDS CONSTRUCTION UPDATE

1. PURPOSE

For the committee to be advised of progress with the Wastewater ponds construction upgrade project

2. SIGNIFICANCE

The matters for decision in this report are not considered to be of significance under the Significance and Engagement Policy.

3. UPGRADE OVERVIEW

The third and central pond still requires a small section to be covered in and has not differed since the last report to the Committee.

Sections of the work for stage 3 has progressed immediately after lockdown though progress has been slow over the previous 2 weeks due to wet weather. But we are still within the timeframe of our consents to have the reservoirs operating-

4. PROGRESS

Below (Figure 1) is an aerial photo of the reservoir's progress on 31st August 2021 showing the partially completed earth dam and the partially lined pond 2.

Figure 1: Reservoir's progress

The work remaining to be completed on the Reservoirs includes

- Lining to pond 2
- Completion of the anchor trenches
- Minor embankment fill (over anchor trenches)
- Three concrete spillways,
- Valve chambers lids and covers
- Subsoil testing
- Topsoil (Embankment crests)
- Turf reinforcement matting
- Grassing
- Site clean up
- All remediation work

It anticipated that this work could be completed by the end of January 2022

5. STAGE 3 – PIPELINES AND PUMPS

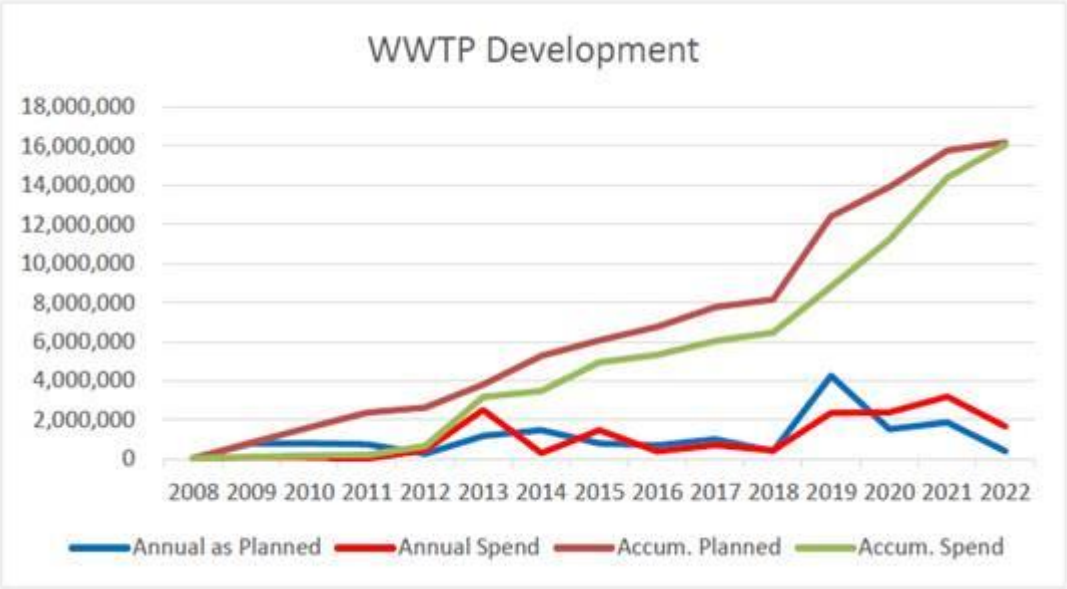
There is now a permanent 300KVA power supply at Gallons Road which will operate and control the new irrigation pumps and sub pond floor hydraulic

system. Work continues with the installation of the electrical system and controls, the pump station internals, and wet wells.

Construction of the pump station will progress through the next few months and culminate in having the pipework in place before Christmas weather dependant.

6. FINANCIALS

Detailed financial reporting is to the Wastewater Treatment Plant Upgrade Governance Group. Overall, the construction is meeting the current budget expectations as displayed below.



7. CONSIDERATIONS

7.1 Climate change

N/A

7.2 Tāngata whenua

N/A

7.3 Financial impact

The construction is within current budget allocations

7.4 Community Engagement requirements

N/A

7.5 Risks

N/A for this report

8. RECOMMENDATION

That the Committee:

1. **Receives** the report

Ordinary Council Meeting – Date Wednesday 15 December 2021

7.1 RESERVOIR CONSTRUCTION

1. PURPOSE

For the council to approve budget for completion of the wastewater reservoirs

2. SIGNIFICANCE

It is acknowledged the matters for decision in this report will have an interest to members of the Carterton Community.

