Absolutely Positively **Wellington** City Council
Me Heke Ki Pōneke

ORDINARY MEETING
OF
PŪRORO WAIHANGA - INFRASTRUCTURE COMMITTEE
AGENDA

Time: **9:30am**
Date: **Thursday, 11 November 2021**
Venue: **Ngake (16.09)**
Level 16, Tahiwi
113 The Terrace
Wellington

MEMBERSHIP

Mayor Foster
Deputy Mayor Free
Councillor Calvert
Councillor Condie (Deputy Chair)
Councillor Day
Councillor Fitzsimons
Councillor Foon
Liz Kelly
Councillor Matthews
Councillor O'Neill
Councillor Pannett
Councillor Paul
Councillor Rush (Chair)
Councillor Woolf
Councillor Young

Have your say!
You can make a short presentation to the Councillors at this meeting. Please let us know by noon the working day before the meeting. You can do this either by phoning 04-803-8334, emailing public.participation@wcc.govt.nz or writing to Democracy Services, Wellington City Council, PO Box 2199, Wellington, giving your name, phone number, and the issue you would like to talk about. All Council and committee meetings are livestreamed on our YouTube page. This includes any public participation at the meeting.

AREA OF FOCUS

The Pūroro Waihanga | Infrastructure Committee has the following responsibilities:

- Council Infrastructure and infrastructure strategy, including:
  - Transport
  - Waste
  - Water (three waters)
  - Council property (buildings)
  - Relationships with other non-council infrastructure.
- The Road Corridor
- 30-year infrastructure strategy
- Asset management plans
- Capital Works Programme Delivery, including CCO's and Wellington Water Limited
- capital works programmes
- Three waters reform.

The Committee has the responsibility to discuss and approve a forward agenda.

To read the full delegations of this committee, please visit wellington.govt.nz/meetings.

Quorum: 9 members

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1. Meeting Conduct

1.1 Karakia

The Chairperson will open the meeting with a karakia.

Whakataka te hau ki te uru,	Cease oh winds of the west
Whakataka te hau ki te tonga.	and of the south
Kia mākinakina ki uta,	Let the bracing breezes flow,
Kia mātaratara ki tai.	over the land and the sea.
E hī ake ana te atākura.	Let the red-tipped dawn come
He tio, he huka, he hauhū.	with a sharpened edge, a touch of frost,
Tihei Mauri Ora!	a promise of a glorious day

At the appropriate time, the following karakia will be read to close the meeting.

Unuhia, unuhia, unuhia ki te uru tapu nui	Draw on, draw on
Kia wātea, kia māmā, te ngākau, te tinana, te wairua	Draw on the supreme sacredness To clear, to free the heart, the body
I te ara takatū	and the spirit of mankind
Koia rā e Rongo, whakairia ake ki runga	Oh Rongo, above (symbol of peace)
Kia wātea, kia wātea	Let this all be done in unity
Āe rā, kua wātea!	

1.2 Apologies

The Chairperson invites notice from members of apologies, including apologies for lateness and early departure from the meeting, where leave of absence has not previously been granted.

1.3 Conflict of Interest Declarations

Members are reminded of the need to be vigilant to stand aside from decision making when a conflict arises between their role as a member and any private or other external interest they might have.

1.4 Confirmation of Minutes

The minutes of the meeting held on 14 October 2021 will be put to the Pūroro Waihanga | Infrastructure Committee for confirmation.

1.5 Items not on the Agenda

The Chairperson will give notice of items not on the agenda as follows.

Matters Requiring Urgent Attention as Determined by Resolution of the Pūroro Waihanga | Infrastructure Committee.

The Chairperson shall state to the meeting:

1. The reason why the item is not on the agenda; and

2. The reason why discussion of the item cannot be delayed until a subsequent meeting.

The item may be allowed onto the agenda by resolution of the Pūroro Waihanga | Infrastructure Committee.

Minor Matters relating to the General Business of the Pūroro Waihanga | Infrastructure Committee.

The Chairperson shall state to the meeting that the item will be discussed, but no resolution, decision, or recommendation may be made in respect of the item except to refer it to a subsequent meeting of the Pūroro Waihanga | Infrastructure Committee for further discussion.

1.6 Public Participation

A maximum of 60 minutes is set aside for public participation at the commencement of any meeting of the Council or committee that is open to the public. Under Standing Order 31.2 a written, oral or electronic application to address the meeting setting forth the subject, is required to be lodged with the Chief Executive by 12.00 noon of the working day prior to the meeting concerned, and subsequently approved by the Chairperson.

Requests for public participation can be sent by email to public.participation@wcc.govt.nz, by post to Democracy Services, Wellington City Council, PO Box 2199, Wellington, or by phone at 04 803 8334, giving the requester's name, phone number and the issue to be raised.

2. General Business

WELLINGTON WATER LIMITED - COMMUNITY INFRASTRUCTURE RESILIENCE

Kōrero taunaki

Summary of considerations

Emergency water is an ongoing challenge for Wellington residents. Wellington Water Limited has the role of a lifeline before, during and after a civil defence emergency, and has been requested to brief the Committee on plans for the provision of emergency water via the Community Infrastructure Resilience investment, with a specific focus on the known vulnerabilities in the Southern and Eastern parts of the City.

Purpose

This report updates Te Pūroro Waihanga | Infrastructure Committee on the Community Infrastructure Resilience programme.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☒ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☒ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	Outline relevant previous decisions that pertain to the material being considered in this paper.

Financial considerations

☐ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☐ Low	☐ Medium	☒ High	☐ Extreme

Author	Zac Jordan, Principal Advisor Resilience Infrastructure
Authoriser	Siobhan Procter, Chief Infrastructure Officer

Taunakitanga

Officers' Recommendations

Officers recommend the following motion

That the Pūroro Waihanga | Infrastructure Committee:

1. Receive the information.

Takenga mai

Background

1. The Civil Defence Emergency Management Act defines lifeline utilities including water suppliers as:
    - An entity that supplies or distributes water to the inhabitants of a city, district, or other place.
    - An entity that provides a wastewater or sewerage network or that disposes of sewage or storm water.
2. Every lifeline utility must ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency
3. For Wellington City's water supply and wastewater, Wellington Water Limited (WWL) is contracted to provide emergency management and response planning on behalf of the Council.
4. Following the Kaikoura earthquake in 2016, the seismic vulnerability of the water and wastewater networks came into focus, and additional investment was made by WWL on behalf of the Greater Wellington Regional Council (GWRC) to locate alternate water sources, and to plan for a cross harbour pipeline. Ultimately, drilling in the harbour did not locate a suitable alternate water source, and the cross harbour pipeline was not funded through the GWRC Long-Term Plan.
5. Locally, and with Government support, the Council contributed funding for WWL to invest in an above ground emergency water network (Community Infrastructure Resilience – CIR) of resilient reservoirs, water treatment plants and mobile transportation equipment to provide emergency water supply from day eight onwards. Citizens are responsible for storing their own water for the first seven days, with at least twenty litres per person per day being recommended.
6. It has been recognised that the provision of emergency water to the Eastern and Southern parts of the City is more challenging than other areas of the city, and that these areas have the longest expected time to restoration of normal water supply following a significant seismic event.

Kōrerorero

Discussion

7. WWL has provided an update on the CIR programme, an overview is attached at Appendix 1.

Whai whakaaro ki ngā whakataunga

Considerations for decision-making

Communications

8. While it is generally understood that emergency water should be stored at home by residents in Wellington, despite the efforts of WWL and the Wellington Region Emergency Management Office, take-up is thought to be low, and increasingly problematic as the City moves to more intensive housing with more limited storage spaces. Ongoing community education and engagement is required.

Attachments

Attachment 1. WWL briefing on CIR 11 Nov 21 Page 10

Te Waihanga Pūroro

Community Infrastructure Resilience – 11 Nov. 2021

Laurence Edwards – Chief Advisor Drinking Water
Gary O'Meara – Principal Advisor

Wellington Water

Our water, our future.

Our water supply network

Wellington Water

Water sources

Bulk water network 180 km

Reservoirs

Business, Government and critical customers

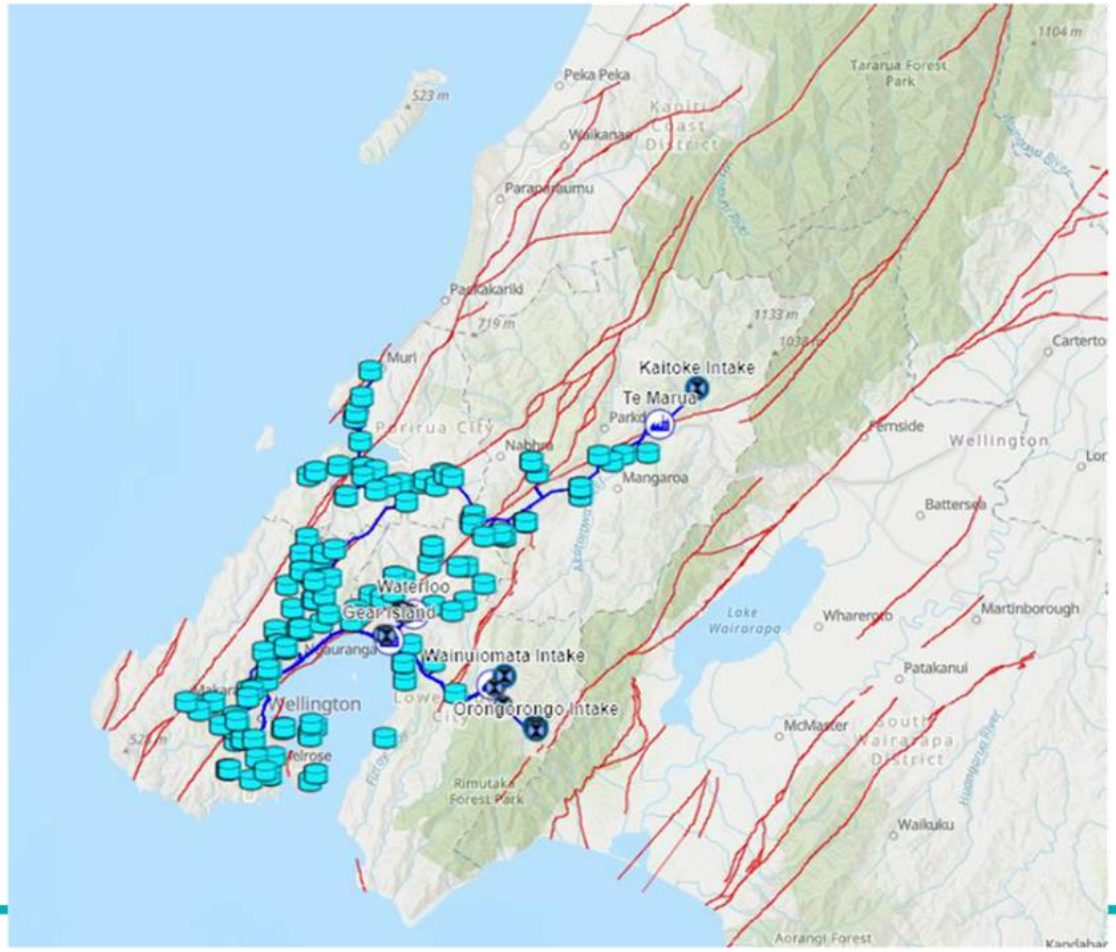
Reticulation network 2800 km

Our homes

Our water, our future.

Seismic Risk

Wellington Water



Our water, our future.

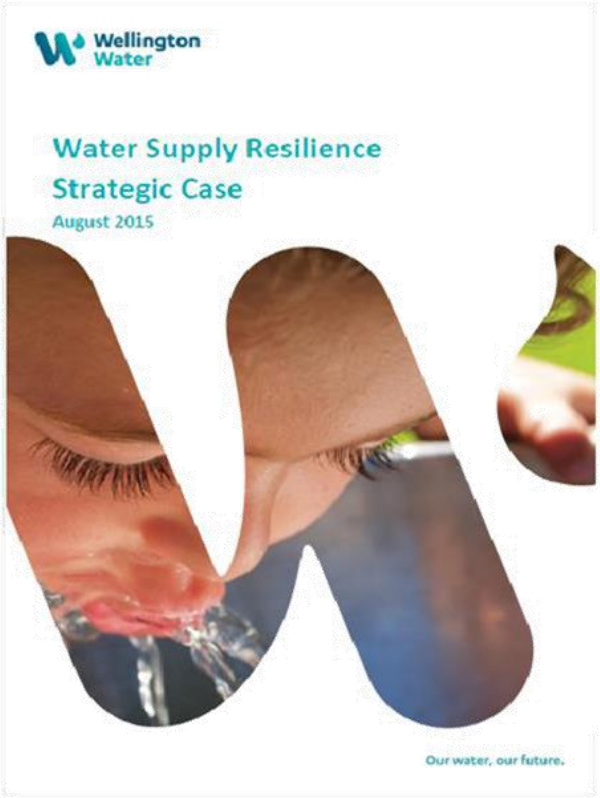
Our Strategic Case

Wellington Water

In our strategic case we identified a number of problems associated with a major event and the following benefits:

- We continue to provide drinking water
- We maintain supply to 'Critical Customers'
- We minimise time to economic recovery
- We comply with legislation

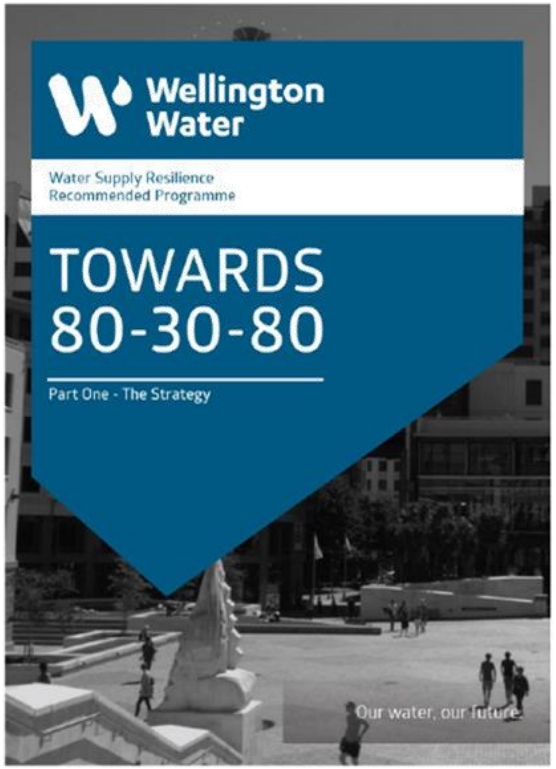
Agility is required – best plans are likely to be disrupted



Our water, our future.

Readiness and Response – PBC

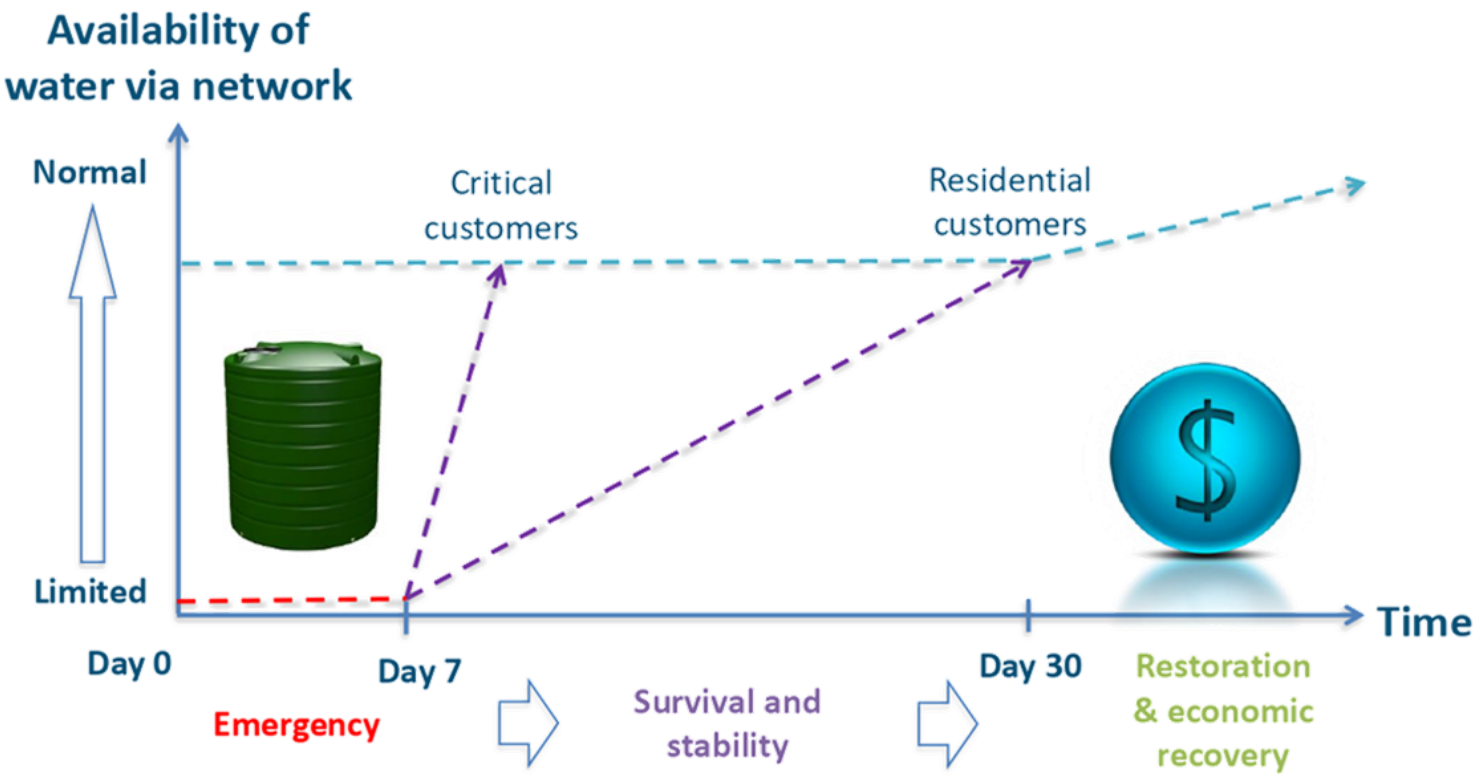
Wellington Water



Our water, our future.

What's the target?

Wellington Water



Our water, our future.

Wellington's vulnerable water network

Wellington Water

15 to 100+ days to restore water in network

17 Community 'Islands'

Our water, our future.

WELLINGTON'S VULNERABLE WATER NETWORK

WHY ARE WE INVESTING IN RESILIENCE?

Estimated time to restore bulk network services to these areas.

Wellington's water supply network is vulnerable and could leave many parts of the region without water for 100 days.

Over the next 30 years, we are focusing significant investment in reducing network water supply restoration times from 100 days to less than 30 in all parts of the region.

In the next 5 - 10 years, we are prioritising major Bulk Water projects that will deliver significant benefits for resilience.

