

Wastewater Treatment Plant Upgrade Project Public reports from Committee and Council meetings from 2022



Infrastructure and Services Committee Meeting – Date Wednesday 2 February 2022

6.2 WASTEWATER AND SOLID WASTE

1. PURPOSE

For the committee to be informed of the Wastewater Treatment Plant's (WWTP's) operations and Solid Waste.

2. SIGNIFICANCE

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

3. WASTEWATER

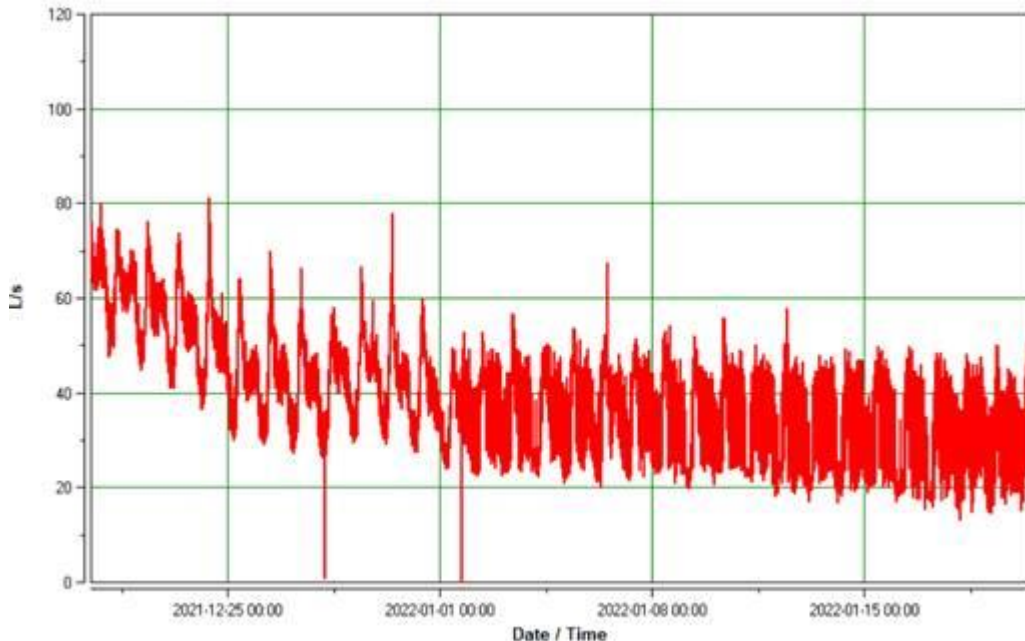
Operations

On the 31st of December 2021, discharge was transferred from the outfall to the pivot irrigator. The irrigator has been in operation 7 days a week, with just the last few nozzles turned off (due to ongoing works at the head of the new storage reservoirs) and the new power box which has been installed on the new reservoir bunding. We have now tied up the last nozzle to stop it rubbing against the box.



Photo showing the irrigator tracking and the bund of the new storage reservoirs.

Inflows from the end of December have been averaging between 28l/s to 45l/s, however we can only discharge 28 l/s from the irrigator, so the pond levels are at 100 percent full, leaving no capacity for an event should we have one.



Graph showing Inflows into the WWTP

New soil moisture sensors have been ordered as the supplier recommends replacement every 3 years, for accuracy of the sensors (the existing probes were installed in 2016).

The new sensors are an upgrade from the existing as two sensors are installed at each location at 100mm and 300mm depths. The 100mm sensor shows when soil moisture levels reach field capacity (saturation point). This allows for calculation of soil water deficit i.e. how many mm can be applied until the saturation point is reached. The 300mm sensor checks for over watering – if the soil is reaching saturation point at 300mm then too much water is being applied. This will allow better management of the irrigation field.

Dissolved Oxygen levels in the ponds have been good. New probes have been ordered due to the age of the existing probes (the suppliers recommend replacement every 3 years).

Projects

Sludge Extraction

Costs were received from Parklink for the mechanical removal of the sludge in all 3 ponds and the main channel of the wetlands. There is also an option to complete the work over 3 financial years. Due to the cost, we will go out to

the market to gain some comparative quotes / and see if there are any other options of removal.

Ordinary Council Meeting – Date Wednesday 9 February 2022

6. CAPITAL EXPENDITURE

Capital expenditure during the six months to 31 December was \$3.4 million.

The LTP approved in June 2021 provided for capital expenditure of \$6,826,000 in the first year of the Plan (2021/22). Additionally, the LTP anticipated a carry-forward of \$7,003,000 of unspent capital expenditure from 2020/21. However, year-end reconciliation reduces the carry-forward by \$176,000.

Therefore, the capital budget for the 2021/22 year is \$13,653,000.

The following table identifies the key areas of this spend over the year and the amount spent to 31 December. Some planned areas reflect funding accumulated over the past few years (animal pound, district plan review), or is activity scheduled over recent years or to be done over the next few years (WWTP, relocation of the operations yard). Other activity reflects seasonal scheduling and progress on contracts (roading, 3 Waters Stimulus, other water supply and wastewater projects, parks and reserves).

Although our % spend of planned spend is currently low, we do expect to be able to complete most of the capital programme during the year. We are working through the capex budgets, including carryforwards, as part of the 2022/23 annual plan process to determine which of the projects are unlikely to be achieved this year.

Capital Expenditure

Period to 31 December 2021	Planned	Spend	% of Planned
Roading	2,827,094	675,397	24%
3 Waters stimulus funded	3,554,452	848,500	24%
Wastewater Development	1,918,200	1,090,415	57%
Other Water Supply projects	958,000	198,072	21%
Other Wastewater projects	30,000	27,924	93%
Stormwater projects	363,750	-	0%
Review of the District Plan (CDC share)	710,000	178,396	25%
Replacement of Animal Pound	370,000	1,800	0%
Relocation of the Operations Yard	397,533	5,785	1%
Parks and Reserves	581,300	190,438	33%
Event Centre	110,452	9,011	8%
Carrington headwaters (intake development)	411,300	-	0%
Administration systems and equipment	399,766	75,199	19%
Mobile & Portable Equipment	87,950	46,454	53%
Motor Vehicles	320,000	27,809	9%
Other capital spend projects	265,884	19,799	7%
Total Capital Expenditure	13,652,831	3,394,998	25%

Ordinary Council Meeting – Date Wednesday 30 March 2022

12. MAJOR PROJECT UPDATES

WWTP

Remediation work on the worst geomembrane liner damage and excess anchor trench soil has been underway since December. A high-level visual mapping and recording of damage was undertaken on the reservoir ponds by the engineers, Tonkin and Taylor, and was sent to an Australian company ExcelPlas to consider and review the impacts on the durability of the geomembrane liner.

The ExcelPlas report was received late in February 2022 and is currently with Tonkin and Taylor, our Engineer, to consider the durability implications and more importantly what remedial repairs need to be undertaken as a result. We hope to have a further verbal update at the Council meeting.

During this time a more detailed mapping of damage has been underway, while we continue on with Stage 3 works, being pipes, pumps and connections.

Due to the excess of wastewater being received at our existing plant, officers have been considering how, and when the new storage ponds can be brought into service. Clearly the reservoirs need to be structurally sound, waterproof and available for use. From a practical perspective we are planning to have Pond 1 available to bring into service during the month of April.