Our Significance and Engagement Policy explains how the Council will determine the degree of significance of particular issues, proposals, assets, decisions, and activities.

Section 5 of the Local Government Act 2002 defines **significance** as:

'in relation to any issue, proposal, decision, or other matter that concerns or is before a local authority, means the degree of importance of the issue, proposal, decision, or matter, as assessed by the local authority, in terms of its likely impact on, and likely consequences for, —

(a) the current and future social, economic, environmental, or cultural wellbeing of the district or district:

(b) any persons who are likely to be particularly affected by, or interested in, the issue, proposal, decision, or matter:

(c) the capacity of the local authority to perform its role, and the financial and other costs of doing so'.

The table below is a guide for assessing the degree of significance of proposals and decisions, and the appropriate level of engagement.

Matter/Issue	Determining the Level of Significance		
	Low Significance	**Moderate**	**High**
Relates to an asset that is a 'strategic asset'	Does not relate to strategic assets or does not substantially affect other Council assets	Involves sale of, or substantial impact on, part of a strategic asset, or other Council asset	Sale of a strategic asset, or activities that affect the performance of the strategic asset as a whole
Changes to levels of service	Minor loss of, or change to, service levels provided by the Council (or its contractors)	Moderate changes to the level of service provided by the Council.	Decision or proposal creates substantial change in the level of service provided by the Council
Likely level of community interest	Decision or consequence has little	Minor or moderate level of community interest in a proposal or	A high level of community interest in a proposal or decision; likely to be, or is,

Matter/Issue	Determining the Level of Significance		
	Low Significance	**Moderate**	**High**
	impact or is easily reversible	decision; or there is a moderate impact arising from changes; or one or more areas of the District are affected disproportionally to another; or duration of an effect may impact detrimentally on people or a community	controversial in the context of the impact or consequence of the change; involves a specific area affected (e.g. geographic area, or area of a community by interest, age or activity); or there are substantial impacts or consequences arising from the duration of the effect
Financial impact	No material effect on the Council's budget, debt, or residents' rates	Minor effect on rates, debt, or the financial figures in any one year or more of the Long-Term Plan	Substantially affects debt, rates, or the financial figures in any one year or more of the Long-Term Plan
Changes to Groups of Activities	Minor change to how Council manages groups of activities	Partial exit from a group of activities	Ceasing an existing activity or adding a new group of activities
Delivery arrangements	No substantive change to partnership arrangements for delivery of services, or consultant services	Contracting out or entering partnership with the private sector to carry out minor activities on behalf of the Council	Contracting out or entering partnership with the private sector to carry out a significant activity or a group of activities

The primary purpose of engaging (consulting) with the community is to enable effective participation of individuals and communities in the decision-making of councils. This enables elected representatives to make better-informed decisions on behalf of those they represent. Consultation is best undertaken before significant decisions are made.

Council may choose not to consult when it believes the matter is not significant enough. Council may also recognise a matter as significant and choose not to consult, when it believes it has enough information to make an informed decision.

The process of upgrading our Wastewater Treatment Ponds began in 2012. Council obtained a 35-year resource consent from GWRC in 2017; issued a contract to build in 2018 and are actively working towards delivering a solution which could avoid all discharge to waterways. The recommendations in this paper are consistent with delivering on this strategy.

The wastewater treatment ponds are a significant asset. The delivery of this project will not alter the level of service for ratepayers. Officers consider this paper will generate a moderate level of public interest. The financial impact of this paper is covered in sections 9 and section 11.3. There are no proposed changes to Groups of Activities and no proposed changes to Delivery arrangements.

Any additional cost incurred which is unable to be recovered from the contractor will be held by Council as debt until July 2024, when it will transfer to the new Water Services Entity. This carrying cost of this additional debt is not considered to be significant. Legal costs which are unable to be capitalised will be expensed and funded from reserves.

The outcomes of the project - upgraded wastewater treatment ponds, obtaining 35-year resource consent, minimising /eliminating discharge to waterways; further developing our partnerships with mana whenua – are not being altered, and will be delivered following the project re-approval.