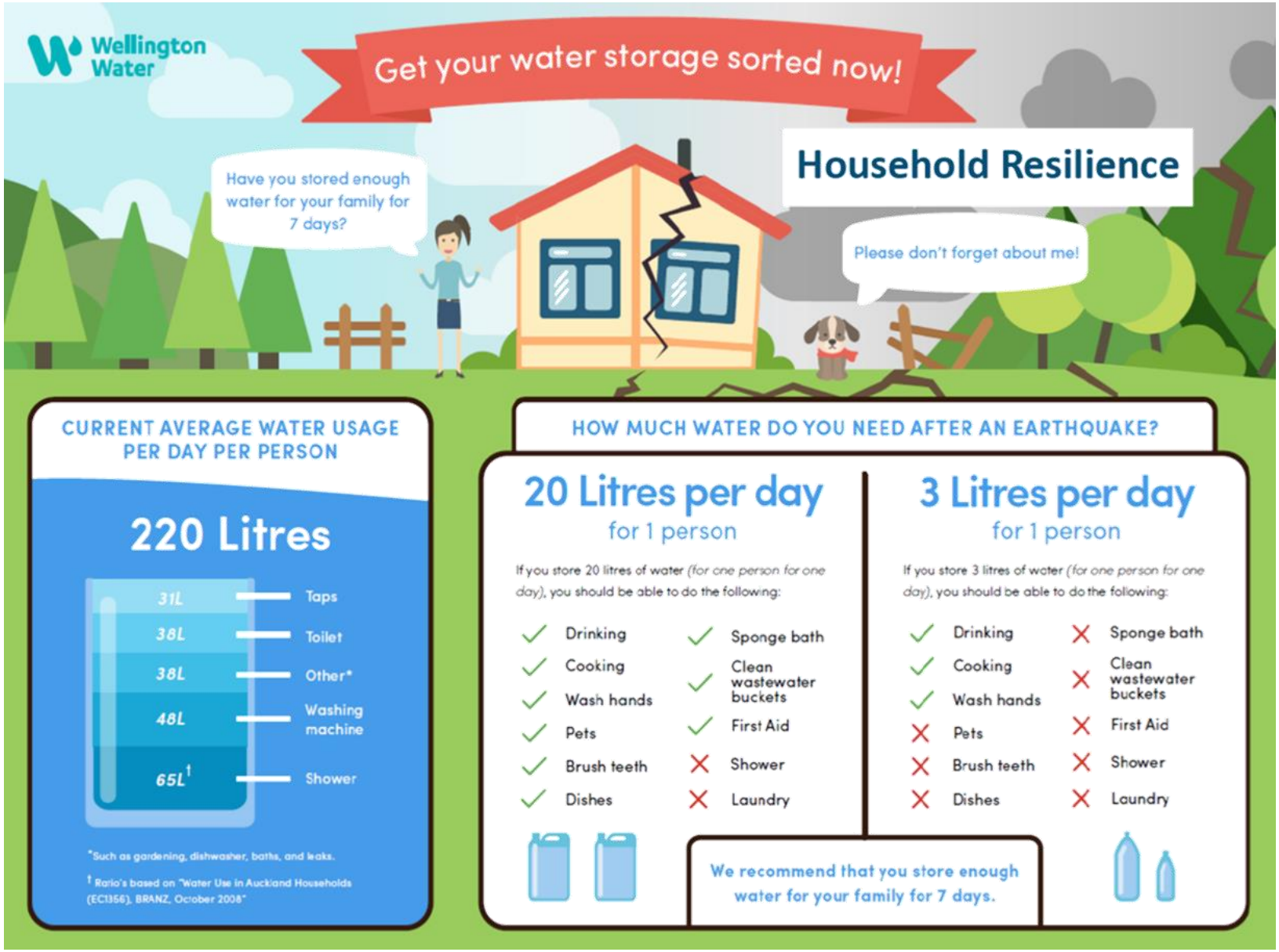
Right now, we are exploring and developing alternative sources of water in communities, and providing new ways to improve the speed and nature of emergency response and repairs.

Our system response – water supply

Wellington Water

1. Household resilience
2. Community Infrastructure Resilience (CIR)
3. Long term programme of regional projects

Our water, our future.


Wellington Water
Get your water storage sorted now!
Household Resilience
Have you stored enough water for your family for 7 days?
Please don't forget about me!
CURRENT AVERAGE WATER USAGE PER DAY PER PERSON
220 Litres
31L Taps
38L Toilet
38L Other*
48L Washing machine
65L† Shower
*Such as gardening, dishwasher, baths, and leaks.
† Rario's based on "Water Use in Auckland Households (EC1356), BRANZ, October 2008"
HOW MUCH WATER DO YOU NEED AFTER AN EARTHQUAKE?
20 Litres per day
for 1 person
If you store 20 litres of water (for one person for one day), you should be able to do the following:
Drinking
Cooking
Wash hands
Pets
Brush teeth
Dishes
Sponge bath
Clean wastewater buckets
First Aid
Shower
Laundry
3 Litres per day
for 1 person
If you store 3 litres of water (for one person for one day), you should be able to do the following:
Drinking
Cooking
Wash hands
Pets
Brush teeth
Dishes
Sponge bath
Clean wastewater buckets
First Aid
Shower
Laundry
We recommend that you store enough water for your family for 7 days.

We have a way to go on household resilience

Wellington Water

Household resilience is a challenge and we are looking at ways to accelerate take up…

- Motivation
- Lack of awareness
- Affordability
- Rented accommodation
- Housing intensification

Our water, our future.

Our system response

Wellington Water

1. Household resilience
2. Community Infrastructure Resilience (CIR)
3. Long term programme of regional projects

Our water, our future.

PROVIDING EMERGENCY WATER

1. WATER SOURCES PROVIDE BASIC WATER NEEDS

RESERVOIR

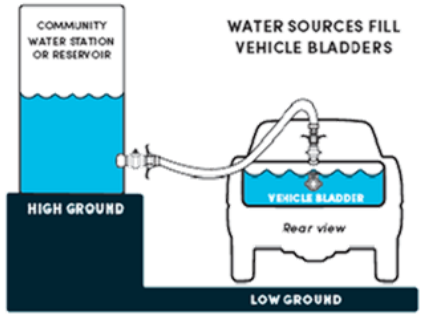
120 Water Reservoirs

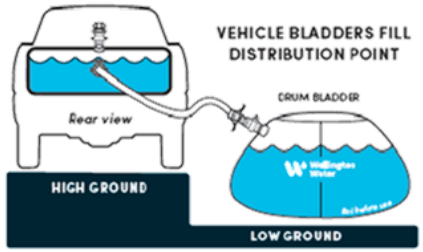
COMMUNITY WATER STATION

22 Community Water Stations

Residents can also collect water at these water sources.

2. MOBILE BLADDERS TRANSPORT WATER TO DISTRIBUTION POINTS





3. RESIDENTS COLLECT WATER FROM DISTRIBUTION POINTS

COMMUNITY WATER DISTRIBUTION POINT

Distribution Points will be established within 500 to 1,000 metres of your home. These will provide 20 litres of water per person per day.

Wellington Water

Community Infrastructure Resilience (CIR)

Wellington Water

Alternative Water Sources

Emergency Bores

"Develop new bores as alternative sources while the bulk network is being repaired."

Alternative Water Sources
Desalination

"Develop sites to be used as emergency desalination points while the network is being repaired."

Alternative Water Sources
Surface Water

"Set up treatment stations at surface water sources to provide clean water while the network is being repaired."

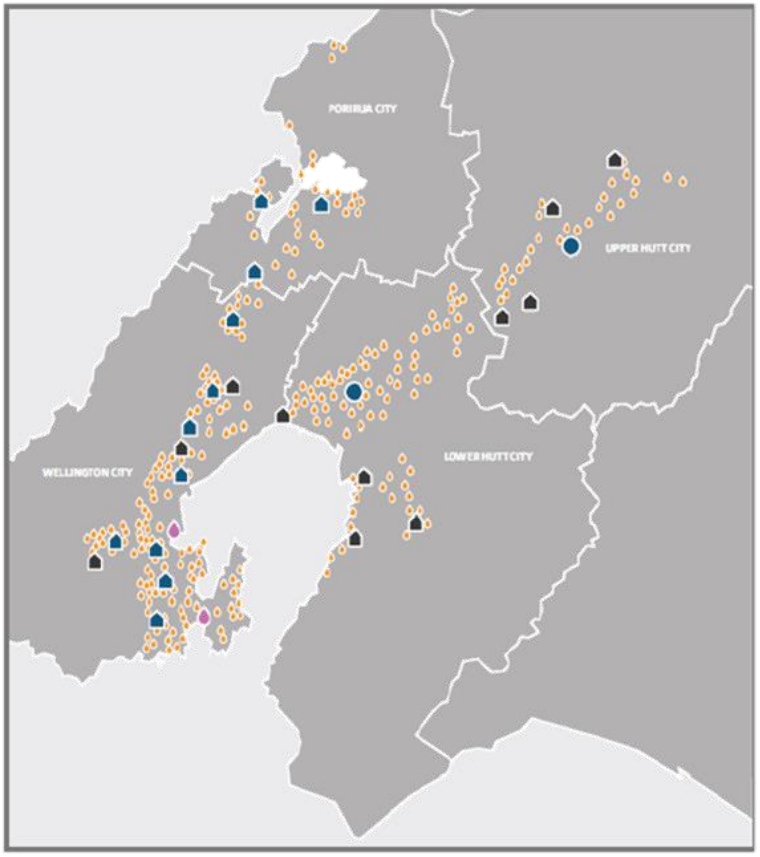
Large Water Bladders & Distribution Points

"Procure test bladders and develop a distribution and ownership plan."

Our water, our future.

CIR - Alternative water sources

Wellington Water



We have an alternative emergency water network in place across the region…

- 22 community water stations
- Desalination (post-event response)
- Over 300 water bladders
- 20 litres/person/day within 500-1000m

Our water, our future.

CIR Implementation

Our water, our future.

Southern & Eastern Suburbs

Wellington Water

Challenges

- Lack of emergency sources
- Furthest away from normal treatment plants
- Longest restoration times

Options considered

- Desalination – expensive, however central government/WREMO post event implementation possible within reasonable timeframe
- Fixed treatment station Owhiro Bay or mobile treatment plants – unreliable source of water, difficult access post earthquake etc.

Preferred approach

- Completion of Omaroro reservoir (~40 days) and emergency desalination (out to 100 days+)

Our water, our future.

Our system response

Wellington Water

1. Household resilience
2. Community Infrastructure Resilience (CIR)
3. Long term programme of regional projects

Our water, our future.

Reduction – Additional Storage and Renewals

Wellington Water

Our water, our future.

Reduction – Alternative Supply to Wellington City

Wellington Water

Our water, our future.

Reduction - Resilience Improvements Flume Bridge

Wellington Water

Our water, our future.

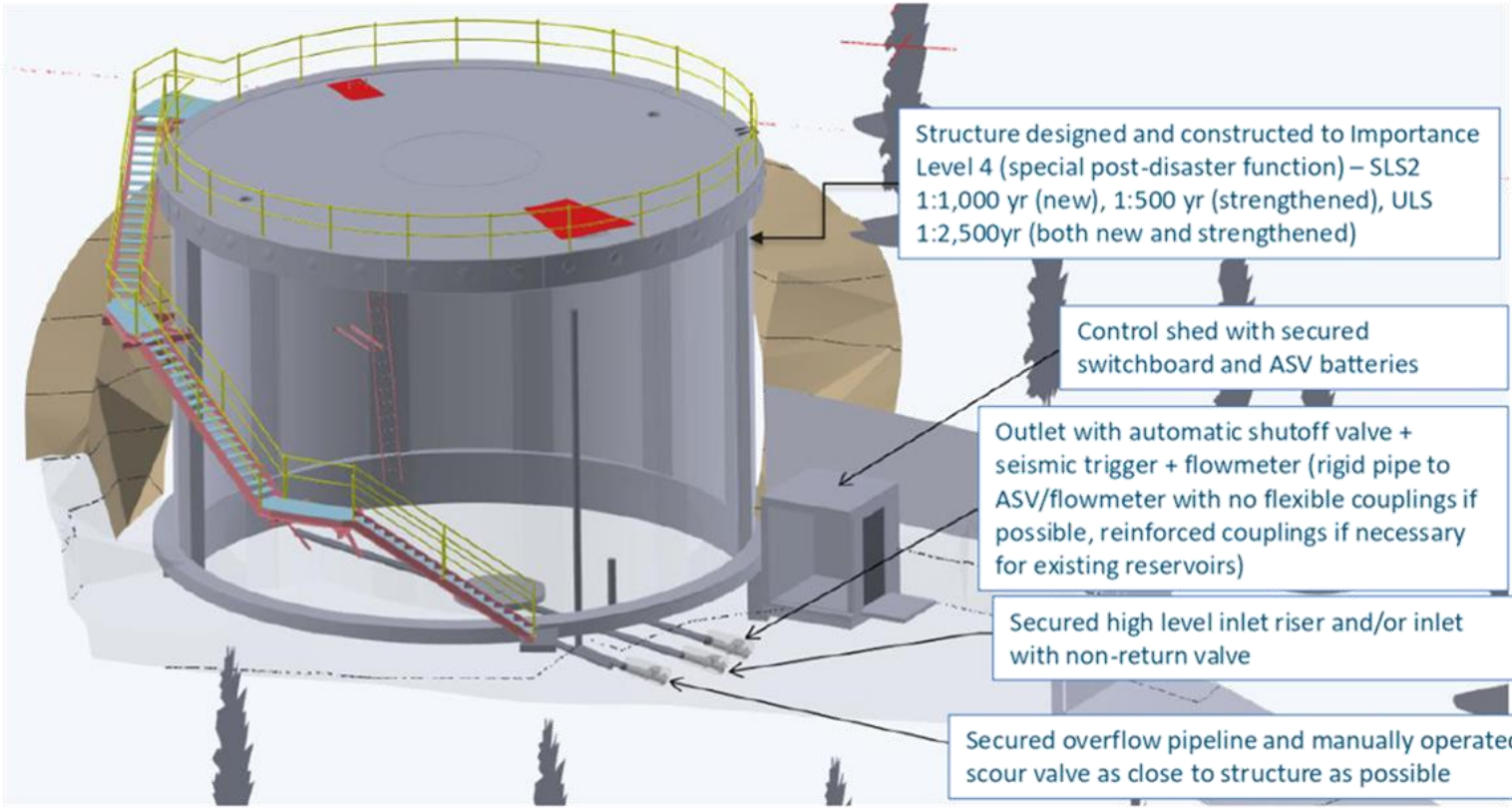
Reduction – Backup Pumping Station Te Marua WTP

Wellington Water

Our water, our future.

Reduction – Reservoir Resilience

Wellington Water



Our water, our future.

Reduction – Silverstream Bridge Pipe Replacement

Wellington Water

Our water, our future.

Readiness, Response, Recovery

Wellington Water

- **Running a Wellington Water Emergency Operations Centre** that also incorporates Business Continuity – providing the collective business and infrastructure view across the region.
- **Running four resilient operational sites** in the region to support responses close to our communities (Rongotai, Porirua, Pomare and Waterloo)
- **Working with WREMO and Council EOCs (4)** to ensure consistency of delivery and confidence.
- **Taking a 'Significance' approach to event management** – using impact analysis - escalating early and changing mind-sets to ensure we work across and collectively face challenges.
- **Making our water whanau resilient** so we can respond as best we can.

- **Scenario analysis** to understand the impact on the company service delivery and customers from a range of factors:
  - Loss of buildings
  - Loss of IT systems
  - Pandemic
  - Serious harm
  - Earthquake
  - Tsunami
  - Flooding
  - Loss of communication / controls system
  - Power loss
  - Contamination of water supply
  - Lack of raw water
  - Terrorism
  - Solar storm
- **Practice / practice / practice**
- **Continuous learning** from events – reviewing and improving

Our water, our future.

Key Messages

Wellington Water

Your Home

Your Community

Our Region

- Days 0-7, Resilience starts at home –20 L/p/d recommended
- Days 8 – 30+, Community Infrastructure Resilience kicks into action
- For Central and Eastern Wellington City, Omāroro reservoir provides ~40days to allow further emergency equipment to arrive
- Day 30+, network restoration underway – the current Level of Service gap is 100+ days is some areas, but planned work will progressively close this gap over time (~30 year timeframe)
- Agility following a significant seismic event is key – best plans are likely to be disrupted

Our water, our future.

MAYORAL TASKFORCE THREE WATERS: PROGRESS REPORT

Purpose

At the meeting of the Strategy and Policy Committee on 11th March 2021 officers were tasked with provide a progress report on the recommendations of the Mayoral Taskforce: Three Waters.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☒ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☒ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	SPC 11th March 2021. The Committee agreed with the general direction of the Taskforce and its recommendations, and added several resolutions, mostly around water meters. Council 30th September 2021. Council made recommendations around the Government's Three Waters Reform proposal.

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Zac Jordan, Principal Advisor Resilience Infrastructure
Authoriser	Siobhan Procter, Chief Infrastructure Officer

Taunakitanga

Officers' Recommendations

Officers recommend the following motion

That the Pūroro Waihanga | Infrastructure Committee:

1. Receive the information.
2. Note the close relationship between the recommendations of the Taskforce and the Government reform proposals.
3. Note that the Government reform process is currently the priority for both Council and WWL officers.
4. Note that officers will provide a further progress report in October 2022.

Whakarāpopoto

Executive Summary

1. In December 2020 the Mayoral Taskforce presented 48 recommendations to the Council. On 11th March 2021 officers provided brief advice on each recommendation to the Strategy and Policy Committee.
2. The Committee requested that a progress report be provided in October 2021. The report is attached.
3. While progress is modest, addressing the issues raised by the Taskforce is a long term challenge, and developments through the Government reform process and recommendations from the Whaitua Committee will largely subsume the recommendations of the Taskforce.

Takenga mai

Background

4. The Wellington Mayoral Taskforce: Three Waters (Taskforce) was established by the Council in February 2020. The purpose of the Taskforce was to make recommendations to the Council on the management and governance of three waters in the City.
5. The Taskforce presented its report in December 2020, and in March 2021 the Strategy and Policy Committee was provided with advice on each of the Taskforce's 48 recommendations. The Committee agreed in principle with the overall direction and tenor of the Report of the Taskforce.
6. The Committee added several resolutions, mainly around water meters.
7. A summary of the Taskforce's recommendations, advice provided to the Committee and resolutions is at Appendix 1.
8. The Committee requested officers to provide a progress report in October 2021. A brief synopsis of progress is included with Appendix 1.

Kōrerorero

Discussion

9. Since the Taskforce issued its report, there have been several strategic developments.

10. The Government's Three Waters Reform package is moving at pace. This is likely to overtake many of the asset and financial management recommendations of the Taskforce and provides a strong incentive for the rationalisation of processes and policies. Additionally, the stimulus funding provided by the Government is directly addressing some of the recommendations.

11. It should be noted that the reforms have consumed significant effort from both Wellington Water Limited and Council officers – effort that otherwise might have been directed at some of the Taskforce recommendations

12. The Long-Term Plan also addresses several of the recommendations but does not address the backlog of renewals in a way that will make a significant difference to the performance of the network in the short term. As outlined in the Long-Term Plan, service levels may continue to decrease before they improve.

13. The work of Te Whaitua te Whanganui-a-Tara (Whaitua) Committee has progressed, and on 11th October 2021 the Planning and Environment Committee was presented with the 111 recommendations of the Whaitua Committee. The work of the Whaitua Committee is closely aligned with the recommendations of the Taskforce.

14. The review of the District Plan covers some aspects of stormwater management (such as hydraulic neutrality) but does not address the stormwater quality issues that were identified by the Taskforce. Water quality issues are expected to be addressed as the Whaitua starts to take effect, although this is likely not for several years.

15. Appendix 1 includes a short update on each of the recommendations. The update reflects the developments above, and outlines the significant progress that has been made on the following (recommendation numbers are shown in parenthesis):

    - Condition assessment activity (1).
    - WWL's asset management information system has been bedded in (3).
    - Overland flow paths and flood storage mitigations have been adopted in the draft District Plan (14).
    - The new Wastewater laterals policy was adopted in October 2021 (23).
    - The sludge minimisation project is well underway (24, 29).
    - WWL has started reporting carbon emissions in projects such as Omāroro Reservoir (28).
    - Both WWL and WCC staff are actively involved in the reform programme with WWL staff seconded into DIA (31-35).
    - Development contribution policy is under review (38).
    - Growth studies for Central City, Tawa, Johnsonville and Newtown are underway (39).
    - WWL is undertaking a business case analysis as part of the extension to the water meters projects commissioned by Regional Council.

