



Te Kaunihera-ā-Rohe o Ngāmotu

**New Plymouth  
District Council**

## **MEETING AGENDA**

# **COUNCIL**

**Wednesday 26 February 2020  
at 1pm**

**COUNCIL CHAMBER  
LIARDET STREET  
NEW PLYMOUTH**

<b>Chairperson:</b>	Mayor Neil Holdom
<b>Members:</b>	Cr Tony Bedford
	Cr Sam Bennett
	Cr Gordon Brown
	Cr David Bublitz
	Cr Anneka Carlson
	Cr Murray Chong
	Cr Amanda Clinton-Gohdes
	Cr Harry Duynhoven
	Cr Richard Handley
	Cr Stacey Hitchcock
	Cr Colin Johnston
	Cr Richard Jordan
	Cr Dinnie Moeahu
	Cr Marie Pearce

**Purpose of Local Government**

The reports contained in this agenda address the requirements of the Local Government Act 2002 in relation to decision making. Unless otherwise stated, the recommended option outlined in each report meets the purpose of local government and:

- Promote the social, economic, environmental, and cultural well-being of communities in the present and for the future.
- Would not alter significantly the intended level of service provision for any significant activity undertaken by or on behalf of the Council, or transfer the ownership or control of a strategic asset to or from the Council.

END

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District Council**

### **Health and Safety Message**

In the event of an emergency, please follow the instructions of Council staff.

Please exit through the main entrance.

Once you reach the footpath please turn right and walk towards Pukekura Park, congregating outside the Spark building. Please do not block the footpath for other users.

Staff will guide you to an alternative route if necessary.

If there is an earthquake – drop, cover and hold where possible. Please be mindful of the glass overhead.

Please remain where you are until further instruction is given.

## **APOLOGIES**

- Cr Gordon Brown
- Cr Dinnie Moeahu

## **ADDRESSING THE MEETING**

*Requests for public forum and deputations need to be made at least one day prior to the meeting. The Chairperson has authority to approve or decline public comments and deputations in line with the standing order requirements.*

## **PUBLIC FORUM**

*Public Forums enable members of the public to bring matters to the attention of the committee which are not contained on the meeting agenda. The matters must relate to the meeting's terms of reference. Speakers can speak for up to 5 minutes, with no more than two speakers on behalf of one organisation.*

- None advised

## **DEPUTATIONS**

*Deputations enable a person, group or organisation to speak to the meeting on matters contained on the agenda. An individual speaker can speak for up to 10 minutes. Where there are multiple speakers for one organisation, a total time limit of 15 minutes, for the entire deputation, applies.*

- None advised

**REPORTS**

- 1 Thermal Drying Facility Replacement Project and Urgent Maintenance

END

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## **THERMAL DRYING FACILITY REPLACEMENT PROJECT AND URGENT MAINTENANCE**

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### **MATTER**

1. The matter for consideration by the Council is the decision to defer the replacement of the thermal drying facility (TDF) and the allocation of funding for urgent maintenance of the existing facility.

### **RECOMMENDATION FOR CONSIDERATION**

**That having considered all matters raised in the report:**

- a) **The Council note that the TDF will be taken out of service from 25 February 2020 until repairs are undertaken on critical components. Disposal of biosolids to landfill will be required if this extends beyond 8 weeks.**
- b) **Approval be given to use \$1.85m of the approved 2019/20 Thermal Drying Facility Replacement budget for critical and urgent maintenance and component replacement to the existing facility;**
- c) **Approval be given to use \$2.45m of the approved 2020/21 Thermal Drying Facility Replacement Budget for component replacements to the existing facility in order to extend its operating life for 10 years;**
- d) **The replacement of the Thermal Drying Facility be deferred by 10 years and;**
- e) **The business case for the replacement of the Thermal Drying Facility be revisited so that alternative options with lower impacts on climate change and greenhouse gas production can be reconsidered.**