3. BACKGROUND

Prior to 2014 the Council had operated a traditional sewerage treatment and discharge regime, with treated wastewater being discharged into the Mangatārere Stream on a regular basis when the flows were high. The method of wastewater treatment and disposal included tertiary treatment processes located on the Council's land fronting Dalefield Road. The three-stage treatment process was followed by seasonal irrigation of a relatively small proportion of the final effluent on approximately 3.0ha of land adjacent to the treatment plant, with a larger proportion discharged to an unnamed drain upstream of its confluence with Mangatārere Stream.

The neighbouring Daleton Farm property was purchased in 2012 with the view to developing a land discharge system. The wastewater treatment plant upgrade project started in earnest in 2013, following the granting to the Council of short-term consents for the discharge of treated wastewater and related discharges. All consents expired in 2017. The Council was required to renew the consents by April 2017.

Early in 2014, Council adopted a long-term vision of removing all effluent discharges to water other than in exceptional circumstances. The project to develop Daleton Farm then began, underpinning information collection to support the 2017 consent renewal process.

The Council sought a further short-term consent to allow the discharge of treated wastewater onto land (Daleton Farm) using a pivot irrigator. This allowed deficit irrigation, over an area of approximately 20ha via a centre pivot irrigator, installed in 2014.

The short-term consents allowed the Council to gather data and carry out investigations on the land discharge option.

The Council then spent the next three years designing the upgraded treatment and disposal project and preparing resource consent applications. In December 2016 the Council adopted a strategy for the upgrade, which formed the basis of the applications. In summary the strategy was:

Stage 1 (2015-2017)	–□□□□Continue inflow & infiltration investigations.

	–□□□□Continue network condition assessment, rehabilitation & replacement. –□□□□More tightly manage trade wastes. –□□□□Implement the 2014 consent for Stage 1 irrigation to land on Daleton Farm. –□□□□Install UV disinfection. –□□□□Operate and monitor the environmental effects of land irrigation –□□□□Prepare application for replacement consents informed by monitoring data (for lodgement April 2017). –□□□□Develop sustainable land use practices on Daleton Farm –□□□□Pilot scale test and design Sequential Batch Reservoirs –□□□□Line the inlet and outlet channels and replant the existing wetlands
Stage 2 (2018-2021)	–□□□□Construct on-site Sequential Batch Reservoir treatment and storage on Daleton Farm 200,000m3 (doubled from the original plan of 100,000m3), including earthworks, leak detection pipework, pond sumps, anchor trenches and lining of three ponds. –□□□□Further develop amenity wetlands.
Stage 3	–□□□□Relocate the existing stream discharge to the lower reach of Mangatārere Stream immediately above the State Highway 2 bridge and closer to the confluence with the Waiohine River –□□□□Construct wet wells, pumping stations and install pipework for discharge to land on Daleton farm –□□□□Progressively investigate opportunities for supplementary land for additional storage and irrigation. –□□□□Develop sustainable arrangements that facilitate long term security of tenure over privately owned land available and suitable for irrigation.
Stage 4 (2026-2045+)	–□□□□Progressively expand supplementary bulk storage capacity for treated wastewater off-site as land becomes available and is affordable (land additional to Daleton Farm). –□□□□Extend irrigation to land additional to Daleton Farm as suitable private and/or Council-owned land becomes available and is affordable. –□□□□Continue irrigating treated wastewater to Daleton Farm. –□□□□Remove high-flow stream discharge once alternative irrigation to land options are implemented. –□□□□Add post-reservoir UV plant –□□□□Continue tightly managing trade wastes.

The issues the strategy was seeking to address included:

- Meeting forecast future increased wastewater generated by residential growth;
- A tightening of environmental standards signalled in the GWRC Proposed Natural Resources Plan and early outputs from the Whaitua planning process; and
- Minimising the environmental impact of waste water discharges, and where possible eliminating all waste water discharges in water ways;
- The importance of using existing wastewater facilities as efficiently as practicable by optimising the capacity of the existing WWTP and Daleton Farm; and
- The impact of trade wastes on treated effluent quality;
- High infiltration rates into the pipe network, necessitating an ongoing programme to reduce unwanted inflows to the wastewater treatment plant;
- The importance of achieving a high degree of certainty in giving effect to the Strategy.

Council's 2015-2025 Long Term Plan approved site preparation, preliminaries and both short and long-term consents. Consents were sought and granted in 2017 as planned. The consents have a 35-year period. Through the 2016/17 annual plan process Council increased the reservoir capacity by an additional 100,000m3, giving a total storage capacity of 200,000m3.