16. In general, there has been modest progress on the findings of the Taskforce. Many of the stresses identified by the Taskforce are endemic across the sector, and Government reforms are designed to address these.

Whai whakaaro ki ngā whakataunga
Considerations for decision-making
Engagement and Consultation

17. The Committee is not asked to make a decision. It is noted that the Government reform debate has subsumed many of the engagement issues identified by the Taskforce.

Implications for Māori

18. Mana whenua made clear their views on Wellington's water during the Taskforce sessions. This view has been further reflected in Government reform processes, which is now the strategic main effort for much of the sector.

Financial implications

19. As outlined in the advice, many of the recommendations are unfunded and will not be delivered until future decisions are taken. This could well be an issue for the future Water Services Entity rather than the Council itself.

Communications Plan

20. There is no Communications Plan, however officers will develop key messages as work progresses. The main effort for communications is currently around the three waters reform programme.

Ngā mahinga e whai ake nei
Next actions

21. Officers will continue to monitor progress against the recommendations of the Taskforce, and will report back to the Committee in October 2022.

Attachments

Attachment 1. Mayoral Taskforce Update ⇩ Page 41

	Recommendation	Agency	Officer Advice [at as 11th March 2021]	Funding implications	Officer Recommendation	Update 11 November 2021
Assets and Services						
1	With urgency, task, and fund WWL to implement a plan for the inspection of critical assets across the three waters network within three years, in order to inform future investments.	WCC	This financial year WWL was provided with Government stimulus funding in order to commence inspection very critical assets. This work will inform the investment profile, however it will need to be sustained in out years. WWL is commencing with the very critical wastewater and drinking water assets as a priority, this work is underway and Council officers have been provided with a progress brief.	There will be ongoing funding requirements if this recommendation is to be sustained.	Accept in principle Noting that this will require future funding decisions	The Government's stimulus package included $4.3m allocated to asset condition assessments. The health of very high criticality assets has been inspected using this funding, and the Infrastructure Committee was briefed on 12th August 2021. Planning is underway for the assessment of high criticality assets. These assessments will commence in 2021/22 using available LTP funding. The number of assets, the available funding and specialist assessment resources will mean that only a portion of these assets will be assessed within this three-year funding period.
2	Task and fund WWL to prioritise increased renewals investment on those critical assets identified as needing maintenance and repair during the condition assessment programme.	WCC	This is starting to be addressed via the Long Term Plan. Officers are recommending a step change in the renewals budget.	Substantial, this will require an ongoing investment that will transition to the new water entity.	Accept in principle Noting that this will require future funding decisions	The LTP investment includes funding to complete Omāroro, improve knowledge of asset condition, and a programme of pipe renewals. As outlined in the LTP, this is expected to reduce the recent trend of unpredictable leaks and burst pipes, but it is not expected to fix all of the network problems over night. It was identified that service levels may continue to decrease and therefore increase operating cost. Where VHCA assessments are identifying issues requiring attention these are being planned into maintenance schedules (where a repair is possible) or programmed for renewal within the next 3-6 years as part of the overall capital programme (where replacement is required).
3	Task and fund WWL to continue to improve its asset maintenance systems and processes, and asset data collection and management.	WCC	Government stimulus funding has been allocated to WWL to improve asset and data systems. WWL has deployed asset management software (Maximo) and is working with Fulton Hogan as the maintenance and operations partner.	This will require ongoing investment during and beyond transition.	Accept	WWL has bedded in the Maximo system. This in turn has highlighted some systems integration issues between WCC and WWL. These issues are currently being addressed.

4	Substantially increase the level of funding in the WCC 2021/31 LTP for capital funding for renewals (possibly by ringfencing funds collected for water asset depreciation), operational funding for planned maintenance, and operational funding for reactive maintenance to reduce the risk of asset failure.	WCC	As per recommendation 2, it is proposed to increase the level of funding for renewals and maintenance via the LTP. This is based on asset management advice from WWL and must comply with the Council's revenue and finance policy. 'Ringfencing' is not proposed as part of the LTP, this would require substantial reconfiguring of accounts. However, ringfencing will effectively occur naturally as part of the Government reforms that are currently underway.	As outlined in draft consultation document	Accept	Funds have not been ringfenced, it is anticipated that Government reform will see this occur. An opex increase of $2.9m was approved in the 2020 Annual Plan. An annual capital works programme in excess of $60m is in place for the current financial year. However, the market's ability to deliver substantially more renewals than this is currently limited. There remains a significant backlog of deferred renewals.
Stormwater						
5	In the event that stormwater asset ownership and management is not transferred to a new entity in the Government reforms, Council should develop a plan for the future of stormwater management that recognises its connections to streams, the other water services, land use, and the roading network.	WCC	In March 2021 Elected Members will have the opportunity to provide feedback to the Government on two/three waters at DIA consultation. Following the consultation, a decision will be made on whether this recommendation needs to be actioned. The current expectation is that the reforms will include all three waters, noting that there are complexities around open channels, streams, and drains.		Note	Stormwater is in the Government reform proposals. No further action required. The inclusion of stormwater in the asset transfers is likely to require all Councils to work closely with the new entity to ensure interfaces, responsibilities and accountabilities are clearly defined.
6	The Council, together with WWL and with input from GWRC must develop a comprehensive suite of regulatory and non-regulatory interventions to require property developments and roading infrastructure to adopt water sensitive urban design such as the use of water impact assessments, rainwater/stormwater harvesting, rain gardens, constructed wetlands, green roofs, improved sump maintenance, strategic street sweeping and permeable pavements to mitigate water quality impacts and reduce peak wet weather flows.	GWRC WCC WWL	New legislation will have an impact consistent with this recommendation. The (GWRC) Natural Resources Plan gives effect to the National Policy Statement - Freshwater Management via Whaitua te Whanganui-a-Tara ('Whaitua'). This will in turn require improvements in wastewater overflows, wastewater dry weather leaks and stormwater contaminants. The status quo will not satisfy these increased requirements. From a proposed District Plan perspective, officers are drafting policies and rules to require water impact assessments and water sensitive techniques for subdivisions and developments. These proposed rules are subject to an RMA consultation process. Improving stormwater quality will be a secondary benefit of such policies and objectives - the District Plan cannot require but can only encourage the techniques and behaviours around improving stormwater quality.	Significant cost across several asset owners and contracts. Not currently funded.	Accept in principle	On 27 October 2021 the Whaitua Committee presented progress on its recommendations to GWRC at the Planning and Environment Committee, with 111 recommendations generally aligned with addressing this Taskforce recommendation. Eventually these will be considered for future iterations of the Regional Council's Natural Resources Plan and ultimately increasing requirements of resource consents and requirements of Council's Planning.
7	The chosen interventions should be incorporated into the Council's Codes of Practice and District Plan and mandated for all new development (both greenfield and infill/brownfield) supported by education for contractors, community groups, and the design and engineering community.	WCC	Whaitua recommendations are in line with the Mayoral Task Force recommendations. GWRC intends to commence a plan change process as part of the Whaitua implementation programmes. This means that the proposed District Plan (and the Code that is attached to it) will support water impact assessments and water sensitive techniques and standards. These will only apply to new subdivisions and developments, and possibly not all (this is still to be determined).	Applying regulatory measures at the customer level is expected to reduce the cost impact at the infrastructure level. Funding will be driven by RMA decisions.	Accept	Eventually the Whaitua recommendations, when adopted by Regional Council, will find their way into the Regional Council's Natural Resources Plan, but this has not happened yet and is unlikely to occur in the short term.

8	Propose changes to the District Plan so that all new land development consents are required to improve the stormwater effects of the site (a higher bar than maintaining the current level of effects). Where this is not possible or sensible within development sites, a formal stormwater offsetting programme could be adopted to fund more efficient centralised systems in the public realm.	WCC	As above, officers are currently drafting these rules. Under these drafts, some (but possibly not all – this is to be determined) new developments and subdivisions will be required to manage stormwater impacts. Officers are still working through thresholds for these requirements. Hydraulic neutrality will be a condition of resource consents and developers will be required to present a water impact assessment. This is expected in turn to drive WSUD into developments.	There are significant economic costs to the community from this recommendation. Funding will be driven by RMA decisions.	Accept Noting that requirements may not apply to <u>all</u> new developments and subdivisions	The draft District Plan includes permeability and hydraulic neutrality provisions. This is a rule in the plan itself. This is supported by design guidance which goes slightly further. The Design Guides have statutory weight and so form part of the resource consent process. The provisions do not go as far as requiring a site to improve the stormwater impacts. However, this is being explored before the Proposed District Plan is notified. The key issue will be balancing these requirements with the need to enable housing development as per the NPS-UD.
9	Work with WWL and GWRC to develop catchment scale stormwater planning which considers opportunities to 'daylight' currently piped streams, restoration of remaining streams, and implementation of green infrastructure to treat stormwater prior to discharge into streams, harbour, or the open coast.	WWL	As the City increases investment, officers propose to ensure, where practicable, to incorporate natural green and open spaces that use vegetation, soils, and other elements and practices to help deal with environmental challenges such as stormwater runoff and climate adaptation. This would supplement hard infrastructure, while providing increased biodiversity, flood protection, and more green and open spaces throughout the city. There is a requirement to develop catchment-based approaches as part of the regulatory framework, and new targets are expected via Whaitua. Proposed District Plan rules such as water impact assessments will be prepared based on WWL's stormwater management strategies. These are expected to be released in 2022.	Significant cost to private owners and the Council, not currently funded	Accept in principle Noting that this is contingent on future funding decisions	Not commenced. While WWL is continuing to progress the development of the Stormwater Management Strategies required as a condition of the Global Stormwater Discharge Consent, it has not been funded to develop any catchment-scale stormwater management plans. Stormwater impacts continue to be assessed on a development-by-development basis.
10	Work with WWL to develop an approach to the ownership and management of green infrastructure for private property developments and ensure that these assets meet design and performance requirements when being vested to Council ownership.	WCC WWL	This recommendation underscores existing challenges around ownership, management and funding of private green infrastructure, and the challenges of integrating it with hard infrastructure. While current policy settings do not require private green infrastructure, this is a likely outcome of work currently underway. Assets will need to meet design and performance requirements, and have maintenance properly funded.	There will be economic implications of this recommendation. Not currently funded.	Accept in principle Noting that this is contingent on future funding decisions	A modest trial is underway in the central City (Garrett St). WWL has developed proposed principles for how green infrastructure assets should be developed, owned and maintained but no funding has been provided to implement. Agreements on ownership and management will be required as part of transitioning stormwater under water reform.
11	Ensure all green infrastructure is adequately capitalised and depreciated to provide ongoing maintenance and renewals funding.	WCC WWL	All assets should be treated in accordance with good asset management practice. Green infrastructure should have the same disciplines as hard infrastructure.	Needs to be built into asset management plans	Accept	Not commenced. This is a sub-element of 10 above.
12	With input from WWL, consider the development of a stormwater bylaw to help manage the input of potential contaminants into the stormwater system.	WCC WWL	Officers consider that stormwater quality is likely to be improved as secondary benefit of the proposed District Plan. In time this may be complemented through a bylaw focussed on existing infrastructure, however this is a decision for the future that requires further analysis.	Costs to owners of such a bylaw are likely to be significant, although this offsets infrastructure costs.	Accept in principle Noting that this is contingent on future funding decisions	Stormwater quality limits are set in the Global Stormwater Consent which is issued by GWRC and held by WWL. This consent is in Stage 1 and we anticipate limits being applied by Regional Council in Stage 2 of that consent. Work on a Bylaw has not commenced and is not currently being planned. Eventually the Whaitua recommendations, when adopted, will find their way into planning and regulatory frameworks.

13	Develop standardised estimation and reporting of stormwater effects for all Council projects and require the assessment of options to offset these effects.	WCC WWL	Council projects will be subject to the same rules as other investors. However, the Council can lead by example through pre-empting these rules and developing a framework before the District Plan rules take effect.	Additional costs added to projects before this is legally necessary.	Accept in principle Noting that this is a cost that is not budgeted	Stage 1 of the Global Stormwater discharge consent requires analysis of the catchments and their environmental pressures. As part of the Regional Council's consideration of limits applied to Stage 2 of the Global Consent, projects will need to respond to the catchment needs relating to those projects and report on them accordingly.
14	With WWL, further integrate the use of roads and open spaces (such as parks and sports grounds) to act as overland flow paths and flood storage, to reduce the effects of stormwater flooding on public health, safety, and property.	WCC WWL	WWL and WCC Transport will continue to further integrate the roads and open spaces to act as overland flow paths and flood storage to reduce the effects of flooding. There will also be rules in the new District Plan protecting the overland flow paths and secondary flow paths. These will be in the Natural Hazards Chapter, and the Transport Chapter will also have integration through the Water Sensitive Development Chapter.		Accept	Complete – this has been included in the Draft District Plan under the Natural Hazards chapter to include flood risk, ponding, overland flowpaths and inundation risk associated with Sea Level Rise / Storm Surge.
Drinking Water						
15	Rapidly progress the business case for universal residential 'smart' water meters across Wellington City, building on the economic case recently completed for GWRC and as endorsed by the WWL Shareholders Committee, and include budget provision for installing these meters in the out years of the 2021/31 LTP.	WCC	Officers are of the view that without water meters (with a well-designed tariff) as a primary measurement mechanism, it is very difficult to reduce water leaks and transmission loss, and to make good investment decisions, or to avoid needing to construct a costly new storage facility. Officers note that further analysis would need to be undertaken, and that realistically the vehicle for decision making would be either: the Annual Plan for 2022/3; or Government reform consultations; or a separate process undertaken by a new entity. Porirua City Council is proposing to make meters compulsory for new developments and units via the District Plan.	There are significant financial implications associated with this recommendation, cost of meters is likely to be around $50m.	Accept Noting that further analysis is required, and that the vehicle for decision making is yet to be determined	Work on the further development of the business case has only recently commenced. No funding was provided within LTPs but agreement has recently been reached with GWRC about their funding the next phases of work. The work is being progressed towards informing funding decisions for the investment period commencing in 2024/25.
16	Consult with ratepayers on the merits of these smart meters for reducing water loss and enabling more water-efficient behaviour as part of consultation on the 2021/31 LTP.	WCC	Officers consider that smart meters can provide a level of intelligence that is currently not available.		Accept	Not commenced. Water meters were not included in the 2021 LTP. (see recommendation 15, above).
17	Establish a suite of policy measures, including changes to the District Plan, relevant bylaws, and Codes of Practice that result in reduced drinking water use in new residential developments, such as through requiring rainwater harvesting and storage.	WCC	Officers consider that ensuring new development is water efficient is essential if we are to mitigate the impacts of growth on water security and investment. Water efficiency gains from new builds are 'banked' for 50+ years life of a property and can provide resilience and stormwater benefits that contribute to climate change objectives. Officers are currently considering if this should be included in the District Plan	Costs to the Council are low	Accept Noting that this will not occur for several years	Not commenced. It is expected that Taumata Arowai will shape the drinking water environment in the next 1-3 years. Water storage is not currently required in the Draft District Plan, but again it is encouraged through the Design Guides.
18	Request WWL to investigate the opportunity to harness international innovations around smart water networks and other technologies that support efficient water use and network operations.	WCC	WWL is connected to the international water sector through a range of mechanisms, such as a consultancy panel, membership of the Water Services Association of Australian and SWAN, the global Smart Water Networks Forum. Key staff are tasked with identifying	Minimal, this recommendation is already part of WWL's ambit	Accept	WWL continues to monitor the opportunities associated with the use of smart water networks. The role of smart water meters within such a network is being considered as part of the business case work.

			opportunities to adopt new technologies.			
Wastewater						
19	Task and fund WWL to develop a road-map for consideration in the 2024/34 LTP that would see WWL (or a future entity) funded to achieve compliance with the National Policy Statement – Freshwater Management by 2040.	WCC	Compliance with the NPS-FM will be through limits set in NRP based on the Whaitua recommendations. The limits will be tighter than existing , and the roadmap needs to reflect water quality parameters and catchments.	This is partly funded	Accept Noting that future decisions will determine the deliverability of the roadmap	The Whaitua committee has made its recommendations. These are received and will be considered by the Regional Council for inclusion in future iterations of the Natural Resources Plan and associated rules and Resource Consents. WWL has not been funded to develop a roadmap towards compliance with the NPS-FM. It could be expected that the development of such a roadmap will form part of the requirements set out in the changes to the Natural Resources Plan.
20	Task and fund WWL to progress the Owhiro Catchment pilot programme as a high priority to inform the development of the road-map and to develop and implement a programme that strategically works through catchments to identify and repair cross-connections or asset failures in both public and private assets, where catchments with open streams and community connection are prioritised.	WWL	The Owhiro Bay pilot is underway, although funding for the envisaged catchment rollout is to be sought.		Accept Noting that future decisions will be required for programme rollout	The Owhiro Bay pilot is well underway and the initial phase is nearing conclusion. Investigations are underway for priority catchments such as Newlands in preparation for Sanitary Services Surveys. This additional work is being completed within the existing funding provided
21	The road-map should include activities to address wastewater network capacity issues (including stormwater ingress) to progressively reduce the requirement for untreated wastewater discharges into the environment from constructed overflows, with the goal that constructed overflows should only be used in genuine emergencies.	WWL	WWL is tasked with for developing a roadmap for consideration. The affordability of delivering that roadmap is yet to be determined, and will be the focus of future decisions.	This will involve significant capital investment	Accept Noting that future decisions will be required to support	The adopted phasing of suburbs in the Council's Spatial Plan has been used to commission WWL to progress from pre-feasibility to Investment Advice for the 2024 LTP. It is anticipated that the work to prepare the investment advice for the first tranche of suburbs identified in the 2021 Spatial Plan will be ready in advance of the 2024 LTP. In tandem WWL has commenced a project to investigate options to increase the storage of wastewater in the main network to help to prevent the overflows that can occur at times of peak demand. This will not be significantly advanced before 2024.
22	Urgently review and strengthen consent and code of compliance processes to ensure there are clear accountabilities and a low risk of future illegal cross-connections.	WCC	This work is underway	The review has been undertaken and processes strengthened.	Accept	Complete.