However, the use of one or more of the ponds must not undermine any claim Council may have against Central Hawkes Bay Earthmovers (CHBE) for damage and defects, for which CHBE were liable for at the time Council took possession of site. Council have sought legal advice on this matter and will not bring the ponds into service if it limits our potential claim on CHBE.

Practical Completion of Stage 2 works, for which CHBE remain responsible, is targeted for June or July 2022, depending on weather. Practical Completion of the overall Waste Water Treatment Pond Project is currently targeted for June 2023.

Infrastructure and Services Committee Meeting – Date Wednesday 6 April 2022

6.2 UPDATE ON THE WASTEWATER TREATMENT PLANT UPGRADE

1. PURPOSE

For the Council 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

The recent extreme rainfall event saw the site receiving higher than normal groundwater flows pushing completion timelines out by 2 months. This was a difficult time for the construction teams as critical path work could not be

done while the site was dewatered (Figure 1), consequences assessed, and remedial actions undertaken. The loss of a productive summer period and COVID challenges will result in pushing sections of the work into winter reducing suitable work windows and could stretch the estimated project completion date out to as late as June 2023.



Figure 1 - 21 February 22 – photo taken 10 days after extreme rainfall

4. LINER REPAIR STRATEGY UPDATE

Scratches in all three reservoirs have now undergone a manual, slow, but more detailed survey and recoding using a digital optical micrometer.

Representative samples of liner were sent to the Australian accredited laboratory a leading independent geomembrane testing facility and have now been tested. The test results and report on the impact on short term strength and liner durability and options analysis are unlikely to be finalised before this meeting.

If there's a requirement for additional conductive geomembrane liner to be brought into the country the timeframe for repairs is unlikely to be determined accurately. Liner replacement is a technical judgement balancing ease of laying (reducing cost) and coverage of the scratches to gain a standard installation warranty.

Meanwhile, the tears, rips and major scratches have been patched on two reservoirs, providing functional reservoirs that can receive wastewater from the existing treatment ponds, once all dam safety protocols have been completed (final construction fill, GW monitoring wells, anchor blocks, settlement markers).

Having functional reservoirs allows for the finalisation of construction works and provides time for the engineering and geomembrane experts to develop

a repair strategy that is technically and contractually sound. Appropriate repairs can be undertaken on a single reservoir at a time and is not time bound by consenting requirements. Latest photo of site 10 March 22 (Figure 2).



Figure 2 - Overview taken 10 March 2022

5. **STAGE 3 – PIPELINES AND PUMPS**

Pump Station headworks (Figure 3) post flooding during extreme rainfall event where the culmination of uncompleted construction works resulted in the pump station floor being flooded. Once cleaned up there was minimal damage, some equipment needed to be checked by the supplier (which has been completed) and we are currently waiting on the supplier's assessment of the pumps which we anticipate will only be bearing replacement.



Figure 3 – Headworks

Mangatarere Stream Diffuser Outfall

After many months of delays and construction planning the diffuser construction has finally commenced (Figures 4 & 5). The construction team has picked the month of March in which the Met Service predicted will have below normal rainfall. Work on the diffuser outfall should take 4-8 weeks to complete but it is weather and COVID dependent.



Figure 4 – Stream diffuser location



Figure 5 – Stream diffuser work commenced 16th March 2022

6. CONSIDERATIONS

6.1 Climate change

N/A

6.2 Tāngata whenua

N/A

6.3 Community Engagement requirements

N/A

6.4 Risks

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

6.5 Financial impacts

Outlined below is a forecast countdown of the additional costs required for the completion of the wastewater reservoirs post approval from Council on 15 December 2021 for an additional budget of \$1,273,087 - \$1,944,087.



Summary of critical path items used for financial forecasting

- 1 Dec-21 \$1,824,087 Wetwells - power trench to the transformer
- 2 Jan-22 \$1,654,087 Minor electrical inside UV Container (extension, VSD's and switchboard installed)
- 3 Feb-22 \$1,654,087 Install Valves into outlet Valve chambers (Check for fit)
- 4 Feb-22 \$1,654,087 Clean out Wetwell's at wetlands ready for pump install in Feb
- 5 Feb-22 \$1,654,087 Reservoirs - earthworks (Build up the top of embankments, placement of topsoil)
- 6 Feb-22 \$1,654,087 Concrete Reservoirs Spillways
- 7 Feb-22 \$1,654,087 Valve chamber - Completion of pressure testing and Backfill pipework.
- 8 Feb-22 \$1,654,087 Reservoirs - Viking patching holes and Tears
- 9 Feb-22 \$1,654,087 Manual Scratch survey
- 10 Feb-22 \$1,654,087 Install wet-well pumps and headworks (NTC25)
- 11 Feb-22 \$1,654,087 Reservoirs - install 300DN flap valves and cables on cleaning outlets

12	Feb-22	\$1,654,087	<u>Reservoirs</u> - pressure Test Tee bar decant floating pipework for water tightness.
13	Feb-22	\$1,454,087	<u>Reservoirs</u> - Ability to fill Reservoirs 1 via existing pivot Design flow 44L/s (following Dam safety commissioning guidelines* T&T to supply checklist)
14	Mar-22	\$1,454,087	<u>Scratch test</u> results from Australia
15	Mar-22	\$1,354,087	<u>Reservoirs</u> - intakes (Concrete anchor blocks and SS intake pipes)
16	Mar-22	\$1,304,087	O&S Commissioning
17	Apr-22	\$1,304,087	Ability to fill reservoirs via new pumps and pipework (Not building consent dependent, checked with David Bulmer)
18	Jun-22	\$1,204,087	River Diffuser**
19	Jun-22	\$1,054,087	Part #1 installation of <u>Gravity outfall</u> (From River to Gallon Road MH4)
20	Jun-22	\$504,087	Completion of Scratch repair solution
21	Jun-22	\$404,087	Final Topsoiling and grassing Reservoirs Crest edges (Post Scratch repair solution)
22	Jun-22	\$404,087	Reservoirs Practical Completion application
23	Jun-22	\$404,087	Reservoirs Building consent signoff
24	Jun-22	\$404,087	Ability to fill Reservoirs 2 and 3
25	Oct-22	\$254,087	Part #2 - Gravity outfall (Gallon Road to Reservoirs)**
26	Oct-22	\$54,087	Connection from Reservoirs 2 and 3 to pump station
27	Nov-22	\$0	Ability for new reservoirs to discharge to the river at the new location
			Consent Expires
	Apr-23		Must have outfall pipeline completed if need to discharge to river

Diff

\$1,273,087

\$1,944,087

Will attempt to lay in winter but ground water conditions are a factor for the successful completion of this

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Resource consent requirements

CDC's current discharge consent to the unnamed stream (leading to the Mangatāre Stream) expires in January 2023. At this time point, Council will require significant alternative storage (i.e. the reservoirs), irrigation, and if needed, discharge facilities available - or prior to this date, apply for a new resource consent to continue to discharge into the unnamed stream. The issuing of a new resource consent to discharge is not within the control of CDC and nor is it something that could be guaranteed to occur.

Working on the January 2023 date needs to allow for construction windows for all work associated with the reservoirs to be completed which may be unavailable through the winter months. Following the filling of the reservoirs with treated wastewater CDC must undertake a minimum of 12

months of testing under operational conditions, in order to establish the appropriate median limits of water quality.

Not having the availability of the current discharge is the paramount driver in seeing the completion of the reservoirs.

7. RECOMMENDATION

That the Committee:

1. **Receives** the report.