<b>COMPLIANCE</b>	
Significance	This matter is assessed as being critical
Options	<p>This report identifies and assesses the following reasonably practicable options for addressing the matter:</p> <ol style="list-style-type: none"> <li>1. Approve \$4.30 million (\$1.85m this year and \$2.45m in 2020/21) of funding to undertake urgent maintenance this year and a further overhaul in 2020/21 to extend the life of the existing TDF by 10 years and defer its planned replacement for 10 years.</li> <li>2. Approve a budget of \$1.85m for urgent maintenance of the existing TDF this year and proceed with the construction of a replacement TDF as planned in the current Long Term Plan.</li> <li>3. Continue with the planned replacement of the TDF as planned in the LTP noting that the current TDF is now inoperable and we will need to landfill biosolids at an additional operating cost.</li> </ol>
Affected persons	The persons who are affected by or interested in this matter are all residents and businesses that receive a reticulated wastewater service within the New Plymouth District.
Recommendation	This report recommends option 1 for addressing the matter.
Long-Term Plan / Annual Plan Implications	Yes
Significant Policy and Plan Inconsistencies	No

#### **EXECUTIVE SUMMARY**

4. This report recommends that Council approve the expenditure of \$4.30m, split with \$1.85m this year and \$2.45m in 2020/21, in order to undertake capital replacement of major components of the existing Thermal Drying Facility (TDF) noting that this will be funded from the existing \$15m budget for the replacement of the TDF.
5. This investment will allow the existing TDF to continue to reliably operate for about another 10 years, subject to suitable ongoing routine maintenance.



6. This will ensure that the Council can continue to treat our wastewater biosolids in the most cost effective way as this option has the lowest net present cost of all available options.
7. Deferring the replacement of the TDF by approximately 10 years will allow sufficient time to reassess the replacement options and investigate lower carbon options. This is in line with the views expressed by our community regarding climate change and the Council's recently adopted Climate Change Adaption Framework.
8. If we do not do this then the Council runs the risks that the existing TDF experiences and serious and irreparable failure that renders it inoperable before the replacement facility is constructed and commissioned.
9. Not only would this incur significant additional costs associated with disposing biosolids to an out of region landfill, it also risks the collapse of the Bioboost™ brand and customer base.
10. Failure of some of the components that require replacement could also put the health & safety of the facility operators in serious danger. For this reason the TDF will be shut down until such time that these critical components are replaced.
11. In anticipation of the next steps, arrangements have been put in place to undertake this work immediately following Council approval