23	Establish a complete set of regulatory and policy measures to ensure that Council can require landowners to undertake repairs to failed private assets, record failures on Land Information Memoranda until repaired, and provide a funding mechanism to support landowners to make these repairs, such as through instalments on their rates bill or by enabling Council to recover the costs when the property is sold.	WWL WCC	WWL's advice is to establish a complete package of initiatives to support the identification and repair of these issues. This includes communicating the need for action in the community, establishing a clear compliance framework, identifying the issues, and making it easy for customers to effect repairs including through providing finance support and access to qualified contractors. Recording issues on LIMs can already be done and will be considered as part of the framework, and the laterals policy is being revisited through the LTP. There are existing provisions for the Council that can require landowners to address issues.	Unknown	Accept in principle Noting that further analysis is required Noting that the LTP is addressing laterals policy	For laterals this is complete - primary barriers were identified as costs and complexity of repair and renewal of wastewater laterals in the road (often as a result of third party service strikes). In the 2021 LTP the Council proposed to adopt the wastewater laterals in the road. This was supported and the Council has agreed the new 2021 Wastewater laterals policy with associated Opex and Capex funding made available to Wellington Water to give effect to the new policy as adopted by the Infrastructure Committee on 14th Oct 2021. There remains limited means to require homeowners to maintain and repair defects on the sections of laterals on private property. WWL is investigating the range of policy measures to achieve this most effectively.
Network resilience						
24	When evaluating future sludge treatment options, consider the resilience risks involved in piping wastewater sludge across earthquake faultlines.	WWL WCC	The resilience risks involved in piping wastewater sludge was one of the criteria considered by WWL when evaluating and prioritising treatment options as part of the wastewater sludge minimisation project. An evaluation of how the preferred option addresses this risk will be included in the business case for this project. That business case is currently under development and the draft is expected to be presented to Wellington City Council by 31 March 2021.	Estimate in LTP	Accept	Complete.
25	Request that WWL develops greater understanding of the compounding effects of seismic activity on buried water infrastructure.	WWL	Improving data collection is a WWL focus area under stimulus funding and more generally to support asset management. A comprehensive programme concentrating on critical assets will help WWL to understand the collective state of assets and consider the role of seismic activity.		Accept Noting that this will be a consequence of improved data and analysis tools	Underway. Noting that it is very difficult to determine if damage is due to seismic activity, with early results from condition surveys not supporting the notion that pipe failure is significantly related to seismic events.
26	Task and fund WWL to identify critical three waters infrastructure at risk from natural hazards and prioritise them for upgrade, having regard to the previous work undertaken for the Wellington Lifelines Group resilience project.	WCC	Five resilience projects are in scope of this recommendation: • The cross harbour pipeline has been deferred beyond the 2021/31 LTP (GWRC) • General toughening of water pipes occurs during renewals (GW) • Omāroro reservoir is underway • Moe-i-te-ra reservoir is under review • Carmichael - Johnsonville and Karori pipeline is unfunded (GW)	Funding decisions have already been made around these projects	Accept For WCC assets only	Omāroro and Moe-i-te-ra review are underway.
27	Continue working with other utility service providers to identify joint earthquake and climate change adaptation strategies, such as alternative 'shared corridors' for utility	WWL	WWL works with other providers where possible for seismic risk issues Policy setting around climate adaptation do not yet exist; there is no	Funding is the domain of asset owners	Note	The Council has increased its resources in Climate Change Mitigation and Adaptation by adding an Adaptation Principal Advisor who will develop strategies for consideration on how the Council can

	services to be moved away from hazard areas.		intention or funding to move assets away from hazard areas			best adapt to climate change.
Low carbon transition and resource recovery						
28	Task and fund WWL to measure carbon and to pursue projects that will reduce the carbon emissions generated by the three waters services.	WWL	WWL has a programme of work underway, mainly focused around wastewater sludge. Investigations around investment in energy efficiency and renewable energy are ongoing.	Minimal impact, potential future costs.	Accept	WWL is now capturing the carbon emitted at projects such as Omāroro, and is reporting in standard project reports.
29	Advance the sludge minimisation project to deliver more efficient treatment of biosolids, including beneficial reuse of biosolids and treated wastewater where feasible.	WCC WWL	Currently in LTP, however this will require the full investment in phases 1 and 2 to achieve the desired outcome.	LTP	Accept	Underway.
Improving governance and achieving sufficient, sustainable funding						
30	Commit to the concept of an independent, publicly-owned, not-for-profit, water management and asset-owning entity that is governed and operates in accordance with a statement of intent from shareholding Councils.	WCC	Officers support this recommendation	Significant impact on Council financials yet to be assessed	Accept	Underway, given recent announcement on the Government reform programme.
31	Actively participate in the Government's national Water Reform agenda, to ensure that it delivers on the principles and goals agreed by the Taskforce	WCC	Officers support this recommendation. Officers are engaged with DIA directly, and with a CE forum for the lower North Island. Water reform is also an agenda item for the Mayoral Forum, and Councillors are invited to participate in Government workshops.		Accept	Underway.
32	Engage positively and proactively with the other Councils in the region to agree on how the region's people and the environment can best benefit from the reform programme and associated funding.	WCC	Officers support this recommendation, and participate in a regional co-ordination framework that is designed to deliver the best outcome for Wellington Region.		Accept	Underway – a Regional working group of officers including WWL has been in place since the beginning of the reform process and continues to share joint knowledge, resources and thinking.
33	Work with other Councils to develop a plan to transfer three waters debt and asset ownership off Councils' balance sheets at the 2024/34 LTP, to either WWL or a new entity formed through the Government reforms.	WCC	Officers consider that Government reform is likely to proceed. On that basis, officers support this recommendation with respect to a new entity. PWC has undertaken some primary analysis in this area and has presented results to Councillors. With respect to asset transfer to WWL, officers consider that further due diligence and analysis would be required.		Accept Noting that further analysis would be required in the case of WWL	Underway and subject to Government reform programme. [must be read in conjunction with recommendation 30, particularly regarding public ownership.]
34	Ensure the entity has the ability to borrow against its assets, thereby smoothing water infrastructure investment over time.	WCC	This is a fundamental requirement of the reform programme		Accept	Complete.
35	Enable the entity to raise revenue directly though customer charges, while protecting incentives for rainwater harvesting.	WCC	This is a fundamental requirement of the reform programme		Accept	Likely to be addressed via the transition plan of the Government three waters reform programme.
36	Communicate the benefits of switching from the current water charging model to a method based on actual water consumption to reduce demand on drinking water and incentivise property owners to repair leaks.	WCC	This recommendation is fundamentally about water meters. Officer consider that reductions in water demand are significantly higher if volumetric-based charging is also applied.	Significant costs (as per recommendation 15,16), but benefits are expected to exceed costs	Accept	Not commenced. Water meters are removed from the 2021 LTP. It is expected that the WSEs as outlined in the Government reform proposals will pick up the momentum for water meter issues.

37	Evaluate any future water charging system to ensure that it is transparent to all users, fair and reasonable in terms of providing a long term ability to deliver sufficient, affordable water to low income households and ensuring that it does not limit the uptake of rainwater tanks for harvest and reuse for non drinking uses	WCC	Officers consider that it is feasible to introduce water meters with a well-designed tariff that delivers on this recommendation.	Significant costs	Accept	This is expected to be partially addressed as part of WWL's development of the smart meter business case, as funded by the Regional Council. That work is expected to consider the elements of a transparent, fair and effective charging regime (including how this achieved in other jurisdictions) but not the design of a proposed regime for the Region.
38	Review the Council's development contributions policies to ensure these are requiring new developments to meet the infrastructure costs that they create, and require the new asset owning entity to ensure that upgrades to asset capacity due to population growth are paid for through development contributions and use of the Infrastructure Funding and Financing Act.	WCC	Given the high level of growth and high levels of investment, reviewing development contributions and considering how these might reflect costs in different growth areas has already commenced, with a broad principle to recover funding for all growth related development (except green building remissions).		Accept	Underway. The Developer Contributions Policy is currently under review.
39	Synchronise three waters investment to enable city growth in identified areas in the new District Plan	WCC	WWL undertakes growth studies in areas identified by WCC. Areas have been identified for the LTP. In some areas growth is occurring ahead of infrastructure in some areas causing risk to levels of service. Sufficient funding will be needed for new infrastructure.	This recommendation is subject to funding decisions	Accept in principle Noting that this is contingent on future funding decisions	Underway. Growth studies have been initiated for the Central City, Tawa, Johnsonville and Newtown as outlined in the Council's approved 2021 Spatial Plan.
Community Participation						
40	With iwi, key stakeholders and the wider community develop a process for the formation of catchment governance groups and catchment plans, within the framework of the Natural Resources Plan and associated resource consents.	WWL	There are some wide obligations under the Global Stormwater Consent. Any community groups need to be clearly established within consent processes.	Implementation of plans may be subject to funding	Accept in principle	This is currently planned but running behind schedule. It will be commenced as part of the Regional Council's requirements of the Stage 2 of the Global Stormwater Consent, which will in turn be a precursor to the implementation of the Whaitua.
41	Engage Iwi, key stakeholders, and the wider community around the Government's reform proposals to develop governance mechanisms that enable direct democratic input while achieving the economies of scale offered by a large corporate entity.	WCC	Consultation is schedule to occur later in 2021. Note that DIA is leading iwi engagement		Accept	The engagement process for the Government reform programme is likely to be mandated via legislation.
42	Investigate ways to connect people with their catchment using measures such as landscaping and signage to identify the location of piped streams.	WWL	Officers are of the view that this recommendation may detract from effort that needs to be placed into fixing pipes. This falls under recommendation 40.	Moderate cost	Note	Not commenced. [SPC 11 March 2021 - this recommendation is a priority that can best be progressed via catchment governance groups once established as per recommendation 40]

43	Establish clear lines of accountability and communication so that customers know who to contact about all water-related matters and where to find and easily access water-related information and performance data.	GWRC WWL WCC	This is a complex area and it can be difficult for citizens to find the right agency. For water quality however GWRC is the regulator and holds most of the information. Officer consider that water-related information and performance data is the responsibility of the GWRC and propose to liaise with officers there. Officers recommend that lines of accountability be accepted as 'workable' until the transition to a new entity that subsumes all aspects of water management, effectively giving a one stop shop for all water issues		Note	Recommendations 43 - 46 have been raised with GWRC. All water pollution enquiries now go to GWRC (as the regulator) and not WWL. As outlined in (3) a change is currently being proposed where WWL takes responsibility for all direct customer contact instead of the WCC Contact Centre.
44	Review the effectiveness of receiving waters quality monitoring processes, such as LAWA and Baywatch, and noting Auckland Council's 'Swim Safe' system, including a specific focus on whether the selected monitoring sites are consistent with the needs of communities and whether public health notices and signage are clear, unambiguous, and well located.	GWRC	As with 43, officers propose to raise this recommendation with GWRC.		Note	[SPC 11 March 2021 - this recommendation is a critical concern for our community following a number of wastewater overflow events in the past year and the need to elevate community awareness where public health risks are present].
45	With iwi and partner agencies, develop a cultural health and ecosystem health monitoring programme at selected sites around the Wellington streams and coastline.		Officers consider that this type of programme belongs in existing resource consent processes.		Note	[SPC 11 March 2021 - this recommendation was intended to develop publicly available performance information beyond what is required for the resource consent process.]
46	In collaboration with partner agencies, build on the Water That Counts pilot to develop and progressively expand an open-access data portal for water, including measures such as drinking water quality and consumption, water leakage, fresh and marine water quality monitoring, and other key performance measures including compliance with consent conditions.	GWRC	Officers consider that this recommendation is a subset of 43.		Note	
47	Redesign and align WCC and WWL customer satisfaction surveys to better reflect community aspirations and expectations about three waters services.	WWL WCC	Officers have developed an internal *intelligent client* function, with input from WWL, for the purposes of better assurance, oversight and monitoring. Officers consider that this recommendation can be deferred for the new entity, which is likely to look to standardise customer feedback across a wider Region.		Note	
48	Support the benchmarking of cost and operations for three waters services against other comparable providers to better assess the performance of WWL, additional benchmarking of the condition of the assets to assess the performance of the network, and make these results publicly available where possible.	WCC	WWL is already undertaking some benchmarking. Officers do not consider further benchmarking a priority given the Government reforms and the physical work that must commence as soon as possible.		Note	

	Recommendations from amendments SPC 11th March 2021					
	12. Request officers to write to GWRC informing them of the council's decisions regarding the Mayor's Taskforce on Three Waters and formally requesting their input into the October 2021 status update.	WCC				Complete. Officers have been in close communication with GWRC on water issues including Whaitua.
	13. Note that any discussion of water meters has been removed from the Long-term Plan consultation document by a decision of the Annual Plan / Long-Term Plan Committee.	WCC				Complete.
	14. Note that Wellington Water Limited will progress a business case in 2021/22 about the benefits of universal smart metering for leak detection and providing consumption information to customers, as well as what additional benefits could come from volumetric charging, but that different models of volumetric charging for drinking water is not in the scope of that business case.	WWL				Will become part of the programme of work associated with the development of the business case for universal smart water meters that has recently been funded by Regional Council.
	15. Note that the community will have an opportunity to share their views on water meters as part of a consultation following the business case.	WCC				Not commenced.
	16. Note that Wellington City Council will continue to work with other councils in the region around consultation on water meters.	WCC				Universal metering is part of the regional 30-year investment direction that has been presented to the Wellington Water Committee and to be discussed again at the November meeting.
	17. Agree that Wellington City Council will not consult on volumetric charging for drinking water until a report has been provided to council, which evaluates any future water charging system to ensure that it is transparent to all users, is fair and reasonable in terms of providing a long-term ability to deliver sufficient, affordable water to renters and low-income households, and that it does not limit the uptake of rainwater tanks for harvest and reuse for non-drinking uses.	WCC WWL				An assessment of the effectiveness, transparency and fairness of charging regimes is expected to be undertaken as part of the work programme for the business case for universal smart water meters that has recently been funded by Regional Council .
	18. Request officers to provide a report on different models for volumetric charging for drinking water used at other territorial authorities in New Zealand and how each of them address issues of equity for renters and low-income households, prior to decisions on the 2022/23 Annual Plan consultation document.					This is expected to be completed as part of the work on approaches to charging described in item 17, above.

PROJECT JASMINE – SEWAGE SLUDGE MINIMISATION

Kōrero taunaki

Summary of considerations

The sewage sludge minimisation project (Project Jasmine) is gathering momentum. Governance arrangements are in place, and key work streams are progressing.

Unlike a traditional Council project, Project Jasmine funding is proposed to be structured around the Infrastructure Funding and Financing Act. This means that the mechanism for funding the infrastructure is not yet in place, but costs need to be incurred in order to meet consenting, land acquisition and procurement milestones.

This is in a commercial environment where there is cost and supply chain uncertainty, likely to trigger the requirement for further public consultation due to costs escalating beyond those consulted on in the LTP.

In order to progress Project Jasmine, key decisions need to be made and identified risks need to be accepted and managed.

Purpose

This report asks the Pūroro Waihanga - Infrastructure Committee to agree to the next steps of Project Jasmine.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☒ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☒ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☒ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	Outline relevant previous decisions that pertain to the decision being considered in this paper. Pūroro Waihanga | Infrastructure Committee - 23 June 2021 - Noted that Wellington City cannot achieve carbon and waste minimisation objectives unless sewage sludge is decoupled from the Southern landfill. - Noted WWL's business case outlining that lysis-digestion with thermal drying is the preferred technical option for Wellington City. - Noted that officers are developing a commercial framework with

	Crown Infrastructure Partners using the provisions of the Infrastructure Funding and Financing Act 2020 to fund sludge minimisation. - Noted that officers are developing a governance framework in conjunction with Crown Infrastructure Partners and Wellington Water Limited. - Noted that officers are assessing integration of sludge minimisation with the Government's Three Waters Reform package. - Noted that officers will report to the Finance and Performance Committee in September, and will provide further updates as required and via the Quarterly Report. Pūroro Tahua | Finance and Performance Committee - 16 September 2021 - Noted the engagement to date with the Crown regarding the Infrastructure Funding and Financing Act as a tool to fund the Sludge Minimisation Facility Project. - Noted the next milestone for the project will be consideration by Te Pūroro Waihanga Infrastructure Committee of the preferred technology solution and procurement strategy. Pūroro Waihanga | Infrastructure Committee – 14 October 2021 - Requested officers to provide an update on the sludge removal project as a priority
Significance	While Project Jasmine is a project of high significance (given the importance to Wellington City and the high capital cost, the decisions contained in this report are rated rated high significance, [THIS SHOULD READ MEDIUM SIGNIFICANCE]

Financial considerations

☐ Nil	☒ Budgetary provision in Annual Plan / Long-term Plan	☒ Unbudgeted $36m

Risk

☐ Low	☐ Medium	☒ High	☐ Extreme

The risk consequences for the City and for the Council in relation to Project Jasmine are significant and are further detailed at the end of this report.

Author	Heath George, Specialist Financial Adviser
Authoriser	Sara Hay, Chief Financial Officer Siobhan Procter, Chief Infrastructure Officer

Taunakitanga

Officers' Recommendations

That Te Pūroro Waihanga | Infrastructure Committee:

1. Receive the information.
2. Agree to engage further with the community and in particular with:
   - the residential ratepayer base regarding the indicative change in the proposed levy range compared to what was included in the LTP consultation.
   - the commercial ratepayer base on the indicative levy
3. Agree to recommend to Council to approve a budget increase for the 21/22 and 22/23 financial year of $36.15m, which will be debt funded, and delegate authority to spend to the Chief Executive.
4. Note that, subject to funding being successfully achieved using the Infrastructure Funding & Financing Act, the budget increase will be recovered from the special purpose vehicle set up to facilitate the finance, with the likely exception of costs associated with the land purchase.
5. Agree to the procurement approach specified in this report including market sounding for Early Contractor Involvement in November 2021 and release of an RFP in January 2022 (noting that commencing the procurement is not pre determinative of a final decision on the project)
6. Note that the project has identified a preferred technical solution of Lysis-Digestion and Thermal Drying at Moa Point and is progressing formal costing and design of this solution (noting that progression of this costing and design is not pre determinative of a final decision on the technical solution)
7. Note that the case for change is well advanced and is being strengthened by further economic analysis to complete the full business case.
8. Note that there is one worldwide credible supplier for THP, and that a procurement strategy has been developed to mitigate the risk this presents.
9. Note that officers will report back in early 2022 with the final business case and results from the community engagement to propose a Committee decision to proceed with the project, and the technical option, and to provide an update on the funding arrangements and on other work streams.

Whakarāpopoto

Executive Summary

10. Significant effort has been invested by Council, Wellington Water Limited (WWL) and Crown Infrastructure Partners (CIP) in initialising Project Jasmine.
11. As the project normalises, risk and issues are emerging that need to be brought to the attention of Te Pūroro Waihanga | Infrastructure Committee. In particular, funds need to be spent to progress the project, but these funds are not budgeted and cannot be recovered until agreement is reached with the Crown.
12. Public consultation has occurred through the LTP however it is prudent to undertake further public engagement in light of escalating project costs.

Takenga mai

Background

13. The sewage sludge minimisation project (Project Jasmine) sets out to enable the City to meet its waste and carbon aspirations. Project Jasmine is a complex and bold undertaking that seeks to introduce new technology for managing sewage sludge, funded by using the Infrastructure Funding and Financing Act 2020 (IFFA). This is the first time that IFFA has been deployed for an investment of this type.

14. Through the Long-Term Plan 2021, Wellingtonians were consulted on an investment at Moa Point in the order of $147m - $208m to minimise the amount of sludge produced, and to avoid the need to pump sludge across the City to the Southern Landfill. The LTP consultation indicated households would be charged a levy of around $70-$100 per residential ratepayer to repay the financing required to fund the project. The consultation was silent on the impact to the commercial ratepayer base.

15. In June 2021 the Infrastructure Committee received and noted a draft short form business case, prepared by Wellington Water Limited (WWL), detailing a multi-criteria analysis (MCA) of technical options that might be suitable for minimising sludge at Moa Point.

16. The MCA identified that lysis-digestion with thermal drying (THP) is the preferred technical option for Wellington City. An updated Case for Change - Preferred Option is attached at Appendix 1. This has been prepared in advance of the completion of the long form Business Case, expected to be completed in early 2022.

17. In September 2021 the Finance and Performance Committee received an update on how Project Jasmine was intended to be funded, outlining the specific mechanics of the IFFA.

18. Since then, a project governance group has been established, co-chaired by two Council Executive Leadership Team members, with senior representatives from the construction and water sectors, Crown Infrastructure Partners and a programme governance specialist. WWL does not sit on the governance group but provides specialist advice to it.

Kōrerorero

Discussion

19. The governance group has reviewed the case for change and MCA. The MCA was a substantial piece of work that incorporated input from technical experts and iwi to ensure it developed solutions that delivered multiple objectives. The governance group supports the selection of Lysis-Digestion and Thermal Drying as the preferred technical solution for Project Jasmine as outlined in Appendix 1.