Ordinary Council Meeting – Date Wednesday 25 May 2022

9. MAJOR PROJECTS

WWTP Project

Council has received the remedial repair methodology for the damaged liner from Tonkin & Taylor. Following receipt of this report, contractors have completed scratch repairs in Reservoir One – which had suffered the least amount of damage from CHB Earthworks actions. Completion of the repairs to Reservoir One has allowed the project team to begin the initial pond filling process to settle the liner, test for leaks and provide additional storage capacity for wastewater over the winter period.

The initial filling of the pump will be achieved through a temporary setup and the construction of the permanent pipework and pumping systems are still underway – which includes the outlet for Reservoir One. Reservoir One storage capacity is 60,000 CuM, or approximately the same capacity of our existing three wastewater storage ponds.

Repairs on Reservoirs Two and Three have been estimated at approximately 6-8 weeks of work, and around 10-12 weeks of time (given weather delays). Officers are considering deferral options for remediation of Reservoirs Two and Three. This is because Reservoir One is now operational, and the winter rain, higher humidity and colder temperatures will make repairs difficult to complete over the next few months. If deferral of these repairs will not impact the project critical path, and contractors are available to complete the work later in the year, Officers are likely to delay the repairs. We anticipate this decision will be cost neutral to Council, as the cost of repairs will be claimed against CHB Earthworks.

The full Tonkin & Taylor report will be tabled at the Infrastructure and Services Committee on 1st June.

Progress of Stage 3, which is the construction of pipes, pumps, and connections is proceeding well. The recent spate of dry weather has allowed the team to construct and install the outfall diffuser on the Mangatāre River and remediate the site and stop-bank. Earthworks contractors are laying pipe from the diffuser back towards the WWTP Reservoirs and have made good progress to date. The remaining section runs parallel to the existing State Highway and will require a Traffic Management Plan. Part of managing inclement weather risks, work on the outfall pipe will stop during winter and recommence November 2022.

Now Officers have the repair methodology for the liner, we are able to refresh our forecast for the project and update Stage 2 and Stage 3 estimated costs. Because of the delays that have occurred, and the changes following Council taking control of site from CHB Earthworks, managing budgets according to the original Staged programme is becoming difficult and less meaningful. An example of this is delays occurring from the completion of Stage 2 (the CHB Earthworks contract) often lead to additional costs being incurred in

Stage 3. We are working through if these additional costs may be recovered from the Stage 2 contractor.

Officers will continue to report on the overall programme budget as agreed with Council, and show the actual costs for each stage, as shown below.

The forecast reflects our current estimate of the project outcome, including the cost of remedial repair of the three reservoir liners.

Financial Forecast

Project Name	Total Cost of Project including forecast	Total Project Budget
Stages One and Two	8,080,125	
Stage Three	5,135,175	
Contingency	200,000	
Total	14,310,557	14,612,447

We anticipate the completion of Stage 2 could be in the next few months if liner repairs are undertaken over the next few months, but may be pushed out until summer if this can be done without impact the project critical path. Once Stage 2 is completed we will begin the recovery process against CHB Earthworks Limited.

Practical completion of the overall project including Stage 3 is anticipated to be mid 2023.

The WWTP Advisory group is working through the activity and plant species recommendation for the additional 21ha of land available for irrigation on the Dalefield Site. The Advisory Group will meet on 10th June to make a recommendation to Council which will be presented to Ordinary Council on 29th June for a final decision.

Infrastructure and Services Committee Meeting – Date Wednesday 1 June 2022

6.2 UPDATE ON THE WASTEWATER TREATMENT RESERVOIR PROJECT

1. PURPOSE

For the Committee to be updated on progress with the Wastewater Treatment Reservoir project.

2. SIGNIFICANCE

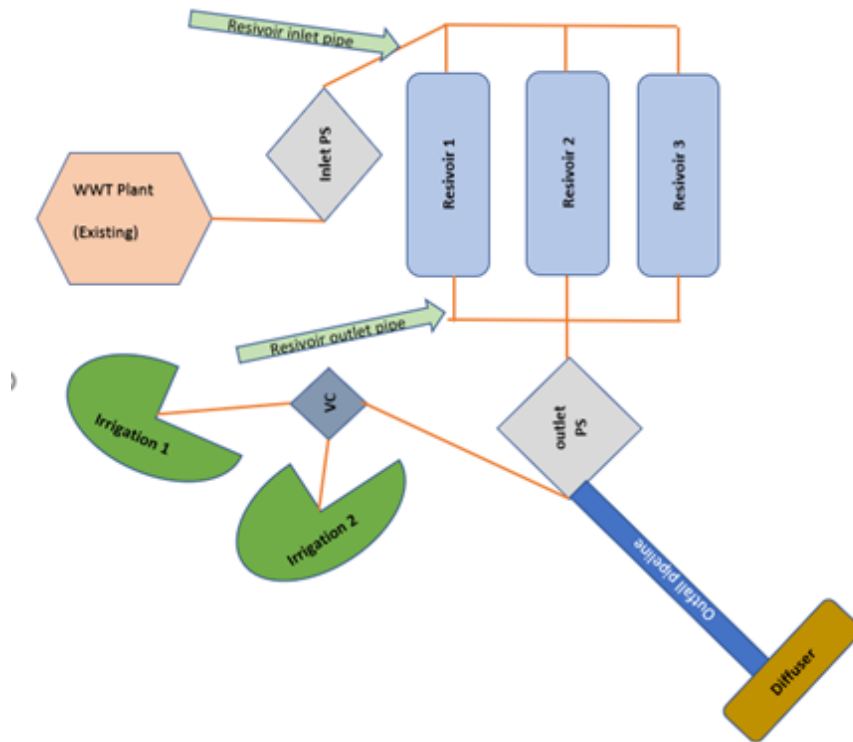
The matters for decision in this report are not considered to be of significance under the Significance and Engagement Policy.

3. DISCUSSION

3.1 Programme

A high level diagram of the new wastewater reservoirs is shown below. Stage One (complete) was the design and detailed plans. Stage Two

is the construction of the reservoirs. Stage Three is construction of the pipework, pumps and outfall, along with the expansion over the second irrigation area. Once complete, testing and commissioning will occur before the new reservoirs are passed over to the Operations team.



Outlined below are the key milestones and the percentage of progress for the three reservoirs.

	Milestones	Progress	Completion
	Reservoir 1		
Stage 2	Construction	100%	
Stage 3	Inlet Connection	90%	30/07/2022
Stage 3	Outlet Connection	60%	30/09/2022
	Reservoir 2		
Stage 2	Construction	97%	30/11/2022
Stage 3	Inlet Connection	90%	30/11/2022
Stage 3	Outlet Connection	60%	30/04/2023
	Reservoir 3		
Stage 2	Construction	97%	30/11/2022
Stage 3	Inlet Connection	90%	30/11/2022
Stage 3	Outlet Connection	60%	30/04/2023
Stage 3	Inlet Pump Station	90%	30/06/2022
Stage 3	Outlet Pump Station	80%	30/06/2022
Stage 3	Valve Chamber	99%	30/09/2022

Stage 3	Outfall Pipeline	30%	30/06/2023
Stage 3	Diffuser	100%	

3.2 Liner Repair Strategy Update

Remedial work began after the Tonkin and Taylor's (T&T's) Engineer's report was received – *"Carterton WWTP Reservoir Construction Contract 02/2018 – Assessment of Defect on Reservoir HDPE Liner"* (**Attachment 1**).