## **BACKGROUND**

12. The Thermal Drying Facility (TDF) at the New Plymouth Wastewater Treatment Plant is scheduled for replacement with the fabrication of the new drying equipment scheduled to commence in the current financial year (2019/20).
  13. The fabrication of the equipment, construction of a new building at the wastewater treatment plant and installation and commissioning of the new equipment is expected to take approximately 2 years to complete.
  14. The project to replace the TDF has progressed through the business case and detailed design stages. It is important to note that when this project was included for funding in the 2015 Long Term Plan, almost no planning or investigatory work had been undertaken. In fact, the initial feasibility study was not undertaken until the 2016/17 financial year. The cost estimates for this project were therefore highly uncertain.
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15. Now that the necessary planning and investigation work has been undertaken, tenders for the fabrication of the mechanical plant and equipment were advertised during the 2019 calendar year and the Council has received bids from suppliers. It is now in a position to proceed with the project and enter into supplier agreements and contracts. The estimated cost of this project is now \$25m, which is greater than the current budget in the LTP.
  16. Since the business case for the replacement of the TDF was completed, there has been increased community interest in the issue of greenhouse gas emissions and the impacts of climate change. There have been a number of deputations to the Council on this matter in particular regarding calls from within the community to declare a "climate emergency". This Council has responded with the development of a Climate Change Adaption Framework.
  17. Furthermore, since the business case was developed, there have been key changes in central government policy on oil and gas exploration and a transition to a low carbon economy.
  18. The TDF has been highlighted as a particularly large source of greenhouse gas emissions, consuming approximately 7.4million kWh of natural gas during the 2018/19 financial year which accounts for about 63% of the council gas consumption.
  19. As a result, there have been some calls for the business case for a new TDF to be revisited and other, more environmentally sustainable options investigated.
  20. In the meantime, the existing TDF has continued to be operated and is very close to the end of its operating life. Routine inspections of the facility undertaken during December indicated that a significant number of items of equipment were aged, heavily worn, showing signs of significant defects and some at risk of sudden and total failure.
  21. These included the trunnion rings, burner, combustion chamber, shaker, primary mixer, condenser tubing, biofilter, raw materials silo and raw materials conveyor.
  22. All of these items are critical to the operation of the TDF or compliance with our resource consent and it cannot operate without them or they pose a health and safety risk.
  23. In most cases these components are beyond their expected working lives.
    - a) The Combustion Chamber has failed on various occasions and multiple patch jobs have been done specially in recent years. It has only just been kept in service.
    - b) The Primary Mixer should have a shell plate thickness of 8mm, this is now as little as 4mm.
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- c) The Shaker top and bottom plates have failed on various occasions and have been repeatedly welded and repaired. The securing springs are also in urgent need of replacing.
  - d) The Recycle Silo Roof is corroded and the 6mm plate in areas is down to under 3 mm rendering it unsafe to walk on.
  - e) The wall thickness of the tubes in the condenser have corroded by an average of 20%. At 25% they will fail completely. Replacement requires a substantial outage of the TDF.
  - f) The biofilter is estimated to only be 30% effective with deep holes evident in the filter material creating shortcuts for odour.
  - g) Raw Materials Conveyor 810 has failed multiple times including the motor and gearbox of which the gearbox failed over Christmas resulting in biosolids spilling onto the ground.
  - h) The nitrogen fire suppression system has been found to be leaking gas and is now being refilled monthly, in the event of a fire its effectiveness could be seriously compromised.
  - i) The burner is now 20 years old and the manufacturer no longer supplies replacement parts.
24. In total, \$1.85 million of urgent work is required to for the capital replacement of major components in order to keep the TDF operating safely and reliably until the replacement facility is constructed and fully commissioned. This includes the cost of disposing bio-solids via land application during the shutdown period.
25. The primary reason for the poor condition of this equipment is a lack of investment in suitable preventative maintenance in order to keep costs low. When the TDF was first identified for replacement in the 2015 LTP, only minor maintenance was budgeted for; in anticipation of a new TDF being constructed major component replacement works were not allowed for in budgets in order to reduce costs.
26. Furthermore, the debrief report following ex-cyclone Gita's impact on the NPDC water network highlighted the impact on the performance and condition of the council's infrastructure due to budget reductions over the last 10 years. In addition, a management review undertaken in 2017 noted that approximately 86% of wastewater maintenance work was reactive repairs triggered by breakdowns with the 14% balance being proactive preventative maintenance.
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27. The 2018 Long Term Plan, reintroduced some of the investment in basic maintenance, including reinstating the critical role of the organisation's only Mechanical Maintenance Supervisor that had previously been disestablished and re-instigating annual maintenance shutdowns of key plant and equipment such as the TDF; however, this level of investment is still not sufficient to redress the deterioration to the District's infrastructure that has occurred over the last decade.
  28. Currently, of major concern is the condition of the trunnion rings on the drying drum. These were found to be severely cracked during the December 2019 inspection.
  29. Due to the risk of these components failing suddenly and causing major damage to the TDF facility, as well as creating a potentially life threatening safety incident, the TDF facility was shut down. Emergency maintenance work was undertaken to weld the rings back together to get the TDF operating and processing bio-solids again and two new forged trunnion rings have been ordered.
  30. The operational life expectancy of the weld repairs is limited and a shutdown of the TDF was scheduled for the beginning of March so that new trunnion rings can be installed. This was the earliest date possible given the long lead time for forging new trunnion rings.
  31. Due to the limited life expectancy of the weld repairs operating the TDF beyond a certain point will become too great a risk. If the trunnion rings were to break during operation, the TDF would likely suffer major damage. Not only would this irreparably damaging the TDF itself, rendering it permanently inoperable, it would also expose the TDF operators to significant danger. For this reason the TDF will be taken out of service on 25 February until the new rings are installed.
  32. This shutdown will also allow the opportunity to undertake other urgent and essential component replacement works at the same time rather than scheduling a further shutdown at a later date which would be more costly.
  33. During inspections of the TDF during December 2019 a further \$2.45 million of major component capital replacement work were identified that, if carried out, would allow the existing facility to continue to operate for approximately another 10 years.
  34. This provides the opportunity to extend the life of the current TDF and delay the construction of a new TDF by up to 10 years. A net present value assessment of this option shows it is cheaper than compared to the current plan of replacing the TDF. This is presented in the financial section below.
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35. Not only would the deferral of the TDF replacement be a more long term cost effective approach, it would also allow time for the business case to be revisited and for more environmentally sustainable options to be investigated.