20. While the case for change is sound and unlikely to change, the governance group has requested that the economic benefits analysis be strengthened and updated in light of prevailing market conditions and trends. The costs outlined in the LTP have already escalated to $160m - $220m, and in turn the estimated levy for beneficiaries has increased. This is also outlined in the attached report in Appendix 1.

21. The accuracy of the cost estimate will be tested via the further economic benefits analysis and market sounding however, it is prudent to engage further with the community on the anticipated updated costings.

22. It is proposed to bring the final business case to Te Pūroro Waihanga | Infrastructure Committee for approval in early 2022.

23. In the meantime, the governance group has recommended that the project continue, subject to continual critical analysis to ensure that the increased costs still represent value for money (or otherwise). As part of this approach, the external teams will be engaged in a way that allows Council to terminate their services (if necessary) after key stages of the process.

24. CIP have established three conditions precedent that the project needs to meet in order to access funding under the IFFA. These conditions must be met in advance of CIP achieving financial close, currently scheduled to be by October 2022. The conditions are
    - A sufficient level of design development and cost certainty - estimated to be P80 costing based on developed design or greater.
    - Consents (Resource Consents and Land Designation) have been obtained or clear consenting strategies are in place to indicate the likelihood of them being obtained.
    - Project land has been acquired subject to settlement conditions linked to financial close.

25. In agreeing to proceed, the project will incur costs that are not budgeted in the LTP. As the proposer of this project the Council is required to fund these costs up to achieving financial close.

Budget to Financial Close

26. All components of the budget excepting the land transaction will be eligible to be refunded immediately after financial close in September 2022. This Crown process is designed to ensure IFFA projects are appropriately scoped, designed and managed to mitigate the risks inherent in any large-scale project.

27. It is anticipated that the project will need to incur the following estimated costs in the following categories in order to achieve financial close:

Section Description	Cost Breakdown Description	Estimated Cost (NZD)
Project Direct Costs	Seconded Team members	1,298,934
	Project Team Consultants	8,718,579
	WCC Personnel	831,140
	External Project Board Members	293,150
	Wellington Water Advisors	157,800
	Moa Point Operator (Veolia) support	170,950
	Probity Auditor	45,850
	Site Investigations, Surveys, etc	353,850
	SUBTOTAL - Project Direct Costs	**11,870,253**
Tier 1 & 2 Suppliers /ECI Contractor Costs		**1,330,000**
Tenant Relocation Costs	AGS Relocation costs - Building	2,165,305
Land Acquisition Costs	Property Purchase	4,147,500
	SUBTOTAL - Land Acquisition	**6,312,805**
	TOTAL ESTIMATED COSTS	**19,513,058**
	Project Contingency	5,033,407
	Site Preparation and Access Contingency	6,887,000
	Management Contingency	4,715,020
	PROPOSED PROJECT BUDGET - Phase 3	**36,148,486**

28. Project direct costs are primarily labour costs associated with key packets of work, specifically preliminary design, consenting, stakeholder engagement, project management, project governance, procurement and existing Moa Point operator involvement.

29. Supplier costs are professional service costs for key suppliers necessary to contribute to the preliminary design activities. The complexity of the site and the impact this will have on structural design means that early engagement of key suppliers will allow early identification of risks and necessary mitigating activities.

30. The land is being acquired from Wellington International Airport Limited (WIAL) using provisions of the Public Works Act. The site is currently occupied by Airport Ground Services (AGS), and therefore it is appropriate for the Council to pay the costs of relocating AGS to a new base of operations. WIAL had an existing plan for the relocation of AGS which involves significant earthworks at the southern end of the airport. The Council and WIAL remain in commercial discussions on how to share costs and achieve the existing AGS relocation plan.

31. The proposed plant will require RMA approval at both a district and regional level. At a district level, the recommended approach is to alter the existing Moa Point Drainage and Sewage Treatment Plant Designation (Designation 58) through a Notice of Requirement, which would alter the existing designation boundaries as well as some of the existing conditions to provide for the new plant. At a regional level, resource consents will be required for discharge to air, discharge of stormwater, and earthworks activities. These activities are considered discretionary activities.

32. The three contingency budgets will be accessible through approval by the governance group, directly or by delegation. These budgets reflect the necessity to have some flexibility in the early phase of this project to allow practical responses to unforeseeable changes in price or scope.

33. It is proposed that the project proceed in line with the budget above, on the basis that costs will be recovered via the IFFA. In the unlikely event that the project does not proceed, these costs will need to be written off by Council.

34. In the event that the project is placed on hold for any sustained period, it is expected that demobilisation will see the loss of the design team and a delay of up to six months with a loss of momentum that could potentially compromise the ability to achieve sludge minimisation by 2026, when landfill consents expire. This in turn will compromise efforts to minimise other waste streams. Given these risks, officers recommend continuing with the project as set out in the recommendations. Noting that such progress will not determine Council's ultimate decisions on the project.

Procurement

35. Project Jasmine is a large and complex project incorporating international and domestic procurement requirements. To optimise the procurement outcomes for the project, the Council will need to tailor procurement methodologies after considering factors such as product lead time, impact on downstream project activities, and the competitiveness of the market.

36. The Council proposes to initiate two key procurement processes.

- Market sounding by way of a request for information (RFI) to ascertain the appropriateness and the ability of the available main contractors to successfully deliver the project and the market's response to the proposed contracting model. The response from the market will inform the necessary Request for Proposal (RFP) which will include the information from the construction market. The result of which will enable a successful main contractor to participate in the preliminary design phase of the project, with a view to transitioning to a formal construction contract. This is a common procurement discipline for highly complex projects where consideration of construction materials and practices are an important part of the design process.

- Request for quote (RFQ): an RFQ will be issued for suitably qualified peer review resources (including quantity surveyor analysis) to review and monitor the design activities.

<u>Thermal Hydrolysis (THP) Supplier</u>

37. An independent technical analysis of the worldwide market for the componentry for THP has revealed that there is really only one credible supplier of the technology worldwide, based in Europe.

38. This lack of a deep market presents a procurement risk for the Council. It is proposed to mitigate this risk through a procurement process that effectively maintains the same disciplines as a competitive process and follows the highest standards of probity.

39. Watercare in Auckland intends to construct a THP plant at Rosedale. The Project Jasmine team has multiple connections with the Watercare team, both operationally

and at the Project Board level, with a view to exploring opportunities to share risk, procurement, processes, and logistics.

Procurement Risks

40. The complexity and aspirational timelines of this project increase the risks associated with procuring resources and materials. The key risks this project faces are:

- The buoyancy of the construction sector. In New Zealand at present there is a significant pipeline of infrastructure investment that cannot be fulfilled by the capacity of the construction sector (including professional services). This means invitations to participate in procurement processes must be appealing, financially attractive, and considerate of industry capacity constraints and lead times, giving the sector time to engage.
- The sourcing of materials from overseas, which are subject to specific challenges such as foreign exchange volatility, disruptions due to the current global pandemic and increases in shipping costs, inflationary pressures on materials and labour in the international construction sector and the likelihood of being charged a price premium to guarantee supply.
- Supply chain constraints potentially extend to technology providers for the specialised THP equipment and all the associated plant equipment which can be sourced from numerous suppliers. The coordination of purchase and delivery will require careful planning and management.
- The recommended delivery model (ECI with a novation of design to the construction contractor) will require a careful balance of allocating and assuming risk and incentivising suppliers/constructors without exposing suppliers to large risk premiums. With the construction market more hesitant to hold construction and design risk than they might have previously been, WCC may be required to revise its delivery model based on market feedback prior to tendering.
- Contractually, there are a number of different engagement options available particularly around the design. WCC has considered both the direct engagement of the lead designer or the novation of design and lead designer to the main contractor. There are several commercial and legal risks that need to be managed associated with each option and the recommended market sounding exercise will enable WCC to appropriately assess the severity and likelihood of these risks and develop appropriate mitigation strategies which may include altering the recommended delivery approach.
- The risks associated with process performance are relatively unfamiliar to the main contractor fraternity in New Zealand. Careful consideration therefore needs to be given to how process risk is managed (in terms of the performance of individual plant items), and who owns this risk.

41. The construction market risks are being tested with early market sounding to allow direct market feedback to inform the optimal contractual approach. It is proposed that market sounding occur in November 2021.

IFFA Levy – Indicative calculation

42. The Council has a well-developed regime for charging for services which allocates cost across groups of ratepayers. The basic principles that guide the distribution of cost across the beneficiary group are that it should:
    - reflect the actual distribution of the benefit, and
    - seek to reflect a level of fairness, and
    - consider the affordability in the hands of the beneficiary.

43. Where direct benefits are hard to ascertain the concept of fairness is primarily achieved through firstly allocating cost by estimated usage, and then by capital value, as a proxy for distribution according to wealth.

44. In the LTP consultation it was indicated that a household could expect a levy in the range of $70-$100 annually, based on the early cost indications from WWL and was the best available information at the time of consultation. The updated cost range is now between $160m and $220m. No indicative levy was calculated for this specific range.

45. The Council has worked closely with Crown Infrastructure Partners to develop multiple levy calculation models that allowed for the consideration of the most equitable manner for the allocation of costs associated with building the facility.

46. The proposed levy model is covered in detail in the case for change attached in Appendix 1. The following table outlines the proposed levy, compared to the existing rates (or average rates for commercial ratepayers) for a selection of capital values for both residential and commercial ratepayers.

Capital value	Estimated rates ($ p.a.)	IFF levy ($ p.a.)	Equivalent Rates Increase (%)
Residential[1]			
CV $250k	1,345	46	3.4%
CV $500k	2,330	91	3.9%
CV $750k	3,314	137	4.1%
CV $875k	3,806	160	4.2%
CV $1m	4,298	182	4.3%
CV $2m	8,236	365	4.4%
Commercial	Average rates for CV	IFF levy ($ p.a.)	Increase (%)
CV $500k	3,305	117	5.0%
CV $1m	6,611	333	5.0%
CV $2m	13,221	667	5.0%
CV $2.75m	18,179	917	5.0%
CV $5m	33,053	1,667	5.0%
CV $10m	66,106	3,335	5.0%
CV $25m	165,265	8,337	5.0%

[1] The estimated rates value for residential is based on billing category A1.

47. The proposed IFFA levy is calculated for a 30-year period across all WCC ratepayers. It is intended to commence the levy in the year following plant commissioning.

48. The indicative levy values above support up to $250m of IFFA funding, which accommodates the forecast cost of the project, an allowance for normal project contingency, SPV administrative costs, and capitalised interest costs associated with the levy being aligned with plant commissioning.

49. If the project were to be funded through Council borrowings, rate payers would incur increases based on depreciation and interest costs as opposed to the levy and our balance sheet would be constrained by an additional $220m. Rates would need to be 3-4 times higher than the IFF levy if Council wanted to retain the same headroom and service the additional debt.

50. IFF finance is excluded from the Council's key debt calculations, leaving borrowing capacity free for other projects such as Let's Get Wellington Moving.

51. IFF gives Council access to longer term finance than is currently available and therefore provides absolute certainty of costs to ratepayers over the levy period. IFF financing will have a total term of up to 30 years compared to the average LGFA issuance of 5.4 years (with the longest LGFA bond having a tenure of 16 years).

52. The certainty provided by IFF is driven by the following factors:
    - The maximum amount of levy the SPV can collect during the levy period is set at Financial Close
    - The maximum levy is not exposed to:
        - Financial risk e.g. changes in interest rates
        - Inflation
        - Cost increases

Three Waters Reform

53. One 27 October 2021 Local Government Minister Nanaia Mahuta announced that the proposed three waters reform would be made mandatory for all local authorities in New Zealand. While the impacts of this announcement are still being worked through, this announcement does not have any material change on the recommendations in this report.

Project Risks

54. All major infrastructure projects come with financial, design and construction risk, and project Jasmine is no exception. However, there are a number of risks specific to this project, and its current phase that are outlined in the following table. The table is not an exhaustive risk register.

	Risk Description	Mitigation Strategy	Residual Risk
1	Main ECI Contractor to accept novation of designer and key suppliers, including associated process and design risks.	Market sounding will be undertaken in November 2021 to test the market willingness to accept novation of the designer, and key suppliers. Feedback from market will be used to further refine the Procurement Strategy.	High
2	Market capacity for a project of this scale and complexity, considering other major projects pending or already in progress.	During market sounding in November 2021, the capacity of the potential bidders will be requested and evaluated. Based on this feedback, the Procurement Strategy will be further refined as necessary.	Medium
3	Engagement with the wider community before Christmas could be challenging given all the other engagements we have on the go – eg LGWM, District Plan and cycleways.	Strategic Communications and Engagement Plan has been prepared and endorsed by WCC Comms team. Pending Governance Group endorsement in November 2021. Consultation with community groups is continuing and feedback being monitored. Consultation with Commercial ratepayers to be carried out in November.	Medium
4	Proceeding with Preliminary design, Consenting, and other workstreams, before business case is completed in full.	Extensive work throughout the MCA process suggests it is unlikely that an alternative option would be preferred.	Low
5	Money expended on the project is at risk until financial close.	Maintain the process with CIP towards financial close and adhering to their processes and timeline.	Low
6	Consenting risk. Current plan allows for hearings but not environment court.	Consenting activities have progressed since mid-September 2021, with target to lodge consents in March 2022. The Project Plan has been prepared on the basis of notified consents. Early engagement with key stakeholders being undertaken to mitigate risk of appeals.	Medium
7	Escalating costs in the current market where both material and physical resources are constrained	Allowances and contingencies have been made for market escalation in the cost estimate ranges presented herein. An independent cost estimator will be engaged to perform a cost estimate in parallel with the Main ECI Contractor.	High
8	Operational risk and unfamiliar technology in New Zealand.	The project team will continue to work with the incumbent operator at Moa Point WWTP, noting the water reform may influence the final operating model.	Medium
9	The project timelines requiring planning and delivery activities to be run in parallel	Project management plan under development and WCC project management office monitoring and advising project.	Medium

Whai whakaaro ki ngā whakataunga

Considerations for decision-making

Engagement and Consultation

55. Further engagement is proposed to be undertaken with the community in November/December 2021 to engage with residential ratepayers over the increase in the levy compared to what was consulted on in the LTP, and to engage more fulsomely with commercial ratepayers in relation to the levy payable by them.

Implications for Māori

56. Mana Whenua have been directly involved in the multi-criteria assessment process selecting the preferred technology for treating future wastewater in Wellington. As part of this engagement the key principles and values embraced include:

- The principles of rahui in disposing of human waste
- Harnessing the resources in sewage sludge to give them another life
- Kaitiakitanga – having a positive impact on the environment and our communities through the action we take.

57. The project governance group is seeking to invite an iwi representative to join the governance group.

Financial Implication

58. Council, as the proposer of an IFFA project, is required to fund the preliminary project activities in advance of finalising IFFA financing. The initial project costs will be refunded by the special purpose vehicle that facilitates the IFFA finance. Therefore, there is a cashflow impact for council, and accordingly a request to recommend a budget increase to Council is part of the recommendations.

Legal considerations

59. There are significant legal, liability and contractual risks associated with Project Jasmine. This will be one of the first projects to be considered under the IFFA and there are inherent legal and other risks associated with being the first to test a new legislative regime. Together with external legal advisors, the legal team is engaged on key aspects of the project and the General Counsel is a member of the project governance group.

60. A key legal risk identified to date is ensuring that decision makers are sufficiently informed of the views of the community, prior to making a final decision to proceed with the project. Further engagement is proposed in order to deal with this risk.

Risks & Mitigations

61. The above project risk table outlines the known risks and current mitigation strategies.

Disability and accessibility impact

62. No specific impact.

Climate Change impact and considerations

63. This project is a positive contributor to climate change compared to the status quo. As part of finalising the business case work is being undertaken to accurately quantify the measurable carbon impact. This information will be available when the business case comes to council for approval.

Communications Plan

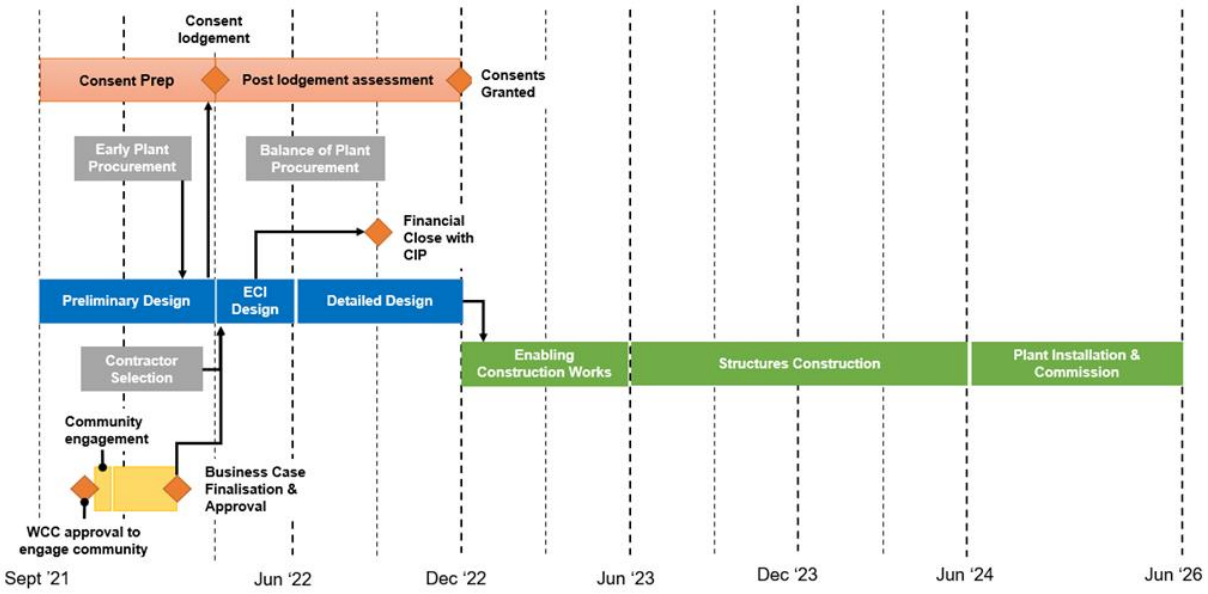
64. A project communications an engagement plan is in development and early engagement with affected communities is underway.

Health & Safety Impact considered

65. Compliance with all Health & Safety regulations is a minimum requirement of all project planning and current physical works. All contractors are required to adhere to Health & Safety procedures.

Ngā mahinga e whai ake nei
Next actions

66. The overall project plan is as below:



67. If the recommendations are approved, officers intend to:
    - Develop an engagement process that builds on the consultation undertaken through the LTP and updates residents and commercial entities on the likely order of costs .
    - Commence market sounding in November 2021.
    - Engage a peer reviewer and probity auditor.
    - Finalise the business case for Te Pūroro Waihanga | Infrastructure Committee for approval in early 2022.

- Continue to progress with negotiating funding through IFFA (identified as the preferred funding option in the 2021 LTP) with an update to Committee in early 2022.
- Continue with other workstreams identified in this report including the consenting and land acquisition processes.
- Include project financial and non-financial progress quarterly health checks to the Committee.