Work included repairing liners where scratches were more than 10 percent of the total liner depth. When repairs to reservoir one were completed, this allowed for the filling of reservoir one to commence (9 May 2022). This marked a significant milestone in the project (*see figure 1 – Reservoir 1 Filling*).

In order to ensure dam safety requirements are met, a staged approach to fill each reservoir is being taken. Reservoir filling is weather dependent as the colder mornings are needed to ensure the liner is not wrinkled once the filling begins. Repairs to reservoirs two and three will begin in June 2022.



Figure 1 – Reservoir Filling



Figure 2 – Reservoir's over view.

3.2 Stage 3 – Pipelines and Pumps

The Pump Station headworks mechanical installation was completed and electrical work 90% completed (*Figure 3 - Headworks*).



Figure 3 – Headworks

3.3 Mangatāre Stream Diffuser Outfall

The construction of the Diffuser is complete (*Figure 4 – Stream Diffuser and outfall pipeline*). The team has started with the construction of the Outfall pipeline between the Diffuser and the Pump station. The team is making good progress by utilising the mild weather conditions through early May 2022.



Figure 4 – Stream diffuser location

3.4 Financial impacts

Now we have the repair methodology for the liner, we have refreshed our cost forecast for the overall project. This is included below.

The forecast reflects our current estimate of the project outcome, including the cost of remedial repair of the three reservoir liners. The forecast is net of anticipated recoveries from CHB Earthworks Ltd.

Financial Forecast

Project Name	Total Cost of Project including forecast	Total Project Budget
Stages One and Two	8,080,125	
Stage Three	5,135,175	
Contingency	200,000	

Total	14,310,557	14,612,447
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As the programme of work progresses CDC will continue to monitor the forecast and report regularly to Council, especially over the winter period. The recovery process against CHB Earthworks Limited will begin once remedial repairs have been undertaken and Stage 2 reaches practical completion.

Further information and detail on Stage 3 costs will be presented at the 29 June 2022 Ordinary Council meeting.

3.5 Resource Consent

Historical compliance

Recent compliance reports have indicated a number of non-compliances for both years. The non-compliances related to late documentation and missing data.

- The issues identified have been remedied with an improved data collection process (related to implementation of the Water Outlook programme), and reminders for dates.
- In addition, a new control system is planned with the storage reservoirs.

Future Risks

The consent condition allowing the regular winter discharge to stream from the existing weir by the UV container expires on 31 December 2022 and is not able to be extended. After this time this weir can only be used in emergency situations, with the transfer of the discharge to stream from the new diffuser location (*shown in Figure 4 above*).

Once this discharge is active, the operating requirements change significantly, with discharges to Mangatāre stream over 3x median flow, from the current 0.5x median flow. This will be managed with the new storage reservoirs and land discharge areas.

Risks for compliance are:

- Bringing sufficient land discharge areas into service in a timely manner
- Repairs to the storage reservoirs being delayed
- Water quality from the new reservoirs (Programme of twelve months testing will begin on 1 January 2023)

3.6 Community Engagement – Wastewater Treatment Advisory Group

A requirement of the consent is at least an annual meeting of the Wastewater Treatment Advisory group. This is a group of interested community groups, Iwi, public health, and Council members.

There have been four meetings over a nine month period to discuss the next area for irrigation and options. In the last two meetings a multi-criteria assessment (MCA) tool was developed to assist the group to be able to compare different options and provide a balanced weighting of the different

views of the group. At the last meeting, it was agreed to use the tool to consider the following options:

1. Cut and Carry grass harvesting, as per the original concept
2. Cut and Carry pole nursery, similar to Akura nursery
3. Short rotation coppice willow plantation

Information has been provided to all advisory group members on the three options for them to evaluate and complete the MCA. A consolidation of the individual advisory group MCA assessments will be prepared and presented at the next advisory group meeting on the 10 June 2022 at the Carterton Events Centre. The outcome of this meeting will provide a recommended option for the additional irrigation area.

As these conversations have progressed there have been differing opinions between some group members. Notably, questions have been raised about the Greater Wellington Regional Council proposal for a poplar and willow pole nursery from proponents who favour alternative nursery options. Because of criticism and perceived conflicts of interest, Greater Wellington Regional Council has decided not to participate further in the MCA decision. GWRC will continue to provide advice to the advisory group including research and technical data where this is available.

4. RECOMMENDATION

That the Committee:

1. **Receives** the report.

Ordinary Council Meeting – Date Wednesday 29 June 2022

7.2 EXPANSION OF LAND BASED DISCHARGE OF TREATED WASTEWATER AT DALETON FARM

1. PURPOSE

For Council to decide how best to expand land-based discharge of treated wastewater on the next 21-hectare area at Daleton Farm.

2. BACKGROUND

Carterton District Council (CDC) has adopted a long-term strategy to remove discharges of treated wastewater into waterways. At present approximately 20-hectares of land at Daleton Farm is utilised for land-based discharge of treated wastewater, via a pivot irrigator onto grass.

Officers calculate the long-term strategy will require approximately 120-150 hectares (effective) of land being available for deficit irrigation year-round to achieve our goal of removing treated wastewater discharges to waterways. The addition of this second irrigation area will double the existing land-based discharge to approximately 40-hectares.

As the new storage reservoirs project continues, construction of the pipe and pump work for the second land-based discharge area becomes crucial. The area is approximately 21-hectares but could be up to 25-hectares. The actual effective area (the area which will be irrigated) will depend on the plant species chosen, the irrigation methodology, set-backs, tracks and working areas (sheds etc.) An important element of this decision is the plant species that will be planted on the area.

The WWTP Advisory Group was asked to consider which plant species would be the best for this second land-based irrigation area.

3. **WWTP ADVISORY GROUP DELIBERATIONS**

The Waste Water Treatment Ponds Advisory Group (the “Advisory Group”) is made up of eight members. Each member has one vote but is often represented by more than one person at meetings. The Advisory Group members are:

Member	Represented by:
•Carterton District Council	Cr S Cretney (Chair)
•Ngāti Kahungunu ki Wairarapa	(Rawiri Smith)
•Ngāti Kahukuraāwhitia	(Joel Ngātueru)
•Rangitāne o Wairarapa	(Horipo Rimene)
•Mangatāre Restoration Society	(Ray Craig)
•Sustainable Wairarapa Inc	(Don Bell)
•Wairarapa DHB Performance)	(Sandra Williams, Mgr Planning and
•Greater Wellington Regional Council	(David Boone, Manager Land Management)

The Advisory Group was asked to make a recommendation to Council on the best plant species for the second irrigation area on Daleton Farm. The Group was directed to ignore economics, set-up and ongoing operational costs amongst other factors, as these would be considered by CDC Elected Members once a recommendation on plant species was received. The primary focus of the Advisory Group was on plant species through a range of criteria being:

1. Educational and Knowledge Outcomes
2. Environmental Outcomes
3. Cultural and Social Outcomes
4. Operational and Technical Outcomes

Advisory Group members needed a way to ensure members views were expressed, heard and considered as part of the decision-making process. This process also needed to help quantify aspects of the decision that were qualitative, or difficult to measure.

The Advisory Group agreed that a Multi-Criteria Analysis decision tool (MCA) was an acceptable method to progress the plant species decision. An MCA tool uses a numerical methodology to score various elements of the decision, and then sums these elements to rate the various options. In the case of this plant species decision, all four primary focus areas were evenly weighted, to avoid any one area skewing the final results.