**NEXT STEPS**

36. If Council approve the recommendation then staff will undertake the \$1.85 million of major component capital replacement works during the TDF shutdown that is currently planned to commence in March.
37. A further \$2.45m of major component capital replacement works will then be carried out during the 2020/21 financial year.
38. The replacement of the TDF facility will be deferred for approximately a further 10 years.
39. In the intervening time, the business case will be revisited and alternative, more environmentally sustainable options investigated so that at a future date the Council may make an informed decision on the replacement of this facility.

**SIGNIFICANCE AND ENGAGEMENT**

40. In accordance with the Council's Significance and Engagement Policy, this matter has been assessed as being critical because:
- 41.
- a) It is likely to be of high interest to the community
  - b) It has financial implications that will need to be budgeted for in future long term plans
  - c) Due to the urgent nature of the maintenance work the decision is not likely to be reversible
  - d) There is a significant cost implications to continuing with the current replacement plan due to landfilling costs.
  - e) The Thermal Drying Facility is part of the wastewater treatment plant which is identified as one of the council's strategic assets.
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**OPTIONS**

42. For ease of comparison all three options have been assessed together.

*Financial and Resourcing Implications*

43. The current Long Term plan has \$5.03m and \$9.96m budgeted in the 2019/20 and 2020/21 financial years respectively. The maintenance overhaul works can be funded from this existing budget without increasing the total cost of the wastewater significant activity in the adopted Long Term Plan.

44. Net Present Value analysis has been used to compare the whole of life costs for the three options. This analysis has used the Council’s standard 4% discount rate, a 30 year investment horizon and is summarised in table 1 below.

	<b>Option 1</b>	<b>Option 2</b>	<b>Option 3</b>
Option Description	\$4.3m of maintenance & deferral	\$1.85m of maintenance & renewal	No maintenance & renewal
Net Present Value	\$27.73m	\$31.88m	\$33.60m

*Table 1*

45. Under option 1 the large capital investment required to replace the TDF can be deferred by 10 years, this significantly reduces the net present value of this option.

46. Due to the highly specialised nature of many of the components to the TDF or due to the specialist skills required to undertake the work to replace these components as significant portion of this work will be procured directly from the relevant suppliers via sole sourcing. Approval to sole source will be carried out under the authority delegated by Council to the Chief Executive in accordance with the relevant financial limitations.

*Risk Analysis*

47. The TDF in its current condition with its cracked trunnion rings cannot continue to be operated safely. These must be replaced before it can be used.

48. Just replacing the trunnion rings will not provide any certainty of operation beyond a matter of weeks due to the condition of other critical components. If there is a failure of one of the critical components because the urgent maintenance work is not undertaken then it is likely that the TDF will not be able to operate for a sustained period of months. During this time, bio-solids from the wastewater treatment process will continue to be produced and will need to be disposed of to landfill at a cost of approximately \$170,000 per month.

49. The condition of the biofilter is such that we risk breaching our discharge consent exposing Council to prosecution.
50. Undertaking the maintenance and component replacement works is estimated to reliably extend the operating life of the existing TDF by approximately 10 years. However, it should be noted that there is a risk that the actual extension to the operating life could be less or greater than 10 years.
51. If the biofilter is taken out of service for two years whilst a new TDF is built this will deplete stocks of Bioboost and our wholesaler will not be able to supply this to the market. Such a gap in supply may effectively end the market for Bioboost.
52. The New Plymouth's population continues to grow at approximately 1% per annum. Part of the reasoning for the total replacement of the TDF was to increase the processing capacity so that the facility would be able to cater for population growth over the next 30 years. There is risk that, in deferring the replacement by 10 years, the existing facility could struggle to meet rising demand as a result of population growth. In such a scenario alternative disposal of excess biosolids would be required. It is expected that this risk is manageable operationally and is relatively low.