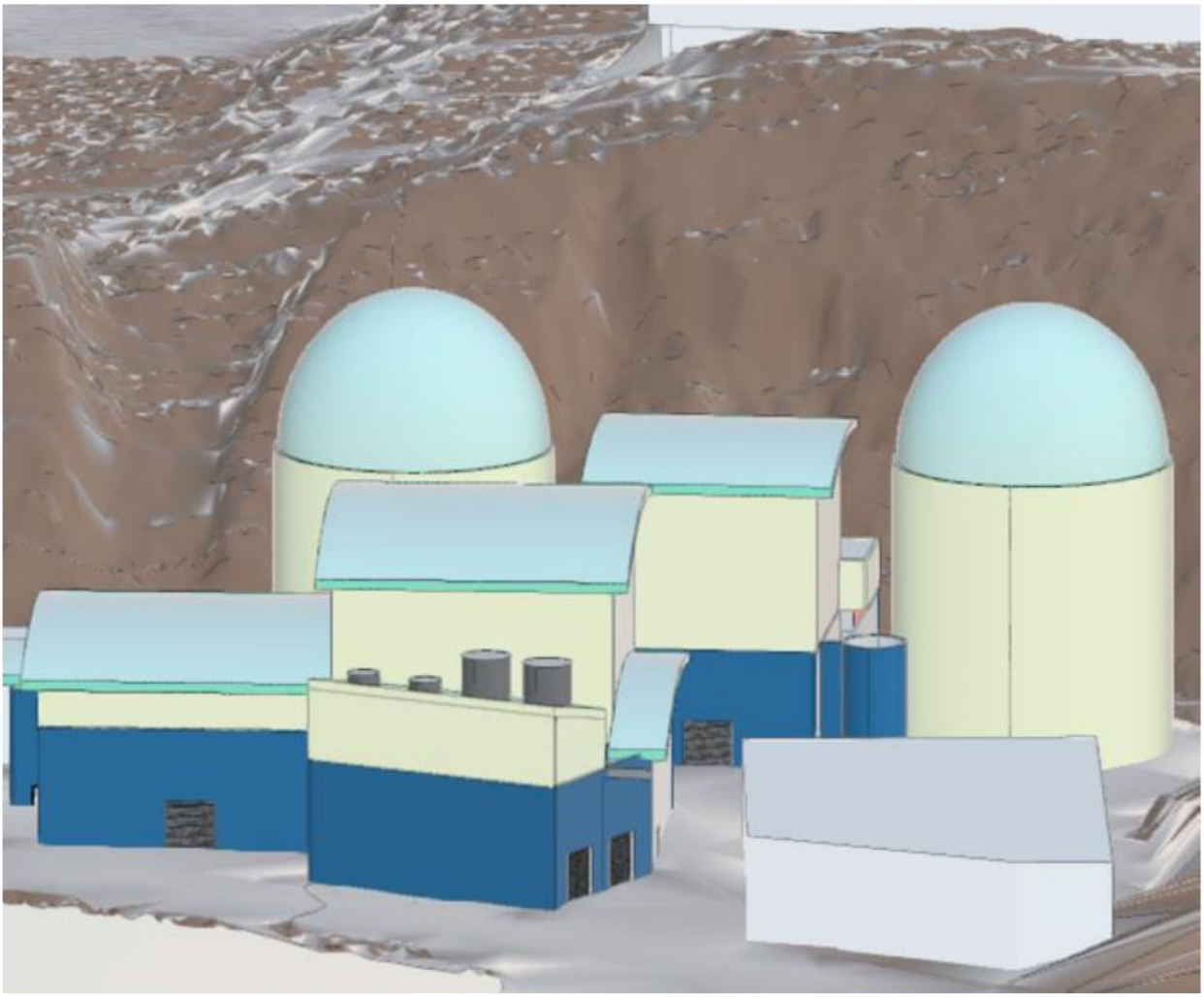
Attachments

Attachment 1. Project Jasmine - Case for Change ⇩ Page 65

Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

Project Jasmine
Wellington Sludge Minimisation Project
The Case for Change – Preferred Option

2 November 2021



Revision History

Revision Nº	Prepared By	Description	Date
1	Chris French	Prepared to Supplement WCC Infrastructure Committee Paper	2/11/21

Document Acceptance

Action	Name	Signed	Date
Prepared by	Chris French		2 November 2021
Endorsed by	Heath George		2 November 2021
Approved by	Siobhan Procter		2 November 2021
on behalf of	**Wellington City Council**		

Contents

Appendices

1 Introduction: Why We Need Change

1.1 Purpose of this Document

Wellington City Council (WCC) requires a fundamental change in the management of sewage sludge, to allow it to be 'de-coupled' from the existing disposal to the Southern Landfill.

The purpose of this document is to present the current challenges and factors that contribute to a transformative need for change in the way sludge is managed in Wellington as well as the preferred technical solution to address these challenges. It also includes the proposed approach to delivering the solution.

This document is a key milestone in the development of a full business case which is currently under development, and which will provide further detail in alignment with Treasury's Better Business Case model.

1.2 Defining the Problem with Sludge Management in Wellington

The need for a transformative change in sludge management for Wellington is driven by three key challenges with sludge management in Wellington at present. These are:

- **At present, there is a singular solution for sludge management and disposal in Wellington, involving sludge being pumped from Moa Point to the Southern Landfill, further dewatered and mixed with waste at a ratio of four parts waste to one part sludge.**

  This solution exposes WCC to increasing operational costs and risks, and severely limits our ability to implement waste reduction initiatives and manage waste volumes and sludge in more environmentally appropriate ways.

- **The existing infrastructure that facilitates this process has a low level of resilience.**

  This has been exposed through the 2020 critical infrastructure failure which cost ratepayers over $20m. Furthermore, the existing infrastructure is susceptible to natural hazards.

- **Solid waste and the associated reduction in carbon emissions cannot meaningfully occur until the volume of sludge is reduced, and the form of the sewage sludge is suitable to be considered for alternative disposal pathways.**

  This is important in consideration of the commitments outlined in WCC's strategies and plans relating to waste and carbon reduction.

Each of these challenges is explored further below.

1.2.1 Enabling Solid Waste Minimisation and Carbon Reduction

Sewage sludge is produced as a by-product from Wellington City's two wastewater treatment plants (WWTPs) at Moa Point and Karori (also known as the Western WWTP). It is currently dewatered to remove some water content before disposal at the Southern Landfill. The existing sludge treatment and disposal method creates critical operational and strategic constraints at the landfill.

The current volume and composition of the sludge is a significant inhibitor to enabling waste minimisation efforts by WCC because so much solid waste is needed to mix with the sludge in its current form. The following diagram illustrates that by changing this one thing, we can reduce waste significantly and in turn, reduce carbon emissions from solid waste management in Wellington City.

1.2.2 A Singular Sludge Disposal Pathway

The existing Carey's Gully Sludge Dewatering Plant is designed to remove freely available water from the raw sludge that is transferred from Moa Point WWTP. This produces a dewatered sludge product which is "soil like" in nature. Because the sludge does not undergo any further treatment, the sludge contains high levels of biodegradable solids (particles) which break down in the landfill. By national and global standards for larger wastewater treatment systems, this is a relatively low level of treatment.

The disposal of sludge in New Zealand is currently guided by the *NZWWA/MfE Guidelines for the Safe Application of Biosolids to Land in New Zealand*, 2003. These guidelines grade biosolids against two factors, the level of stabilisation achieved (Grade A or B) and the level of chemical contaminants (Grade a or b). The stabilisation and contaminant grades are combined to give four possible grades of biosolids, Aa, Ab, Ba and Bb. Grade Aa products can be applied to land as a permitted activity with no requirement for a resource consent. All other biosolids grades require a resource consent to be applied to land.

In terms of stability, the current sludge produced from the Carey's Gully Sludge Dewatering Plant is Grade B because it is un-stabilised. Generally, this grade of sludge is limited to being disposed of at landfills and subject to mixing ratios. Its un-stabilised nature means that it is difficult to transport long distances and it would not be feasible to transport this sludge to other landfills within the region as a long-term measure, because of the likely environmental effects (odour) and risk from spillage of this activity.

On this basis, sludge disposal is currently limited to a single option – disposal at Southern Landfill. In addition to those impacts discussed above:

- It exposes Wellington City Council to cost increases for sludge disposal that are beyond Council's control (such as increases in levies on waste disposal).
- It removes flexibility for Wellington City Council to respond to regulatory changes associated with sludge and solid waste disposal, because there is no alternative.

1.2.3 Infrastructure Resilience

Raw sludge from the Moa Point WWTP is pumped to the Carey's Gully Sludge Dewatering Facility via twin pipelines which run for 9km across the southern districts of Wellington. This route crosses multiple known seismic fault lines and includes almost 2km through a sewer tunnel beneath Mt Albert. These pipelines commenced operation in 1998 and there have been two significant failures in the last ten years (2013 and 2020). The most recent failure affected both pipes and meant that over one million litres of sludge a day was transported using trucks on a 24-hour rotation to collect the wastewater treatment by-product at the Moa Point Treatment Plant and take it to the sludge dewatering facility at Carey's Gully.

When Moa Point WWTP was designed and constructed, in the event of both sludge pipelines failure, the intended alternative sludge disposal method was to discharge via the treated wastewater outfall into Cook Strait. This is not considered to be a viable or appropriate alternative option at this time except possibly under extreme emergency conditions.

The Carey's Gully Sludge Dewatering Facility was constructed in the late 1990s. Mechanical equipment of the type used in this facility is typically estimated to have an operational life of 25 years, meaning that the equipment will reach its nominal end-of-life within five years. While routine maintenance and careful use may extend this life expectancy, it would be prudent not to rely heavily on this facility to service Wellington City in the medium to long term.

The facility is generally considered to have acceptable levels of redundancy and capacity in process equipment, and incorporates a raw sludge storage facility, so that sludge treatment can be managed around intended and unintended outages. However, one of the key challenges with the current Carey's Gully site is its geotechnical resilience. The Sludge Dewatering Facility is located in an old gully that has been filled with uncontrolled fill material and presents a significant geotechnical risk in the event of a major seismic event.

If a significant and prolonged failure were to occur at the Sludge Dewatering Facility, this would cause a ripple effect through the wider sludge management system until alternative arrangements could be made for treatment and/or disposal.

The importance of solving this problem

WCC is committed to reducing carbon emissions and to greatly reducing the amount of waste sent to landfill. These commitments are detailed in the following:

- **Te Atakura - First to Zero Strategy commits Wellington City to zero carbon by 2050**. Approximately 80% of Wellington City Council's carbon emissions are attributed to Southern Landfill. Therefore, reaching zero carbon requires a fundamental change in solid waste management, and by implications, sludge management.

  Te Atakura references sewage sludge as an existing project within this plan, by committing to exploring solutions and funding options for a new sewage sludge processing solution at the Southern Landfill in the 2018-28 Long Term Plan. In exploring solutions, the plan commits to looking at the potential for digesters or co-processing of other waste streams other than sludge to see if further maximised benefit can be achieved. This sludge minimisation project aligns to these actions.

- **Wellington Region Waste Management and Minimisation Plan (2017 – 2023) supported by the Draft Waste Minimisation Roadmap issued in October 2021**.

  WCC has committed to a significant reduction in waste to landfill. The key target in this plan is to reduce solid waste sent to Class 1 landfills from 600kg per person per annum to 400kg per person by 2026.

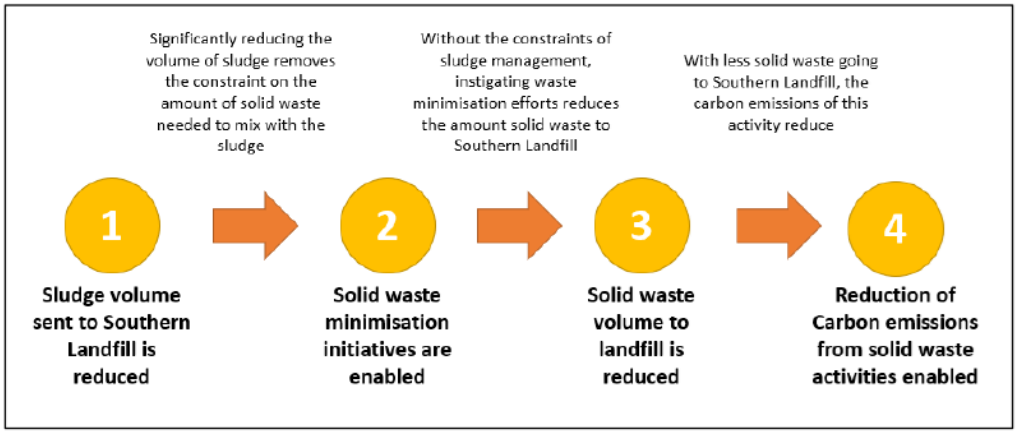
  The current sludge management practice currently inhibits solid waste minimisation efforts due to the need for four times as much solid waste as sludge to meet the mixing ratio consent. As sludge volumes continue to grow as Wellingtons population grows, so too must the volume of solid waste. Therefore, any aspiration to actively reduce solid waste inflows to the landfill, or to manage waste inflows differently, must first remove sludge in its current form from the equation.

Wellingtonians are already changing their waste behaviours as more community focus is placed on being responsible with waste. Given this, it is projected that there will be insufficient solid waste to mix with sludge (at the required ratio) within the short to medium terms, potentially within 2 years.

Wellington is projecting population growth of between 50,000 and 80,000 people in the next 30 years, with a large part of that population intended to be accommodated in the Moa Point WWTP catchment.

The figure below illustrates the steps WCC need to take to achieve its commitments. The sludge minimisation project addresses Step 1 in this journey.

Figure 1: Better Sludge Management Enables Solid Waste and Carbon Emissions Minimisation for WCC.



1.3 Defining Project Objectives

To respond to the problem described above, WCC has initiated Project Jasmine, Wellington's sludge minimisation project.

The problem components have been distilled into three key project investment objectives to provide guidance to the project team and clear parameters by which a technical solution can be selected.

The three investment objectives are as follows:

Investment Objective One

By 2026, minimise the amount of sludge sent to the Southern Landfill .

Achieving this objective required us to examine a range of technologies that allow sludge to be processed and disposed of in quite different ways to existing practise.

Investment Objective Two

Enhance the resilience of sludge management in Wellington.

In the short term, enhancing resilience means:

- Removing the risks in operation of the current sludge management system from a lack of redundancy, ageing equipment and exposure to hazards.
- Reducing the exposure of sludge disposal to costs beyond WCC's control (such as levies on waste disposal).
- Planning for growth, so that this part in the chain of the wastewater system does not become a constraint on population growth.

In the longer term, enhancing resilience means placing less reliance on a single pathway for sludge disposal, by opening up alternative disposal / beneficial re-use options. Beneficially re-using biosolids will require that the biosolids from the new Wellington Sludge Minimisation Facility meet specific criteria, which in New Zealand are currently set out in the *NZWWA/MfE Guidelines for the Safe Application of Biosolids to Land in New Zealand*, 2003 (the Guidelines). The Guidelines apply international and national scientific evidence through standardised practices to allow this disposal route to be managed in a safe and sustainable manner. The Guidelines also provide guidance to regional authorities on suitable activity statuses for applications of biosolids to land, although not all authorities have adopted them.

To provide as much flexibility to WCC in the future disposal of biosolids, the target grade of biosolids is **Grade Aa**.

The big "A" in this grading can be achieved by selecting the appropriate process to install at the new Wellington Sludge Minimisation Facility. Achieving the little "a" in this grading will be dependent on the level of contaminants in the sludge, which is in turn dependent on the levels of contaminants in the incoming wastewater. Reducing contaminant levels requires stringent controls on trade waste and domestic wastewater discharges in the catchment and is considered outside the scope of this project.

Investment Objective Three

Reduce the environmental impact of sludge management in Wellington.

One of the key environmental outcomes is a reduction of carbon emissions associated with the processing of sludge and resulting from the disposal of sludge at the landfill. The current system for sewage sludge management has estimated carbon emissions of around 4,000 tCO2-e per annum. This project aims to reduce the amount of sludge by producing a better product that is less susceptible to degradation at its disposal point and therefore reducing greenhouse gases emissions.

In the shorter term, the installation of treatment processes that include stabilisation could enable controlled capture and utilisation of methane (and other greenhouse gas) in the production process, which offsets the future emission of these gases from the landfill. In the longer term, if beneficial re-use could be established by application of biosolids to land which has the potential to offset carbon-intensive chemically generated fertilisers and provide significant amounts of carbon into the soil[1].

Odour emissions – by putting in place more advanced processes that enable improved capture of fugitive emissions during the breakdown of sludge in a controlled way, the risk of odour emissions can be reduced.

[1] https://www.wasteminz.org.nz/wp-content/uploads/2019/10/WasteMINZ-2019-Potential-value-of-biosolids-in-NZ-%E2%80%93-an-industry-assessment.-Paper.pdf

2 Addressing the Challenges: The Proposed Solution

2.1 Approach to Identifying a Preferred Option

Having identified the strategic drivers and identified the key project objectives, a structured process was used to identify a preferred option for sludge management in Wellington that best meets these objectives, identifying a preferred option has considered both the proposed sludge treatment process and the location of the new facility.

The process of identifying the preferred option has included four key stages of work:

1. **Potential site and process options were initially identified**.
2. **A fatal flaw analysis** of these potential options was used to negate any options that were not feasible for Wellington's sludge management. The output of the fatal flaw analysis was a longlist of options for further assessment.
3. **A Multi-criteria Assessment (MCA)** was undertaken on the long list to arrive at a short list of four options.
4. **To arrive at a preferred option, the shortlisted options have then been assessed against the key project objectives** defined in this document. This analysis had been previously presented in a short form version of the business case and has been updated in this document to reflect further analysis and understanding and is being finalised in a long form Business Case as noted below.

An overview of the analysis undertaken in each stage is provided below. Note that, to supplement the undertaken analysis in stage 4, further quantitative benefits analysis of the shortlisted options is currently being undertaken in alignment with Better Business Case requirements and will be incorporated into a full Business Case for Council approval.

2.2 Stage 1: Identifying Potential Site and Process Options

2.2.1 Potential Process Options

Given that sewage sludge is an unavoidable by-product of centralised wastewater treatment processes, the only way to address volume reduction of sewage sludge is to focus on sludge treatment methods. These treatment methods focus on two key constituents in the sludge, water and organic matter, further explanation as follows:

- Removal of water. The existing sludge dewatering process used at Carey's Gully only generally targets free water within the sludge, which is the water between and not bound tightly within the organic matter in the sludge. Additional processing is needed to target additional free water and embedded water within the sludge.
- Stabilisation of organic matter. The volume of sludge can be further reduced by processes that result in the organic matter breaking down. This change in the organic matter reduces the potential for further degradation in the landfill, reducing the generation of odour and greenhouse gas emissions, minimises landfill stability issues, reduces the side effect of attracting rodents. It is this degradation that creates the current requirement to mix general waste with the sludge.

To achieve these two things, a sludge treatment facility is usually made up of a combination of process units (technologies) that form a process train. These technologies are classified into four categories:

- Concentration technologies – reducing sludge volume, generally by removing water from the sludge
- Stabilisation technologies – stopping or stabilising biological activity, which can reduce odour emissions from further handling/disposal, in addition to reducing microbiological contaminants

- Hydrolysis technologies – treatment to support the enhanced recovery of energy or nutrients, or aid sludge reduction and microbiological stabilisation
- Conversion technologies – conversion of the sludge into other forms for beneficial re-use

A list of 25 potential options was developed by combining the range of technologies available across these categories into known process train options. The full list of potential options is provided in Appendix A.

2.2.2 Potential Site Options

Potential sites were identified by way of a desktop study on potential sites in the southern districts of Wellington based on the key criteria defined in the table below.

Table 1: Criteria for Initial Identification of Potential Sites.

Criteria	Criteria Description
Size	Providing sufficient space and an appropriate site configuration for sludge processing operations
Vehicle access	Being able to accommodate heavy vehicle access for loading / unloading operations
Noise and odour	Sufficient distance from sensitive residential areas
Utilities access	Ability to access to power and utility connections
Topography	Favourable sites have flat, open land for vehicle movements and large building and process plant areas
Land use and Designation	Ability to acquire land based on district plan rules and zoning, designations, existing land use, community amenity value, land ownership, Selected Land Use Register (SLUR) status

The desktop assessment found that there were very limited potential site options across southern Wellington. Using the above criteria, feasible sites were identified which generally fell into two groups.