Once the Advisory Group agreed the MCA elements and weightings, the next decision was to decide plant species options to score using the tool. A number of ideas were promoted but ultimately three plant species were taken forward for evaluation. These were:

1. Grass
2. Poplar & Willow Pole Nursery
3. Coppice Willow

Supporting data was provided to Advisory Group members to assist them with their evaluations. Even after agreeing the evaluation process, plant species options, and what supporting data would be provided, completing the MCA evaluation process was challenging.

All supporting data on the three options is included in the additional information pack supplementing this report as an attachment in **Appendix 1**.

4. MCA SCORING

A total of six evaluations were received from the eight Advisory Group members. Greater Wellington Regional Council (GWRC) withdrew from the process for a variety of reasons however they remain very committed to a Pole Nursery option. The GWRC letter is included in the additional information pack supplementing this report in Appendix 1.

The six evaluations were summarised (averaged) into the scores as shown in Table 1 below. The detailed scoring is provided as an attachment in **Appendix 2**.

Overall, the scoring indicated Coppice Willow was the preferred option with the Pole Nursery second and the Grass option last. The top two scores were very close indeed, with just 2.2 points (out of a possible 100) separating Coppice Willow from the Pole Nursery.

In summary options were rated as follows:

Table 1 Summary MCA Results (n=6)

	Grass	Pole Nursery	Coppice Willow
<i>Average Score (max = 100)</i>	55.8	65.4	67.6
Rated Top	1	2	3
Rated Middle	2	3	1
Rated Lowest	3	1	2

The summary results were reviewed by the Advisory Group, who considered what, if any, plant species recommendation should be made to Council for the second irrigation area on Dalefield Farm.

After some discussion the Advisory Group members recommended that Council makes the decision on the plant species used.

5. OPTIONS FOR LAND-BASED DISCHARGE ON SECOND IRRIGATION AREA

The closeness of the top two results suggests that the Advisory Group was split in its view regarding the best plant species for the second irrigation area. It was clear however, that an expansion of additional pivot irrigation over grass was not supported by the Advisory Group.

Regardless of the decision on the plant species for the second land-based discharge area, a further 80-110ha of land will still be required to achieve the goal of removing all wastewater discharges to waterways. The decision on this 21-hectare site will not pre-determine or limit alternatives from being considered on future land-based irrigation locations.

Four groups identified an interest in using the treated wastewater:

1. GWRC is interested in the 21-hectare site for a Poplar and Willow Pole Nursery. They have undertaken feasibility studies on the soil and site and have contributed to some of the site preparation. GWRC's proposal for a Pole Nursery is the most developed option at this time. Pipe and pump designs for a pole nursery would be able to be started imminently.
2. Ngāti Kahukuraāwhitia representatives identified they have up to 46 hectares of whenua, and may be interested in a partnership with CDC using treated wastewater for crops or a native nursery. The hapū have no firm plans for a project or a change in land use on their whenua at this time, however this should not be considered a barrier to development. Employment for iwi is an important consideration. The hapū fully support Council's strategy of removing all discharges of treated wastewater into the waterways, and wish Council to explore all options to speed this process up as much as possible.
3. Ra Smith (Hurunui-o-Rangi Marae / Ngāti Kahungunu ki Wairarapa) favours use of natives for the management of treated wastewater. A number of research studies have shown evidence that manuka and kanuka crops have the ability to reduce pathogens in wastewater as well as also reducing nutrient loads, such as nitrogen, into the soil structure. The second 21-hectare site is too large to be used for an extension of this research. Officers have agreed with a request to provide approximately five hectares of land for a manuka / kanuka research trial in partnership with ESR and Ra Smith. This is expected to be four hectares under irrigation and one hectare without irrigation as a control site.

Sustainable Wairarapa Inc and the Mangatārere Restoration Society favour coppice willow, with a view this would maximise uptake of water. Overseas research suggests that an efficient coppice willow operation has the potential to be net carbon zero. Discussions with Sustainable Wairarapa indicate that a site of 21-hectares is too large to be effectively utilised at this time.

Considering all of the above, the most viable path forward is utilising one of the top two plant species options identified by the Advisory Group. Council will need to consider the Advisory Group MCA results, as well as economic, capital investment, end use markets and other factors when making this decision, which were outside of the remit of the Advisory Group.

5.1 Coppice Willow

Councillors will already be aware of the ability of Willow trees to absorb water. Willow has been used in waterways for decades to stabilise banks and water courses, with great success. The less well heralded consequences of doing this have become apparent over time and include willows' ability to re-root and spread rapidly; root matting clogging waterways; excessive flooding; crowding out of native species; and significant reductions in water flowing in the waterways.

Coppice willow is designed to leverage the water absorption elements of the plant away from water courses, while coppicing the rapid branch growth for use as either fuel or potentially cattle feed. In short, this option potentially offers all of the benefits of willow, without the adverse environmental impacts.

Irrigation requirements for coppice willow would be either spray gun, or grid-based trickle irrigation. A new pivot irrigation system is not required, or proposed for coppice willow.

Research trials referenced in the supporting data were based in Ireland and were on a large scale of approximately 1,000 hectares. The Irish trials also benefited from a market for the baled coppice fuel. The maximum size of CDC's coppice willow operation would be 150-hectares if all existing and any future land purchases are used into this plant species. It is probable that a minimum viable commercial operation would also require coppice willow production at Masterton and South Wairarapa District Councils wastewater treatment plants.

A coppice willow trial has been undertaken by Masterton District Council at Homebush. The small trial site was approximately 0.2ha. The trial returned mixed results. The trial also identified new challenges with willow root matting restricting wastewater penetrating deeper into the soil, which in turn reduced the amount of treated wastewater that could be discharged onto land. The Masterton District Council trial utilised flood irrigation, whereas the CDC site will use deficit irrigation. Masterton District Council found the uptake of treated wastewater by coppice willow was less than that of grass on this trial site, and the trial has been discontinued.

Growing coppice willow for bio-fuel is predicated on a functioning commercial market for the product. While a market for baled coppice willow may exist, it is not clear at what price or volume the market operates. These market specifics require further investigation to ensure any production from the site is able to be sold at a reasonable price and at the volumes anticipated. At the time of consideration by the Advisory Group, this research had not been able to be completed.

Suggestions that coppice willow fuel could replace coal fired boilers and utilise the recently announced Government subsidy scheme have not been objectively analysed to determine if this is a viable alternative in boiler systems.

Council acknowledges the work Sustainable Wairarapa and the Mangatāre Restoration Society groups do on behalf of the community. Both groups are

volunteer based and do not have the funding or resources to undertake a commercial operation of this scale at this time. It is anticipated Council will be required to fund any capital set-up costs, and ongoing operational costs including employing staff to operate the site outside of volunteer hours. These costs have not yet been reliably determined and would be in addition to the existing WWTP construction costs.

5.2 Pole Nursery

The pole nursery was scored second of the three options by the Advisory Group behind coppice willow. The support for a pole nursery was tempered with concerns around building an exotic nursery, especially a poplar and willow nursery. This was due to the sometimes-serious adverse effects exotic species have had, and continue to have, on our environment and waterways.

Acknowledging this, GWRC still have requirements for thousands of poplar and willow poles annually in their high-country erosion control programme. Poplar and willow poles are considered the most effective means of managing erosion and providing for grazing simultaneously. Alongside this, the GWRC Akura pole nursery in Masterton has a limited lifespan on the existing site, and GWRC is seeking alternative locations for this nursery.