4. RESERVOIR CONSTRUCTION

In November 2018, the tender for the construction and lining of the reservoirs - often referred to as Stage 2 - was awarded to Central Hawkes Bay Earthmovers Ltd (CHBE). The contract had an expected completion date of 30th May 2019. Time delays have been a consistent item for the Council's Governance Group overseeing the project and remain a contentious issue with CHBE.

Throughout the construction of the reservoirs Tonkin and Taylor have held the position of Engineer to the Contract and provided project management resource. Tonkin and Taylor are one of a handful of preeminent engineering firms in New Zealand and were contracted under daily inspections of the reservoir construction.

Councils project management officer acted as engineers' representative assistant submitting daily updates and records for three days a week, while Tonkin and Taylor were physically on site for two days a week. Each daily inspection was reviewed by Tonkin and Taylor and if need be clarified and associated NTC issued. Council holds copies of all daily inspections (photos and notes) over the entire construction period.

The initial completion date for the reservoir construction has been delayed by mudfish relocation, the discovery of a high level of unsuitable ground material, the requirement for additional drainage work, inclement weather, ephemeral channel relocation, COVID-19 lock down, delays in completion of earthworks, and now remedial works on the pond liner.

In May 2020, Council met with CHBE to set a final completion date and gain assurances that construction would be completed by that time. At this meeting CHBE stated that the reservoirs would be completed by 20th September 2020. This date was not met, and a notice of default was issued to CHBE by Council's engineer to contract (Tonkin and Taylor).

The default notice was issued through a standard contractual process referred to as Notice to Contractor. NTC number 84 claimed CHBE was neglecting to carry out its obligations under the contract. This claim was rejected by CHBE and stated that they were committed to resolving the issues and completing the contract works.

Council's Governance Group considered CHBE's position at the time, also weighing the costs to complete the outstanding works against the lower contractual rates CHBE had submitted. A decision was made to endure a longer construction time over the potential increased cost to the ratepayer should Council take over the project at that time (September 2020).

5. RESUMPTION OF CONTROL OF SITE

During earthworks construction Tonkin and Taylor had issued extensive contractual notices to CHBE. Tonkin and Taylor observed issues with CHBE's work practices and methodology in, and around, the geomembrane liner. In February 2021, NTC 105 directed CHBE not to drive equipment directly on the liner surface and provided guidance on how to avoid damage to the already installed liner. CHBE was directed to repair the damage found. In August 2021, NTC 117 identified further damage to the western crest of reservoir 3 and instructed CHBE to repair.

On the 9th August 2021 Council were notified by Tonkin and Taylor's Engineer to Contract that they considered CHBE to be once again in default. Despite multiple contractual notices issued through the NTC system, quality issues were not being addressed. The primary concerns centred around damage to the geomembrane liner, and the construction and backfilling of the anchor trench holding the liner in place at the top of the embankments.

CHBE were given ten working days to provide a remedial action plan. This was considered by both Council and our Engineer to the Contract – Tonkin & Taylor. After careful consideration both Council and our Engineer concluded the proposed remediation plan was inadequate to resolve the faults and Council resumed possession of site on 31 August 2021.

Council fully expect CHBE to repair the damage at their cost. The construction contract required the contractor (CHBE) to carry insurance for these types of situations. As part of the initial engagement process, and throughout the reservoir construction, CHBE provided evidence that they had insurance for the contract works.

Once CDC had resumed control of the site, a local contractor was arranged to oversee the clean-up of the site and to complete the remaining liner installation. Careful cleaning of the excessive soil overspill on, and in the reservoir was undertaken using handheld soft brooms and plastic shovels. This revealed the full extent of lining damage which was much greater than initially thought.

Representative pictures of this damage are below.

Picture 1: Liner damage at the top of the embankments on one of the reservoirs

Picture 2: Scratches to the liner with what appears to be drag marks (Potentially digger bucket drag marks)

Picture 3: A tear to the liner on a corner embankment.

Picture 4: A closer view of scratches with a deeper longitudinal scratch apparent in the liner.

Picture 5: Excessive soil coverage at the top of the embankment and digger bucket resting on geomembrane liner.

6. DAMAGE IMPLICATIONS

Liner stresses are greatest at the upper crests of the reservoirs where the weight of the liner, UV exposure, thermal movement, and wind action are highest. Stresses also occur at the base of the embankment where there are weight stresses and differential thermal stresses. The original reservoir design was to a high standard which allowed for 4 times the daily expected stress load, more than enough to cope.