- Group A sites are all located close to Moa Point Wastewater Treatment Plant (WWTP)
- Group B are all located close to the Southern Landfill (Carey's Gully).

Other site options were not readily identified. This is because much of the area of Southern Wellington is already developed as residential suburbs (which would not be suitable for adjacent siting of a sludge facility, is designated Town belt, or has other uses not aligned to this activity such as sports fields and shopping centres).

2.3 Stage 2: Identifying long List Process and Site Options

2.3.1 Developing a Long List of Process Options

To identify a feasible long list of process option from the potential options noted above, a fatal flaw assessment was undertaken by applying three critical success factors to the long list options.

1. Maturity of technology – If a new or emerging technology was to be implemented in Wellington that was untested or unsupported, this could impact the resilience of the sludge management system. This would include technologies that are only available from a single global supplier that is not established in New Zealand.

2. Significant reduction in volume as indicated by the dry solids content of end product .The dry solid content of the end sludge product is an important consideration, as a high dry solids content represents a significant reduction in volume of sludge
3. Total plant land area footprint – Only processes that can fit within available site footprints should be considered. The estimated maximum land available is 15,000m2.

The table below summarises the scoring that was applied to each option for each of these fatal flaw criteria.

Table 2: Scoring of Fatal Flaw Criteria

Criteria	Scoring Parameters		
	Meets Criteria	Partially meets Criteria	Does Not Meet Criteria
Maturity of Technology	Current application in NZ	Applied in more than 2 sites globally	Applied in 1 site / Novel
Dry solid content of end product	> 60% dry solids	~60% dry solids	< 60% dry solids
Total plant footprint	<15,000m²	~15,000m²	>15,000m²

The fatal flaw scoring applied to the 25 long list options is shown in the table below. Any options with at least one "does not meet" score across the three criteria was not taken forward for further consideration.

Table 3: Summary Evaluation of all Process Options Based on a Fatal Flaw Assessment of Three Key Criteria.

	Evaluation Criteria		
Technology	**Maturity of Technology**	**Dry Solids content of End Product**	**Total plant footprint**
Option 1 - Base Case			
Option 2- Electrostatic Belt Filter Press			
Option 3 – Heated Filter Press			
Option 4 – Solar Drying			
Option 5 – Aerobic Digestion + Solar Drying			
Option 6 – Mesophilic Anaerobic Digestion + Solar Drying			
Option 7 – Autothermal Anaerobic Digestion + Thermal Drying			
Option 8 – Mesophilic Anaerobic Digestion + Composting			
Option 9 – Mesophilic Anaerobic Digestion + Vermicomposting			

Technology	Evaluation Criteria		
	Maturity of Technology	Dry Solids content of End Product	Total plant footprint
Option 10 – Lysis-Digestion + Thermal Drying			
Option 11 – Digestion-Lysis + Thermal Drying			
Option 12 – Digestion-Lysis-Digestion + Thermal Drying			
Option 13 – Mechanical Hydrolysis + Mesophilic Anaerobic Digestion + Thermal Drying			
Option 14 – Ultrasonic Hydrolysis + Mesophilic Anaerobic Digestion + Thermal Drying			
Option 15 – Biological Hydrolysis + Mesophilic Anaerobic Digestion + Thermal Drying			
Option 16 – Mesophilic Anaerobic Digestion + Struvite Recovery			
Option 17 – Mesophilic Anaerobic Digestion + Thermal Drying			
Option 18 – Thermal Drying			
Option 19 - Thermal Drying + Gasification			
Option 20 - Thermal Drying + Pyrolysis			
Option 21 – Mesophilic Anaerobic Digestion + Thermal Drying + Pyrolysis			
Option 22 – Hydrothermal Liquefaction + Oil Upgrading			
Option 23 - Wet Air Oxidation WAO			
Option 24 – Thermal Hydrolysis + Mesophilic Anaerobic Digestion + Wet Air Oxidation			
Option 25 – Incineration (Thermal Drying optional)			

There were five options considered to meet the criteria and another four which were considered to "almost" meet the criteria by way of plant that is used extensively overseas, but not in NZ,

Options considered to meet the 'fatal flaw' criteria very well:

- Option 8: Mesophilic Anaerobic Digestion + Composting
- Option 10: Lysis-Digestion + Thermal Drying
- Option 17: Mesophilic Anaerobic Digestion + Thermal Drying

- Option 18: Thermal Drying
- Option 25: Incineration (Thermal Dryer optional).

Options considered to "almost" meet the criteria:

- Option 7: (Autothermal) Aerobic digestion + Thermal Dryer
- Option 12: Digestion – Lysis – Digestion + Thermal Dryer
- Option 19: Thermal Drying + Gasification
- Option 23: Wet Air Oxidation

2.3.2 Developing a Long List of Site Options

Further analysis was undertaken for the identified potential sites in Group A and Group B to identify any fatal flaws the proposed options. The approach taken included:

- **Group A Sites:** Investigations were undertaken first to identify technical constraints with the options. This was done to inform discussions with Wellington International Airport Limited in May and June 2020. WIAL were consulted because they either own the land on which the sites are located, or their operation could be affected by locating a facility on the proposed sites.
- **Group B Sites:** Consultation with Southern Landfill identified some key constraints with most of the site options selected, requiring that most of the Group B sites be negated from further consideration. Additional technical investigations were then undertaken on the remaining Group B sites.

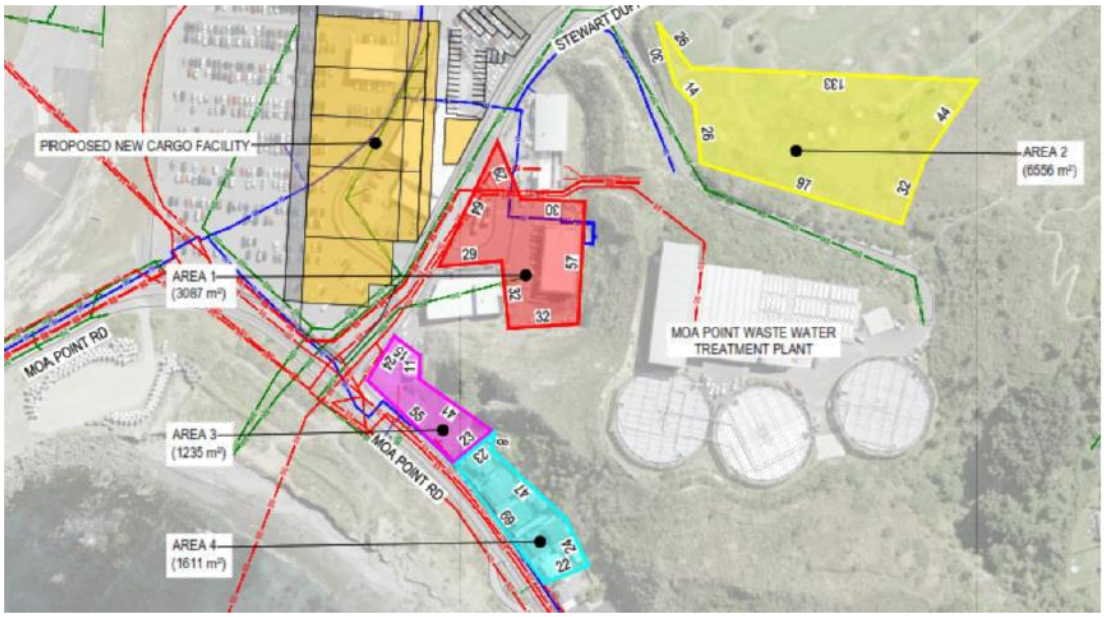


Figure 1: Potential site areas located at Moa Point WWTP (Areas 1-4 highlighted)

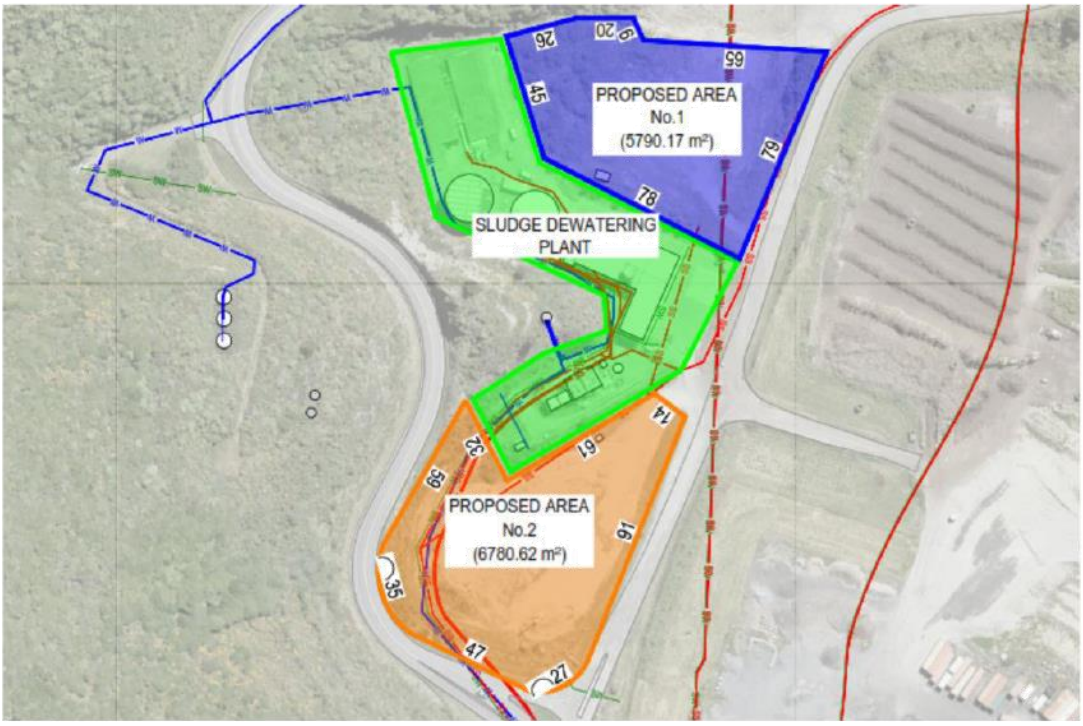


Figure 2: Potential sites located at Carey's Gully (Areas 1 - 2 highlighted)

Additional technical investigations were completed on these site options. These site investigations provided additional detail regarding key risks / constraints with adopting these site locations and demonstrates that both sites are feasible at this stage.

2.4 Stage 3: Multi-criteria Assessment of Long-Listed Options

2.4.1 Collating the Process and Site Options

The next step in the process was to overlay the longlist of process options onto the site options and create a definitive long list which could be evaluated using a Multi-Criteria Assessment.

When the long list of process options was overlaid on the site options, the following process options had site limitations.

- Mesophilic Anaerobic Digestion and Composting (Option 8) at the Moa Point site. This option was excluded due to the limited available land area at the Moa Point Site, relative to the footprint requirement for composting.
- Lysis-Digestion and Thermal Drying (Option 10) at Carey's Gully. This option was only considered further at the Moa Point Site, where primary and secondary sludge would be treated differently prior to being mixed.

The resulting longlist of combined process and site options is shown in Table 4. For consistency, the options numbers for the process options above have been retained and an "M" or "C" added to denote whether the plant would be located at Moa Point or Carey's Gully respectively.

Table 4: Combined Longlist of Process and Site Options

Moa Point Site	Carey's Gully Site
Option 7M: Autothermal Aerobic Digestion + Thermal Drying	Option 7C: Autothermal Aerobic Digestion + Thermal Drying
Option 10M: Lysis-Digestion + Thermal Drying	Option 8C: Mesophilic Anaerobic Digestion + Composting
Option 12M: Digestion-Lysis-Digestion + Thermal Drying	Option 12C: Digestion-Lysis-Digestion + Thermal Drying
Option 17M: Mesophilic Anaerobic Digestion + Thermal Drying	Option 17C: Mesophilic Anaerobic Digestion + Thermal Drying (option 17)
Option 18M: Thermal Dryer Only (option 18)	Option 18C: Thermal Dryer Only (option 18)
Option 19M: Thermal Drying + Gasification	Option 19C: Thermal Drying + Gasification
Option 23M: Wet Air Oxidation	Option 23C: Wet Air Oxidation
Option 25M: Incineration	Option 25C: Incineration

2.4.2 Establishing MCA Criteria

To assess these options, Multi Criteria Assessment (MCA) criteria were initially developed collaboratively by a group of technical specialists, Wellington Water staff and iwi stakeholders. These criteria are outlined in the table below, together with how each criterion ties back to the project investment objectives. The associated weightings of the criterion were determined by the MCA participants.

Table 5: Summary of MCA Criteria Used to Evaluate Site and Process Options, and Relationship of Criteria to Project Objectives.

		Relationship to Investment Objectives		
Criteria (and initial weighting)	**Sub-criteria**	Objective 1: Minimise Sludge Volume	Objective 2: Enhance Resilience	Objective 3: Reduce Environ. Impact
Function (21%)	Level of sludge volume minimisation	X		X
	Potential to re-use the biosolids product	X	X	X
Mana whenua values (20%)	Mana whenua values / principles			X
Complexity (21%)	Operational and Technical Complexity		X	
Environmental (17%)	Ecological Impacts			X
	Carbon Emissions Reduction Potential			X
	Community impacts		X	X
	Consenting and planning considerations		X	X
Cost (21%)	Whole of life cost		X	

	Ability to stage to meet budget constraints		X	

To test the MCA process, alternative weightings were then applied and incorporated into the final rankings of the short-listed options, to provide a sensitivity analysis of how the outcomes of the assessment might change if criteria weightings are changed. The alternative weightings are shown in the following table.

Table 6: Sensitivity Analysis for Multi-criteria Assessment of Wellington Sludge Management Options.

	Criteria Weightings				
Weighting Scenarios	Function	Mana Whenua Values	Complexity	Environment	Cost
Baseline Criteria Scoring	21%	20%	21%	17%	21%
Alternative Weighting 1 - weighted towards further feedback from MCA participants	35%	20%	5%	20%	20%
Alternative Weighting 2 - 100% towards core project objectives.	33%	-	33%	-	33%
Alternative Weighting 3 - Environmental and Mana Whenua Values at 100%	-	50%	-	50%	-
Alternative Weighting 4 - Environmental and Mana Whenua Values at 60%.	20%	25%	10%	35%	10%

2.4.3 MCA Results

Table 7 overleaf provides the scoring based on the baseline and alternative weightings, and the ranking of each option based on this assessment which is shown in parenthesis.

Table 7: Scoring of Consolidated long List Options for Wellington Sludge Minimisation Facility, Based on Baseline and Alternative Weighted Criteria.

		Weighted Score							
		Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Total Score	Median Ranking	Ranking Based on Total Score
Moa Point Site	7M: Autothermal Anaerobic Digestion + Thermal Drying	6.71 (5)	5.77 (12)	6.03 (13)	6.83 (4)	6.50 (6)	31.84 (8)	6	8
	10M: Lysis-Digestion + Thermal Drying	7.14 (2)	7.05 (4)	6.88 (7)	7.19 (4)	7.02 (2)	35.28 (3)	4	3
	12M: Digestion-Lysis-Digestion + Thermal Drying	7.39 (1)	7.48 (2)	6.76 (8)	7.89 (1)	7.57 (1)	37.10 (1)	1	1
	17M Mesophilic Anaerobic Digestion + Thermal Drying	6.94 (3)	6.56 (7)	6.42 (11)	7.08 (3)	6.78 (3)	33.78 (6)	3	4
	18M: Thermal Drying	6.60 (9)	5.73 (13)	7.26 (4)	5.08 (12)	5.71 (14)	30.39 (11)	12	10
	19M: Thermal Drying + Gasification	7.09 (4)	7.74 (1)	7.75 (2)	6.19 (9)	7.08 (4)	35.86 (2)	4	2
	23M: Wet Air Oxidation	4.88 (15)	6.10 (10)	4.91 (15)	5.47 (10)	5.99 (10)	27.35 (14)	10	14
	25M: Incineration	5.81 (13)	6.77 (5)	7.17 (5)	4.72 (14)	6.18 (11)	30.66 (10)	11	11
Carey's Gully Site	7C: Autothermal Anaerobic Digestion + Thermal Drying	6.65 (10)	5.56 (14)	6.14 (12)	6.44 (8)	6.39 (9)	31.19 (9)	10	9
	8C: Mesophilic Anaerobic Digestion + Composting	5.59 (12)	4.40 (16)	4.34 (16)	6.92 (2)	5.62 (12)	26.87 (15)	12	13
	12C: Digestion-Lysis-Digestion + Thermal Drying	6.70 (7)	6.51 (6)	6.67 (9)	6.19 (7)	6.52 (7)	32.60 (7)	7	7
	17C: Mesophilic Anaerobic Digestion + Thermal Drying	6.93 (6)	6.51 (9)	6.53 (10)	6.94 (6)	6.87 (5)	33.79 (5)	6	6
	18C: Thermal Drying	6.20 (11)	5.29 (15)	7.16 (6)	4.19 (15)	5.25 (16)	28.10 (13)	15	15
	19C: Thermal Drying + Gasification	6.84 (8)	7.47 (3)	7.90 (1)	5.36 (11)	6.72 (8)	34.29 (4)	8	5
	23C: Wet Air Oxidation	4.83 (16)	5.90 (11)	5.02 (14)	5.11 (13)	5.89 (13)	26.75 (16)	13	16
	25C: Incineration	5.64 (14)	6.57 (8)	7.38 (3)	4.00 (16)	5.89 (15)	29.48 (12)	14	12

Note: ranking of options has been included in parenthesis

The key finding of the MCA analysis was that, for the purposes of shortlisting options for further analysis, the same options were consistently ranked within the top four options (shaded green in Table 7). These options are:

- 10M: Lysis-Digestion + Thermal Drying, located at Moa Point.
- 12M: Digestion-Lysis-Digestion + Thermal Drying, located at Moa Point.
- 17M Mesophilic Anaerobic Digestion + Thermal Drying, located at Moa Point.
- 19M: Thermal Drying + Gasification, located at Moa Point.

These options are further assessed against the project investment objectives, as described below.

2.5 Stage 4: Short List Option Analysis

The last stage of options assessment has been to evaluate how each option meets the investment objectives for this project. As described below, this has been undertaken qualitatively while further quantitative analysis is completed and incorporated into a full business case in line with Better Business Case requirements, which are important for the project funding process.

In addition to the four options identified in the Stage 3 MCA, Option 1 from the original list of potential options – to continue sludge dewatering at Carey's Gully – has been included in line with normal business case processes.

2.5.1 Assessing the Options Against the Objectives

For each of the do nothing and short listed options, an assessment has been made as to how each option aligns, in detail, to the defined investment objectives defined in Section 1.3. This assessment used a 5-point scale with the following definitions.

Table 8: Benefit Assessment Criteria

Score	Definition
⊘	Does not meet the objective
★	Partially meets the objective
★★	Meets the objective with minimal deficiencies
★★★	Fully contributes to the objective
★★★★	Exceeds the objective

A brief overview of each of the options is provided below, together with their scoring against the defined objectives.

2.5.2 Option 1C: Status Quo (or Do Nothing)

Under this option, the existing method of sludge processing would continue, which includes:

- Pumping the sludge from Moa Point WWTP to Carey's Gully.
- Centrifuge dewatering. In this process, the centrifuge essentially spins off free water from the sludge. The solids are collected into a skip bin for disposal.
- Dewatered sludge from the Western WWTP is sent to Carey's Gully for disposal with the dewatered sludge processed at Carey's Gully.

- The solids will be disposed of at the Southern Landfill and mixed with general waste to meet the consent requirements. Any solids over and above the consented amount will need to be transported to the alternative landfills.