Officers have been working with GWRC investigating the second 21-hectare irrigation area at Daleton Farm. Soil surveys indicate the land is suitable for a pole nursery and in many ways better than the Akura nursery site. The access to consistent volumes of treated wastewater is an obvious advantage for a pole nursery.

Economically the pole nursery option requires the least amount of capital investment on behalf of CDC. The WWTP construction project will build the pipe and pumps required to supply treated wastewater to the proposed nursery. The reticulation of the irrigation (probably grid type trickle irrigation) is expected to be funded by the nursery operator. As with coppice willow, a new pivot irrigation system is not required, or proposed for this option.

A pole nursery with GWRC as a partner (either exclusively or in partnership with tāngata whenua) removes the requirement to find markets to sell the poles produced. Selling products grown with treated wastewater can be an issue, especially if it is a feed product as is the case with the grass irrigation option.

Operationally the involvement of CDC is open to negotiation. We could outsource the entire nursery operation to another party or parties, or build a partnership with Ngāti Kahukuraāwhitia and GWRC to participate in the development of this nursery opportunity. A partnership would provide options for training, education, employment, research and further expansion with natives, when land became available.

6. PREFERRED OPTION

Both the coppice willow option and the proposed pole nursery will utilise treated wastewater and continue to reduce the amount of discharge to waterways. Efficiently using the second 21-hectare site on Daleton Farm will double the amount of land-based discharge available to CDC. The differences between the two plant species in terms of water absorption are not considered materially significant at this stage of our strategy. Consequently, other factors need to be considered when making this decision.

Practically speaking a pole nursery is the preferred option for the second irrigation area because:

- It is the most developed option, and available for implementation now;
- It can be implemented with no capital input, if required;
- It can be run without involvement or funding from CDC;
- The product grown has an established market (GWRC High-Country erosion programme);
- It has less implementation risk as pole nurseries have been tried and tested elsewhere;

The preferred implementation model of a pole nursery is a partnership between Ngāti Kahukuraāwhitia, Greater Wellington Regional Council and CDC. It is envisaged this partnership would provide employment, training and knowledge to the hapū, poles to GWRC, and secure land-based discharge for CDC. There remains a potential for research under this partnership, however this may not be of interest given the exotic, non-native species being propagated.

In addition to this, officers have committed five hectares of land at Daleton Farm for a trial site to research the potential for native manuka and kanuka to uptake and breakdown pathogens in wastewater. This research is in partnership with Ra Smith and ESR.

Together these two options provide the best path forward to continue the development of land-based discharges of treated wastewater. Officers note this decision does not limit alternative plant species options on additional irrigation areas as they become available.

7. RECOMMENDATION

That the Council:

1. **Receives** the report.
2. **Delegates** authority to the CEO to enter into a partnership with Ngāti Kahukuraāwhitia and Greater Wellington Regional Council to develop a pole nursery on the second irrigation area of approximately 21-hectares at Daleton Farm Waste Water Treatment Plant.

Attachments: 1. **Supplementary Documents (under separate cover)**

https://carterton.infocouncil.biz/Open/2022/06/CO_20220629_ATT_2180_EXCLUDED.HTM#PDF3_ATTACHMENT_13625_1

2. **Consolidated MCA Scoring** [↗](#)

https://carterton.infocouncil.biz/Open/2022/06/CO_20220629_AGN_2180_AT.htm#PDF3_Attachment_13625_2

Chief Executive Report

4. MAJOR PROJECT UPDATES

WWTP

Resource consent

In January 2018, Carterton District Council commenced operation of the new discharge consent from the Wastewater Treatment Plant. This suite of consents, nine in total covers discharges to land, air, water, and seepage to groundwater.

As part of the consent, there was a short-term consent, Schedule C (34721) allowing the continued existing operation for discharge to water through UV disinfection to the unnamed tributary near the corner of Lincoln and Dalefield Road. This consent allowed a 5-year period for the construction of the storage reservoirs, the discharge outfall, new irrigation area and expires on 17th January 2023. This consent legally cannot be extended. This consent transitions to a new consent Schedule G (34371) for the discharge through the new diffuser by SH2 bridge via the storage reservoirs and Schedule CA (34729) to use the weir only in an emergency condition, see figure below.



The expiry of this consent places more restrictions on the management of the Wastewater Treatment Plant and on the discharges to water, necessitating either more irrigation to land or storage in the new reservoirs.

The expiring consent Schedule C conditions include:

- No discharge to water from January to March except during an emergency.

- Discharge to water April to December at above half median flow in Mangatārerere Stream.

The new consent Schedule G conditions via the new diffuser include:

- No restrictions for time of year, so allowing easier management for reoccurrence of February 2022, without emergency discharge conditions.
- Discharge to water at above 3 x median flow in Mangatārerere Stream at 30:1 dilution.
- Discharge to water at above 2 x median flow in Mangatārerere Stream at 50:1 dilution.
- Discharge to water below 2 x median flow under emergency conditions.
- 12 months of sampling to finalise median values for discharge.

New consent Schedule CA conditions also include:

- No discharge to water January to March except emergency situations.
- Maximum of 2 times per year for up to 2 weeks.
- Daily sampling to discharge

Our approach to managing this risk is as follows:

- We anticipate having the ability to discharge through irrigation from Jan 2023 to Apr 2023 and potentially May 2023 and therefore not being required to discharge to stream.
- We are considering efficiencies to expedite the delivery of the outfall pipeline which will allow us to discharge to stream when required.
- Should the outfall pipeline be completed June 2023 as planned, then we are left with 2 months without the ability to discharge. We are optimistic that we would have sufficient storage capacity in the 3 reservoirs to carry us through this period.
- As a contingency and worst-case scenario, Officers may apply for a variation to Schedule CA for period between completion of outfall pipeline and expiry of consent.

The Outfall pipeline connecting the Outlet pump station to the Diffuser is the phase of the project that determines the critical path. As planned the construction of the outfall pipeline has been stopped due to the anticipated inclement weather during winter. This has been considered in the construction program and does not affect the overall project completion date.

	Milestones	Progress	Completion
	Reservoir 1		
Stage 2	Construction	100%	
Stage 3	Inlet Connection	90%	30/07/2022
Stage 3	Outlet Connection	60%	30/09/2022
	Reservoir 2		
Stage 2	Construction	97%	30/11/2022
Stage 3	Inlet Connection	90%	30/11/2022
Stage 3	Outlet Connection	60%	30/04/2023
	Reservoir 3		
Stage 2	Construction	97%	30/11/2022
Stage 3	Inlet Connection	90%	30/11/2022
Stage 3	Outlet Connection	60%	30/04/2023
Stage 3	Inlet Pump Station	91%	30/07/2022
Stage 3	Outlet Pump Station	95%	30/07/2022
Stage 3	Valve Chamber	99%	30/09/2022
Stage 3	Outfall Pipeline	30%	30/06/2023
Stage 3	Diffuser	100%	

Completion of the repairs to Reservoir One has allowed the project team to begin the initial pond filling process. The filling of Reservoir 1 has given us the opportunity to start Dam Commissioning procedures as advised by Tonkin & Taylor. The Dam commissioning procedures include the following:

- **Groundwater** - Piezo's and pumping monitoring
- **Outlet pipe** - Floating, anchor ropes, flap gates, valve chamber integrity
- **Reservoir liner** - no entrapped air, working gas vents, connections to concrete
- **Spillways** – formed and clear
- **Subsurface drainage** – flowing subsoil pipework
- **Dam embankments** - Settlement survey markers in place and surveyed.