*Promotion or Achievement of Community Outcomes*

53. Place: - Undertaking the maintenance and component replacement works will ensure that the Council can continue to reliably operate the TDF and safely dispose of our communities bio-solid wastes.
54. Place: - deferring the replacement of the TDF by 10 years allows sufficient time for the business case to be revisited and alternative, more environmentally sustainable options to be further investigated which could reduce the carbon footprint and energy consumption of the Council's wastewater treatment operations.
55. Prosperity: - investing \$4.3 million to undertake maintenance and component replacement works to the existing TDF allows its replacement to be deferred by approximately 10 years. This is the most cost effective approach in the long term and the most efficient use of rate payers' funds.

*Statutory Responsibilities*

56. The Council has a statutory responsibility under the Local Government Act to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.
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*Consistency with Policies and Plans*

57. This option is not consistent with the current Long Term Plan which includes a project for the total replacement of the TDF albeit, this option would achieve a similar outcome for our community.
58. This option is consistent with our Asset Management Strategy which requires a "whole of life" approach to managing our assets and consideration of the total investment over the lifecycle of an asset.

*Participation by Māori and Community Views and Preferences*

59. We recognise that water is taonga to Māori and the safe and environmentally appropriate disposal of wastewater and its by-products is of paramount importance. This view of the importance of environmentally appropriate disposal is closely aligned with that of our broader community. For that reason we have combine these two sections.
  60. The views of Māori are understood from recent discussions relating to the operation of the WWTP and the renewal of related resource consents.
  61. The views of the community are well known via consultation to date as part of changes to the solid waste service and participation in related resource consents.
  62. In general both Māori and the community are not supportive of trucking waste to out of the district and they are not happy with odours at WWTP.
  63. We have no long term viable alternative for biosolids disposal in the event the TDF is out of service. We also have limited capacity for landfarming at the WWTP site and this activity is strongly opposed by local hapū.
  64. There has been increased community interest in the issue of greenhouse gas emissions and the impacts of climate change. There have been a number of deputations to the Council on this matter in particular regarding calls from within the community to declare a "climate emergency".
  65. All options will produce discharges to air of greenhouse gases. The TDF burns gas releasing CO<sub>2</sub>. Landfilling will also release CO<sub>2</sub> from the transport of the biosolids to landfill (approximately 295km one-way) and methane as the biosolids decompose anaerobically in the landfill.
  66. Locally if the biofilter doesn't work odorous gas will be released. This is not acceptable to either Māori or the general community.
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*Advantages and Disadvantages*

67. Option 1: has the advantage of reducing the net present value of the TDF replacement by deferring the initial capital investment by 11 years. This also has the advantage of allowing time to investigate alternative, more environmentally sustainable options that could reduce the council's impact on climate change. This option also reduces the risk of breakdowns of the TDF that would result in bio-solids being trucked to landfill.
68. Option 2: reduces the risk of breakdowns of the TDF that would result in bio-solids being trucked to landfill. However, it commits the council to continuing with the imminent replacement of the TDF and does not allow the opportunity investigate alternative lower carbon options. It also is more expensive than Option 1.
69. Option 3: does not have any particular advantages whilst also having a very high risk of irreparable failure of the TDF that results in a significant cost to dispose of bio-solids to landfill. It has the highest cost.

**Recommended Option**

This report recommends option 1 (budget \$4.3m for essential maintenance and defer the TDF replacement for 10 years) for addressing the matter.

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**Report Details**

Prepared By: Mark Hall (Manager Three Waters)  
Team: Infrastructure  
Approved By: David Langford (Infrastructure Manager)  
Ward/Community: District Wide  
Date: 19/02/2020  
File Reference: ECM 8244604

-----*End of Report*-----