The geomembrane liner specified was a conductive lining that allows for an electrical current to be passed through it identifying any leaks that are unseen to the naked eye.

Checking of liner integrity was planned for a five-year rotation where one reservoir would be drained, cleaned, and checked. Any deterioration would be then be remediated. Developing a regular maintenance schedule could provide the full life expectancy of the liner well beyond 40 years.

Damage to high quality geomembrane liner is rare. Most contractors fully understand the nature of the liner and are careful when working with the finished product. The geomembrane liner is 1.5mm in thickness with damage of 10% depth estimated as potentially reducing the stress resistance by approximately 30%, although this depends on where the damage is located, (top or bottom of the embankments), and the longitudinal or transverse alignment of the damage.

Identification of the damage that may have a material effect on the liner cannot be solely done by eye. A wide mark will be visible to the naked eye but may not be deep enough to raise concern whereas a narrow deep score traversing the primary stress direction may impact the liners' useful life much more.

7. REPAIR STRATEGY

Damage in all three ponds have undergone a high-level visual mapping and recording by Tonkin and Taylor. A manual, slow, but more detailed survey and recoding is in process using a digital optical micrometer.

Testing and reporting on the impact of the damage on the liner has been initiated, using an Australian company ExcelPlas. A range of representative samples of damaged liner (0.5m x 0.5m) have been sent to the Australian accredited laboratory who are a leading independent geomembrane testing facility. The test results and report on the impact of the damage (strength, durability etc) is not expected to be completed before February 2022.

Final technical decisions around repairs will be made following receipt of the ExcelPlas report, in partnership with our engineer Tonkin & Taylor, and our lining installer Viking. Repairs will likely require additional conductive geomembrane liner to be ordered and imported, which has a lead time of approximately 4 months. Liner replacement is a technical judgement balancing ease of laying (reducing cost), maximising coverage of the scratches, maintaining liner performance and conductivity, whilst ensuring we obtain liner installation warranties.

Meanwhile, the tears, rips and major damage have been patched which will provide CDC with functional reservoirs that can receive treated wastewater, while awaiting a more permanent repair.

As at the end of November 2021, the project is over 80% complete. After liner remediation, the majority of the work left to complete focused on the pipe and pump construction – referred to as Stage 3 in the table below.

Having functional reservoirs allows for the finalisation of the construction works and provides time for the engineering and geomembrane experts to develop a repair strategy that is technically and contractually sound, which promotes the longevity of the ponds. Once Stage 3 pipe and pumping works have been completed, permanent remedial repairs can be undertaken on a single pond at a time and these are not time bound by consenting requirements. Officers anticipate the permanent repairs to be undertaken over the 2022 calendar year.

8. RESOURCE CONSENT REQUIREMENTS

CDC's current discharge consent to the unnamed stream (leading to the Mangatārere Stream) expires in January 2023. At this time, Council will require significant alternative storage (i.e. the reservoirs), irrigation, and if needed, discharge facilities available. Alternatively, CDC will need to apply for and obtain a new resource consent to continue to discharge into the unnamed stream. The issuing of a new resource consent to discharge falls under the responsibility of Greater Wellington Regional Council, and is not guaranteed.

Once the reservoirs are filled with treated wastewater, CDC must undertake a minimum of 12 months of testing, under operational conditions, to establish the appropriate median limits of water quality. Working back from the January 2023 date, CDC needs to allow for both testing, and remedial repair and construction work associated with the reservoirs, given they may be unavailable during winter months.

This time bound constraint with the current discharge is the paramount driver in completing the reservoir construction project.

9. COST IMPLICATIONS

The table below shows the overall budget for the WWTP project construction. As stated above the revised completion date of the project as agreed with CHBE was September 2020.

Activity	Budget
Stage 1 Development •□□□□Investigation and design •□□□□Wetlands refurbishment •□□□□Upgrade existing treatment plant •□□□□First pivot irrigator •□□□□35 year consents	$4,500,176
Stage 2 Reservoirs and ephemeral stream relocation •□□□□Investigation and design •□□□□Reservoir construction •□□□□Wetland refurbishment •□□□□Ephemeral stream relocation	$5,473,927
Stage 3 Pumping and pipeworks •□□□□Investigation and design •□□□□Pumps and pipes	$2,694,257
Construction Budget Total	**$12,668,360**