Remedial repairs on reservoirs 2 & 3 are planned for November 2022 when weather conditions are more suitable.

7.3 2021/22 BUDGET CARRYFORWARDS

1. PURPOSE

For the Council to approve the proposed carry forward of capital expenditure and operating expenditure to 2022/23 for projects approved in 2021/22 and prior years that are yet to be completed.

2. SIGNIFICANCE

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

3. DISCUSSION

When the capital budgets for the Ten-Year Plan 2021–2031 were prepared, the planning and programming of each of the projects over that period was structured in terms of what was needed to be done and when. The inherent assumption is that a project budgeted for completion in 2021/22 is completed in 2021/22. At times this does not occur due to a number of drivers – weather, contractor availability, design and compliance delay, sourcing difficulties, deferment, etc.

However, when expenditure is not incurred as expected during the financial year and the project is yet to be completed, it will, unless approved, become unbudgeted expenditure in the subsequent year.

Because the capital expenditure, and some specific operating expenditure, approved for 2021/22 was not fully spent, funds will still be in the bank account or transferred to reserves at year-end. Where capital expenditure was to be funded from borrowing, loans will still be needed.

The capital and operating items that were underspent in 2021/22, were not completed, and require budgets carried forward to 2022/23 are included in **attachment 1**. This includes some projects already included as carry-forwards in the 2022/23 Annual Plan as we were aware that we would be required to carry these projects forward at the time (such as the District Plan review). Some of these amounts have been updated slightly, as we are now past financial year-end so have the final figures available.

4. CONSIDERATIONS

4.1 Climate change

No climate change considerations.

4.2 Tāngata whenua

No specific tāngata whenua considerations.

4.3 Financial impact

Carry forward items were included in the 2021/22 budget via the Long-Term Plan and have therefore already been planned and rated for as required. Approving carry forwards will have no additional impact on rates. Any

borrowing required for these projects was already planned but has simply been delayed. This also applies to those projects funded through reserves, as these reserves have not yet been utilised.

4.4 Community Engagement requirements

No community engagement requirements. These carry forward projects were included in the Long-Term Plan, which was consulted on.

4.5 Risks

There are risks in attempting to complete the full 2023 capital programme, as well as the 2022 capex carry forwards given the total significant value of the projects. There are pressures related to contractor availability, staff capacity, and increasing contract prices. These pressures may mean we are not able to achieve all planned projects. We will manage these risks by forward planning our projects, prioritising appropriately, engaging with contractors early and ensuring we scope correctly. We will update elected members during the year regarding our progress against the planned capital programme.

5. RECOMMENDATION

That the Council:

1. **Receives** the report.
2. **Approves** the carry-forward to 2022/23 budgets of the following capital expenditure:

Project	Amount to Carry forward
	\$000
Library - equipment	75
Events Centre - Facility	32
All Parks - Amenities	22
All Parks - Soft fall matting	10
5 Town Trails	182
Operation relocation (depot)	391
Water Supply mains extension	120
Water Supply mains pressure solutions	120
Water Supply flow meterage	108
WWTP Kaip treatment facilities, telemetry & storage	141
Investigate security & sustainability of water supply	219
Increase water storage capacity	1,265
Rural Water Supply - Resource Consent	70
Rural Water Supply - Carrington	251
Wastewater - Treatment Plants	158
WWTP Project	1,467
Combined District Plan	532
Animal Pound Renewal	339
Under veranda lighting	52
Vehicles	72
Total Capital expenditure to carry forward	5,625

3. **Approves** the carry-forward to 2022/23 budgets of the following operational expenditure:

Opex	Amount to Carry forward
	\$000
WWTP legal and Insurance	232
Governance Projects - telling Māori stories	40
Total Operational expenditure to carry forward	272

CARRY-FORWARDS TO 2022/23

Description of project/expenditure	Proposed C/Fwd to 2022/23 \$000	Comments
Library - equipment	75	Building office area in the library
Events Centre - Facility	32	Motors for winches
All Parks - Amenities	22	Sparks parks toilets & bore hole
All Parks - Soft fall matting	10	Complete softfall matting
5 Town Trails	182	Continues work on the 5 town trails
Operation relocation	391	Relocation of operations yard
Water Supply mains extension	120	Project tendered
Water Supply mains pressure solutions	120	Valve replacements being planned
Water Supply flow meterage	108	Planning for resource availability
WTP Kaip treatment facilities, telemetry & storage	141	Finalising specifications for design
Investigate security & sustainability of water supply	219	WSP is in phase 2 of the investigation
Increase water storage capacity	1,265	Continue water sustainability & storage project
Rural Water Supply - Resource Consent	70	Development of consent in progress
Rural Water Supply - Carrington	251	In design phase or project
Wastewater - Treatment Plants	158	To cover intake pump
WWTP Project	1,467	To continue work to complete WWT Ponds
Combined District Plan : Direct Costs of Review	532	Continues work on the Combined District Plan
Animal Pound Renewal	339	Covers work on animal pound
Under verandah lighting (LED 3000k)	52	To cover under verandah lighting project
Vehicles	72	Covers 2 hybrids received July 2022 due to delays
Total Capital Projects to Carry forward	5,625	
WWTP legal expenses	232	To cover potential legal costs for recoveries
Governance Projects - telling māori stories	40	
Total Operational Projects to Carry forward	272	

4. MAJOR PROJECT UPDATES

Updates on major capital projects are provided in the agenda of the Policy and Projects Committee, however the following updates follow:

WWTP upgrade

As anticipated and programmed, there has not been much progress during June and July due to weather conditions. The critical path remains unchanged and should see the practical completion end of June 2023.

Policy and Projects committee Meeting – Date Wednesday 10 August 2022

6.3 UPDATE ON MAJOR CAPITAL PROJECTS

1. PURPOSE

For the committee to be updated on the progress on Major Capital Projects.

2. SIGNIFICANCE

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

3. BACKGROUND

CDC delivers various projects as part of the delivery of the Asset Management Plan and Long-Term Plan. In the delivery of these projects, we utilise the CDC Operations team, Shared Services, contractors, and consultants.

4. DISCUSSION

4.3 WWTP Upgrade – Reservoirs

As anticipated and programmed, progress has been slow during June and July. We are still on track to deliver on the key milestones and practical completion in June 2023.

Ordinary Council Meeting – Date Wednesday 14 September 2022

8. MAJOR PROJECT UPDATES

WWTP

As expected, and planned, progress has been slow during July and August. The team has been working well throughout all the wet weather and managed to deliver a few key items in the scope of work.

Intake pipework from existing wetlands at the UV on Dalefield Road into new wet wells has been completed. The completion of the wet wells is programmed for the end of September and will be achieved through the installation and commissioning of new pipework and pumps.



Image 8 – Wetlands outlet

Reservoir 1 intake foundation reinforcement has been placed and is ready for concrete. Pipework has been fabricated and is now awaiting galvanizing. The installation is planned to be completed the end of September.



Image 9 – Reservoir 1 Intake foundation

Scratch repairs on reservoirs 2 and 3 are still planned to start in November and be completed by the end of December 2022.

Construction on the outfall pipeline will continue again in October. We are in negotiations with the property owner and are exploring the possibility of adjusting the alignment of the pipeline design to go through private property. We are confident that we will have a decision within the next couple of weeks.