December 2021 Update

Forecast Additional Costs	Low Estimate	High Estimate
CHBE Contract •□□□□Completing contracted works •□□□□Liner remediation & repairs •□□□□Legal costs for recoveries	$754,678	$1,244,678
Stage 3 Additional costs •□□□□Stage 2 Delays increasing Stage 3 construction costs	$518,409	$699,409

•□□□□Wet well/ pumping/supervision/ project management •□□□□Contingency		
Additional Budget requirement	$1,273,087	$1,944,087
Current Authority	**$12,668,360**	**$12,668,360**
Total Revised Project Cost	**$13,941,446**	**$14,612,446**

The contract with CHBE is under the umbrella of NZS3910 and as such allows for the principal (CDC) to complete the contract and seek reimbursement from the Contractor. Council intends to follow this process to seek to recover the cost of liner remediation and completing the contract works. Our legal costs to enforce this will not be able to be recovered.

Included in the additional budget are legal costs of $150,000 (low estimate) and $300,000 (high estimate) associated with the CHBE contract. These costs are unable to be capitalised, and will be treated as operating expenditure.

10. RATING IMPACT

Council will draw down debt to fund the completion of the reservoirs. From the 2022/23 financial year, the interest cost related to this borrowing will be funded through rates revenue. The impact of this on rates is estimated to be between 0.2% and 0.3% (low to high estimate). This will be included in the 2022/23 Annual Plan.

Legal costs will be treated as operating expenditure in the year they are incurred. These unbudgeted costs will be funded through the current year's forecast operating surplus. Any additional interest expense incurred in the current year will also be funded throught the forecast operating surplus.

While there will be no direct impact on rates from the legal fees and current year interest, there will be a decrease in council's reserves. Officers acknowledge a decrease in reserves may reduce the ability to contain rates in future years, but consider this the best approach to manage one-off / non-recurring operating expenditure.

11. CONSIDERATIONS

11.1 Climate change

The undertaking of reservoir construction is underpinned by the drive to reduce the environmental impact of wastewater. Council's long-term strategy is to remove all treated waste water discharges from waterways. This is a key project in achieving that outcome.

Furthermore the Waster Water Advisory group are considering ways to develop long term research into the uses of treated waste water at the Daleton site. If implemented this partnership with mana whenua, ESR, GWRC and key stakeholders will help build on existing research to better understand

the update, and natural treatment of disease causing bacteria through a range of native plant species.

11.2 Tāngata whenua

The request to approve budget for completion of the wastewater reservoirs does not have any specific impact on Tāngata Whenua. It is acknowledged that the temporary discharge of treated waste water into the unnamed stream, which feeds into the Maungatarere Stream is a matter of concern for local hapū. Council are working with hapū and greater Wellington Regional Council on this temporary discharge outfall.

11.3 Financial impact

The additional cost for completion and remediation of the lining will have a financial impact as outlined above. Council will seek to claim reimbursement for costs which CHBE would have otherwise been responsible for. Any funds received as part of this claim will be treated as an offset to the capital cost of the Reservoir Construction project, and reduce debt as appropriate.

11.4 Community Engagement requirements

While Council acknowledges there will be community interest in the reservoir construction project, and the issues surrounding the CHBE contract, there are no community engagement requirements as a direct result of this re-approval.

11.5 Risks

There are legal and financial risks in seeking compensation under the NZS3910 contract. Councils strategy around this claim is being developed, and is likely to remain confidential while proceedings are underway.

12. RECOMMENDATION

That the Council:

1. **Receives** the report
2. **Approves** the unbudgeted expenditure up to a maximum, $1,944,087 being $1,644,807 in capital and $300,000 in operating expenditure, to complete and remediate the new Daleton wastewater reservoirs.

NOTED

1. Elected members voiced their disappointment that Central Hawke's Bay Earthmovers (CHBE) had not heeded numerous contractual notices regarding work practices in, and around, the geomembrane liner. This ultimately led to CDC taking possession of the site on 31 August 2021.

2. Broken areas of the liner will need to be welded, and larger areas of the liner replaced.

3. The contract CDC has with CHBE is under NZS3910 and allows for the CDC to complete the contract and seek reimbursement from the contractor.

MOVED

That the Council:

1. **Receives** the report
2. **Approves** the unbudgeted expenditure up to a maximum, $1,944,087 being $1,644,807 in capital and $300,000 in operating expenditure, to complete and remediate the new Daleton wastewater reservoirs.

Cr D Williams / Cr S Cretney

CARRIED