Policy and Projects Committee Meeting – Date Wednesday 28 September 2022

6.2 MAJOR CAPITAL PROJECTS

1. PURPOSE

For the Committee to be updated on major Infrastructure projects.

2. SIGNIFICANCE

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

3. BACKGROUND

The Infrastructure Services Team delivers numerous projects across the various asset types as part of delivery of the Long-Term Plan.

4. DISCUSSION

4.6 WWTP Reservoirs

At time of writing there is no new information further to the CE report provided to Council on 14 September 2022.

Inaugural Council Meeting – Date Wednesday 26 October 2022

8. MAJOR PROJECT UPDATES

WWTP

Over the last month we have seen good progress on the WWTP project. The three reservoir intakes have now been installed on their foundations. The three intakes now need to be connected to the completed main connecting the wetlands to the reservoirs.



The improved weather has allowed the contractor to resume work on the outfall pipeline. At the time of writing this report we were in the final negotiation of the easement agreement between CDC and the landowners to allow the outfall pipeline to run through their land.



Scratch repairs on Reservoir 2&3 are planned for November with a completion date of late December. Liner electrical leak detection is planned for the end of October.

The project is still programmed to be fully completed by the end of June 2023.

Policy and Projects Committee Meeting – Date Wednesday 23 November 2022

5.1 MAJOR CAPITAL PROJECTS

1. **PURPOSE**

For the Committee to be updated on major Infrastructure projects.

2. **SIGNIFICANCE**

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

3. **BACKGROUND**

The Infrastructure Services Team delivers numerous projects across the various asset types as part of delivery of the Long-Term Plan.

4. **DISCUSSION**

4.6 **WWTP Reservoirs**

The construction of the reservoirs is progressing well. Ordish & Stevens are currently ahead of schedule in terms of their original construction programme. Due to favourable weather conditions and contractor availability, some activities have started earlier than programmed. Please refer to functional schematic below for ease of reference:

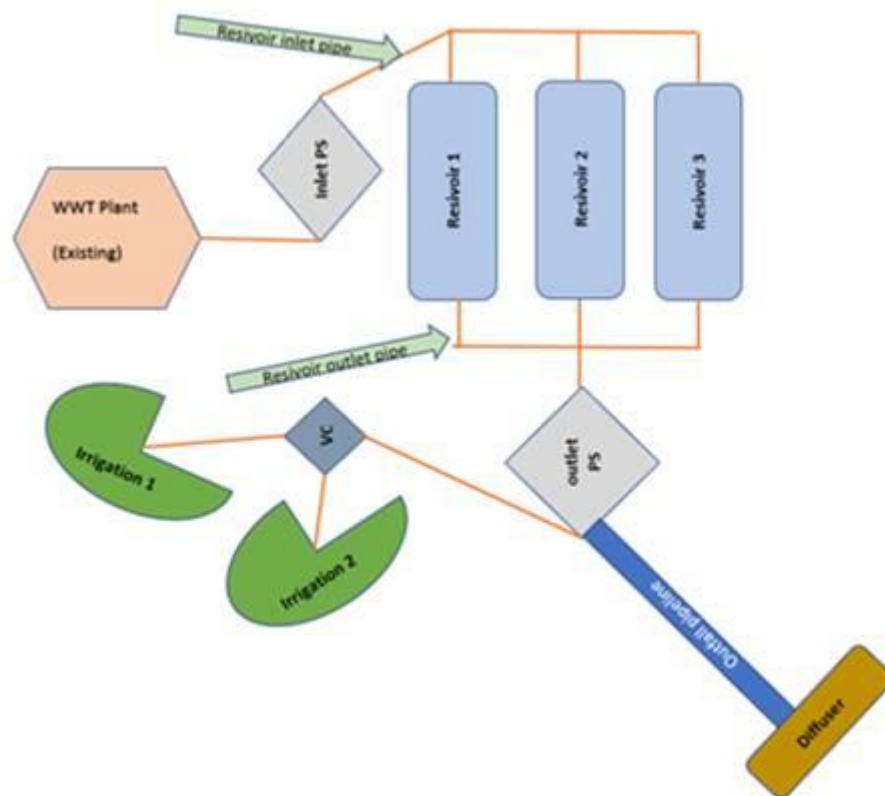


Image 5 – Functional schematic

The outfall pipeline which currently dictates the critical path is roughly 50% complete. Even though the remaining work on the outfall pipeline only requires a couple of weeks of construction in fine weather, the contractor's availability indicates completion by end of June 2023. In the event that other scheduled jobs are delayed, the contractor will return to site to complete this work early.



Image 6 – outfall pipe constructed

Work on the reservoir outlet pipes programmed to start in February 2023 has now started due to the availability of key resources.



Image 7 – Reservoir outlet constructed

The main driver behind the decision to install a conductive liner was to be able to conduct electrical leak detection. Electrical leak detection is a great tool for quality assurance and could also be used as part of the asset management condition assessment in the future. The leak detection identifies leaks not necessarily visible to the naked eye.

In November 2022 we started the leak detection process. Due to availability of under water (1m deep) testing equipment, we managed to test reservoir 1 as well. The test has been worth it as we have identified two leaks to date. The testing should be completed within the next 8 days.

Do not let the below image fool you, even though the process appears very simple the research and development of the process is quite impressive. The process in a nutshell includes electronically charged water being sprayed onto the conductive liner. In the event of a leak, the operator is notified by an alarm.



Image 8 – electrical leak detection

Due to Viking's involvement in the leak detection and this being the main priority at the time, the liner repairs have been postponed until the completion of the testing.

Ordinary Council Meeting – Date Wednesday 7 December 2022

8. MAJOR PROJECT UPDATES WWTP

The Waste water treatment ponds are progressing well. Due to the weather sensitivity of the leak detection, the team has gone away and are planning to be back around 12 December. All newly detected faults have been repaired on the go.

The intake pipes have now been connected to the main line.

The outfall pump station has now been connected to the reservoir outlet pipes and the outfall pipeline. These works were only scheduled to be delivered next year, but due to contractor availability we have made great progress.

The WWTP Project is scheduled to reach practical completion at the end of the fiscal year i.e. 30 June 2023. We anticipate at this time we will better understand the cost for completing the Phase 2 works, remedial repairs and additional claims against the main contractor CHB Earthworks. We will progress our claim against the contractor in earnest once this information is to hand.

Additionally, management has reviewed the costs to date and the forecast to bring the project to practical completion. We anticipate total project costs as shown below:

Project stage	Cost (life to date)	Forecast remaining spend	Total forecast spend	Total Project Budget
Stages One and Two	7,654,348	0	7,654,348	
Stage Three	5,144,065	1,106,772	6,250,837	
Remedial, contingencies, legal, other	300,993	746,271	1,047,264	
Total	\$13,099,406	\$1,853,043	\$14,952,449	\$14,612,447

The table above shows a potential forecast overrun of \$340k. However, within the total forecast budget there are several items which may not eventuate, as well as the likelihood of recovering significant costs from CHB. This includes the following:

- Potential extension of time costs (related to mudfish delay) of \$428k factored into the forecast, which Council may be required to pay.
- Legal fees of \$220k in the Forecast remaining spend which may not be required.
- Approximately \$320k in costs related to remedial work on the liner which we expect to be able to recover. Will also pursue additional cost recoveries (e.g. legal costs).
- Retentions of \$125k which we expect to keep, reducing the amount to be paid.

Management will continue to provide updates to Council as the project is completed and we gain more certainty around these elements.