The status quo option does not score well against the investment objectives, because:

- This option will not enable waste minimisation for Wellington City Council because sludge volumes will not be reduced.
- The resilience / risk profile of the sludge management system will not change.
- The environmental risks of the existing sludge management system will remain.

The status quo option will not require any additional capital funding, however there will be uncertain future operating costs with increasing waste levies and transportation costs if sludge has to be transported to another landfill.

Table 9: Evaluation of Option 1C Against Defined Objectives for Wellington Sludge Minimisation Project.

	Score
Objective 1 – Minimise sludge volume	⊘
Objective 2 –Enhance the resilience of sludge management	⊘
Objective 3 –Reduce environmental impact and risk	⊘

2.5.3 Option 10M: Lysis-Digestion and Thermal drying, at the Proposed Moa Point Site.

This option involves a process to treat the sludge involving three key stages, as follows:

- Thermal hydrolysis. In this process, the sludge is placed in a pressure vessel and heated. This lysis process causes the destruction of the cellar material within the sludge, which makes the digestion process (described below) more effective, producing greater amounts of biogas and sludge stabilisation.
- Mesophilic anaerobic digestion. This is a commonly used process globally for the stabilisation of sludge. The sludge is retained and kept warm within tanks (digesters), in which microbes break down the organic matter within the sludge. As they do so, methane (biogas) is released and captured within the lid of the digester. The biogas can be used in an energy centre to create heat (usually for the sludge treatment process) and/or electricity.
- Thermal drying. Thermal dryers are available in a range of configurations, but all use heat to drive water off the sludge to produce a dry product (typically containing less than 10% moisture). This greatly reduces the volume of sludge output because so much water is removed.

As noted above, the end product from this process is stabilised, which reduces the amount of break down that the sludge goes through when disposed of in the landfill. The dried nature of the product is substantially lower in volume than the existing sludge management process.

The following table provides a summary evaluation of this option against each of the objectives defined for this business case.

Table 10: Evaluation of Option 10M Against Defined Objectives for Wellington Sludge Minimisation Project.

	Score
Objective 1 – Minimise sludge volume	★★★★
Objective 2 –Enhance the resilience of sludge management	★★★★
Objective 3 –Reduce environmental impact and risk	★★★★

This option performs well against the objectives because it substantially reduces sludge volume to enable waste minimisation in Wellington City and produces a sludge output which is stable (therefore less prone to environmental risk). The process is a mature technology, which together with locating it at Moa Point, will enhance the resilience of the sludge management system.

2.5.4 Option 12M: Digestion-Lysis-Digestion and Thermal drying, at the Proposed Moa Point Site.

This option is similar to Option 10M described above but includes an additional initial digestion step, as follows:

- First stage mesophilic anaerobic digestion. As previously noted, this is a commonly used process globally for the stabilisation of sludge. The sludge is retained and kept warm within tanks (digesters), in which microbes break down the organic matter within the sludge. As they do so, methane (biogas) is released and captured within the lid of the digester. The biogas can be used in an energy centre to create heat (usually for the sludge treatment process) and/or electricity.
- Thermal hydrolysis. In this process, the sludge is placed in a pressure vessel and heated. This lysis process causes the destruction of the cellar material within the sludge, which makes the digestion process (described below) more effective, producing greater amounts of biogas and sludge stabilisation.
- Second stage mesophilic anaerobic digestion.
- Thermal drying. Thermal dryers are available in a range of configurations, but all use heat to drive water off the sludge to produce a dry product (typically containing less than 10% moisture). This greatly reduces the volume of sludge output because so much water is removed.

As noted above, the end product from this process is stabilised, which reduces the amount of break down that the sludge goes through when disposed of in the landfill. The dried nature of the product is substantially lower in volume than the existing sludge management process.

The following table provides a summary evaluation of this option against each of the objectives defined for this business case.

Table 11: Evaluation of Option 12M Against Defined Objectives for Wellington Sludge Minimisation Project.

	Score
Objective 1 – Minimise sludge volume	★★★★
Objective 2 –Enhance the resilience of sludge management	★★★★
Objective 3 –Reduce environmental impact and risk	★★★★

This option performs well against the objectives because it substantially reduces sludge volume to enable waste minimisation in Wellington City and produces a sludge output which is stable (therefore less prone to environmental risk). The process is a mature technology, which together with locating it at Moa Point, will enhance the resilience of the sludge management system.

2.5.5 Option 17M: Mesophilic Anaerobic Digestion and Thermal Drying, at the Proposed Moa Point Site.

Under this option, the sludge is treated in a process involving two key stages, including:

- Mesophilic anaerobic digestion. As previously noted, the sludge is retained and kept warm within tanks (digesters), in which microbes break down the organic matter within the sludge. As they do so, methane (biogas) is released and captured within the lid of the digester. The biogas can be used in an energy centre to create heat (usually for the sludge treatment process) and/or electricity. Because this option does not include a cell lysis step first, a greater number of digesters will be needed than for Option 2.

- Thermal drying. As previously noted, this process uses heat to drive water off the sludge to produce a dry product (typically containing less than 10% moisture). This greatly reduces the volume of sludge output because so much water is removed.

The following table provides a summary evaluation of this option against each of the objectives defined for this business case.

Table 12: Evaluation of Option 17M Against Defined Benefits for Wellington Sludge Minimisation Project.

	Score
Objective 1 – Minimise sludge volume	★★★★
Objective 2 – Enhance the resilience of sludge management	★★★
Objective 3 – Reduce environmental impact and risk	★★★

This option is a conventional and well established process for sludge stabilisation but is not as effective as doing so as Options 10M and 12M, which have the added benefit of a hydrolysis step to further aid stabilisation . This means that this option would provide slightly less flexibility in terms of future disposal pathways as options 10M and 12M and presents a slightly higher environmental impact when the end sludge product is disposed of to landfill. Note also that the footprint requirements for this type of plant are substantial, and although the plant could be fitted within the designated Moa Point site, it would not readily provide for response to extraordinary future growth or be as adaptable for changes in technology in the future.

2.5.6 Option 19M: Thermal Drying and Gasification, at the Proposed Moa Point Site.

Gasification is a process of combustion in the absence of oxygen, to produce a product (in this case) known as biochar, which can potentially be used as a fuel source for other combustion processes (such as industrial and commercial boilers). The sludge is pre-treated by dewatering and thermally drying it (as has been previously described). The gasification process also produces biogas which can be captured and used for process heat and/or electricity generation.

The following table provides a summary evaluation of this option against each of the objectives defined for this business case.

Table 13: Evaluation of Option 19M Against Defined Objectives for Wellington Sludge Minimisation Project.

	Score
Objective 1 – Minimise sludge volume	★★★★
Objective 2 –Enhance the resilience of sludge management	★★
Objective 3 –Reduce environmental impact and risk	★★★★

This option would significantly reduce the volume of sludge to landfill and provide potential future pathways for the sludge, thereby meeting objective 1. The sludge is also stabilized by this process to meet objective 3. The key challenge with this option is that there are very few examples of this technology in operation globally. This would create significant risks for Wellington City Council in terms of supporting a relatively immature technology in a remote global location. On this basis, the resilience score for this option has been downgraded when compared to the other options.

2.5.7 Financial Assessment

The whole of life cost (TOTEX) of these options was determined by undertaking a net present value (NPV) analysis, using capital and operational and maintenance (O&M) cost estimates. The NPV analysis is

provided for the purpose of comparing the relative cost of the options based on available cost information at the preliminary assessment stage and should not be relied upon for budgeting purposes.

The following table provides a summary of the comparative cost estimates developed for the shortlisted options under consideration. The process for producing the cost estimates presented here is as follows:

- Level 1 estimates, in accordance with Wellington Water's Cost Estimation Manual, were produced for all shortlisted options in June 2020. These were based on high level estimates of vendor plant and equipment costs and the use of international vendor databases, rates for construction from other typical projects, and general allowances for project and funding contingency. These estimates were produced for comparative purposes as part of the MCA.
- Since production of the Level 1 estimates and the MCA, further development has occurred of the preferred Option 10M, which has enabled the production of a Level 2 estimate in accordance with Wellington Water's Cost Estimation Manual. This has enabled a better understanding of quantities and risks which reflect more up to date cost information for this option.
- To ensure an even comparison between Option 10M and the other options, the Level 1 estimates for the options have been adjusted by scaling them based on the quantum of change of individual items for between the level 1 and level 2 estimate for Option 10M. This provides for a more reasonable comparison of cost between the options.

Table 14: Summary of Estimated Capital, Operating and TOTEX Costs for Sludge Minimisation Options.

Option	Capital Cost ($million)	Net Present Value ($million)
Option 1C: Do Nothing	Range: $58.8 - $63.9 Mean: $61.4	Range: $239.5 - $240.4 Mean: $240
Option 10M: Lysis-Digestion and Thermal Drying (at Moa Point)	Range: $158.4 - $222.4 Mean: $186.5	Range: $326.3 - $436.5 Mean: $381.4
Option 12M: Digestion-Lysis-Digestion and Thermal Drying (at Moa Point)	Range: $177.1 - $245.8 Mean: $208.1	Range: $376.0 - $501.8 Mean: $438.9
Option 17M: Mesophilic Anaerobic Digestion and Thermal Drying (at Moa Point)	Range: $170 - $251.1 Mean: $210.6	Range: $376.4 - $475.6 Mean: $426
Option 19M: Thermal Drying and Gasification (at Moa Point)	Range: $163 - $240.6 Mean: $201.8	Range: $341.9 - $516.1 Mean: $429

Note that the comparative capital cost estimates for this project are subject to significant uncertainty, including the following key risks:

- Market (contractor / supplier) appetite for risk for a project of this complexity and scale,
- The procurement model and potential risk premium charged by the market,
- The procurement of materials from overseas, which are subject to specific challenges such as foreign exchange volatility, disruptions due to the current global pandemic and increases in shipping costs,
- Inflationary pressures on materials and labour in the construction sector, which are currently in exceedance of standard inflation indices, and

The impacts of these risks are being assessed as part of the current stage of design and analysis.

The cost comparison shows that the lowest Whole of Life Cost estimate is delivered by the "do nothing" option, however given this option does not meet any of the investment objectives, the preferred option is

Option 10M – Lysis-Digestion and Thermal Drying because this option best meets the investment objectives and is the lowest whole of life cost option after the do nothing option. While Option 12M produces similar benefits, it has a higher capital and whole of life cost because it requires the construction of more plant.

2.6 Preferred Option

In summary, analysis undertaken to date shows that of the four short-listed options taken forward from the MCA, Option 10M (Lysis-Digestion and Thermal Drying) presents the lowest whole of life cost option, and, together with Option 12M (Digestion-Lysis-Digestion and Thermal Drying) best meets the investment objectives particularly in terms of resilience and reducing environmental impact and risk. Therefore, **Option 10M, Lysis-Digestion and Thermal Drying, is the preferred option**. Work is underway to better understand the benefits through further quantitative analysis which will be included in the final business case.

3 Delivering the Solution

This section describes the proposed approach to funding and delivering the preferred solution. While the full Project Business Case is still being finalised, the options analysis to date provides sufficient certainty to continue progressing the project to meet the timeframes for funding and to ultimately bring the new Sludge Management Facility into operation as soon as possible and before the expiry of the existing Southern Landfill resource consent in 2026.

3.1 Funding the Project

3.1.1 Consultation in the LTP

WCC has assessed the options for potential funding models for the Sludge Minimisation Project and presented two options in the draft Long-Term Plan (2021 - 2031)[2] for public consultation. The two funding options presented were:

1. Funded by WCC. Delivery of the project through Council funding resulting in a debt impact to Council in the range of $147 - $208m[3].
2. Funding of the project externally through use of the Infrastructure Funding and Financing Act (2020) (IFFA). This funding approach results in a charge to ratepayers in the form of a levy to repay the borrowing and associated costs required to fund the project. The initial estimate of the levy was $70 to $100 per residential ratepayer collected per year from year 4 of the LTP.

Funding the project from council debt increased the risk of WCC exceeding its debt cap when this potential investment was considered alongside other demands on WCC available capital.

Following public consultation on the funding options WCC adopted its preferred option, to use the IFFA, in the final long-term Plan 2021 – 2031.

3.1.2 Infrastructure Funding & Financing Act (2020)

The purpose of the IFFA is to provide a funding and financing model for the provision of infrastructure for housing and urban development that:

- supports the functioning of urban land markets; and
- reduces the impact of local authority financing and funding constraints; and
- supports community needs; and
- appropriately allocates the costs of infrastructure.

The IFFA has been designed to assist local government to progress critical infrastructure investment without compormising the existing strucutre and content of the local body's balance sheet.

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[2] *To matou mahere ngahuru tau – Our 10-year Plan 2021-2031 – Long-term Plan Consultation Document.* Wellington City Council, 2021. https://ehq-production-australia.s3.ap-southeast-2.amazonaws.com/460913009f18aa413b5a9364aa69a4032bed497f/original/1618367998/7050de8daf3e27b17b5ea566b6d0cb67_J012225-LTP-consultation-2021_3.3_WEB_singlepages.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIBJCUKKD4ZO4WUUA%2F20210518%2Fap-southeast-2%2Fs3%2Faws4_request&X-Amz-Date=20210518T204853Z&X-Amz-Expires=300&X-Amz-SignedHeaders=host&X-Amz-Signature=ea66a56173547872e60945567768497f6e703c92e202b273e8f1663174862246

[3] Note forecast capital cost for the project is now in the order of up to $250 million.

Crown Infrastructure Partners (CIP) administers the IFFA on behalf of the Government, including responsibility for sourcing financing and administering the Special Purpose Vehicles (SPVs) that are central to the mechanics of the IFFA.

The Ministry of Housing and Urban Development (MHUD) has an oversight responsibility for IFFA initiatives, including responsibility for recommending to the Minister to issue an Order in Council (OIC) that provides the power for the SPV to charge a levy to identified beneficiaries.

The Treasury enters into the Government Support Package (GSP) with the proposer that allows risk to be shared between the proposer and the Government. This is in effect an insurance policy that protects investors and the proposer if any unforeseen circumstances eventuate. The GSP is intended to only be called in the rarest of circumstances and is primarily provided to given certainty to investors. It is not intended to insure the proposer or construction partners against bad management, poor planning, or process.

At a high level, the mechanics of the IFFA are relatively simple:

- The proposer, in this case WCC, proposes to CIP a concept that they believe qualifies and is suitable for facilitating finance through the IFFA.
- The proposer and CIP work together to develop a description of the concept, identify the beneficiaries and undertakes high level estimations of financial cost, in order to seek preliminary support for the concept from MHUD and The Treasury.
- Following the provision of preliminary support, the proposer establishes a project team, and working with CIP develops a detailed project plan, project costs and associated levy estimations, along with relevant project specific material.
- The project plan is submitted to The Treasury for consideration for a Government Support Package (GSP).
- CIP goes to the debt markets to source investment in the concept. This is referred to as financial close.
- The project plan, the proposed investment and GSP are submitted to MHUD for review, who will then recommend to the Minister whether they believe an OIC should be issued.
- If an OIC is issued, the levy is struck, and the funding is available for the proposer to proceed with the project.

3.2 Beneficiary Identification

Benefits that flow from large scale infrastructure projects typically fall into three categories:

- **Service level improvement:** Providing a step change in the level of service available to ratepayers in anticipation of future needs and/or to reflect shifts in community expectation.
- **Planning for Growth:** Developing infrastructure that will facilitate or set the foundations for urban development to accommodate population growth.
- **Improving Resilience:** Improving the ability of core infrastructure to respond to risks inherent in the environment that they operate without compromising service levels.

The identified benefits of the Sludge Minimisation Facility (SMF) are as follows.

Waste Minimisation

WCC committed to the Wellington Regional Waste Management and Minimisation Plan (2017-2023) which entailed a reduction in the total quantity of waste sent to landfills from 600kg to 400kg per person per annum by 2026. Almost 20% of the waste volume sent to WCC's Southern landfill is sewage sludge, therefore removing the majority of sewage sludge from the landfill will provide WCC with a significant step towards achieving its waste minimization target.

Benefits: Allows WCC to achieve its waste minimisation target by materially reducing the amount of sewage sludge. This will reduce the amount of sewage sludge buried at the landfill by approximately 70%.

Beneficiaries: All Wellington ratepayers share in the benefit.

Te Atakura – First to zero

WCC's blueprint for a Zero Carbon Capital, Te Atakura, outlines WCC's intention to step up and show leadership in adopting policies and initiatives that promote positive environmental outcomes. It is important to WCC to be seen to be taking bold and definitive steps that clearly illustrate the seriousness of the council's commitment. The SMF does this by introducing new technology to address a growing challenge faced by all local authorities and facilitated by a funding mechanism that provides for additional flexibility in the council's capital programme, delivering more to the community sooner.

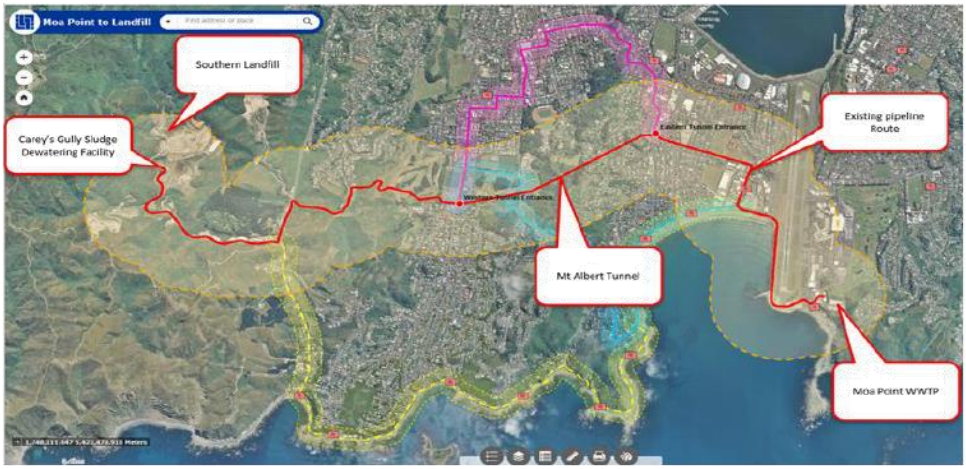
Approximately 80% of carbon produced by Council functions comes from the Southern Landfill, and a significant amount of this is directly attributable the existence of sewage sludge at the landfill. Organic waste like sewage sludge undergo anaerobic decomposition in landfills, producing methane gas that could be released to the atmosphere. Methane is a greenhouse gas that has been implicated in global warming. The Council is required to purchase carbon credits to offset the damaging gases produced by its activities.

Benefits: Lower long-term costs to council of carbon. Showing leadership in a key area of concern in New Zealand.

Beneficiaries: All Wellington ratepayers

Resilience

A key outcome of Project Jasmine is the decommissioning of pipe through which the sewage sludge is pumped from Moa Point to Carey's Gully. The pipe is approximately 9 kilometres long and travels beneath several residential suburbs. Parts of this pipe run at very high-pressure to pump the sewage sludge up hill. The pipe failed in March 2020 resulting in a repair bill of circa $20m and took several months to repair resulting in both traffic and odour impositions on local communities.



Benefits: WCC reduces the risk of running a high-pressure pipe.

Beneficiaries: Residents in the suburbs under which the pipe runs no longer live with the risk of failure. All Wellington ratepayers benefit from avoiding the risk of further expensive pipe failures.

Changing the way WCC manages waste

Consent requirements at the Southern Landfill require a mixing ratio of 4:1 waste to sewage sludge. These consents lapse in 2026. Given the amount of sewage sludge pumped to the landfill, this mixing ratio means there is limited spare waste to pursue more responsible and environmentally focused waste management initiatives such as organic diversion, recycling, and resource recovery.

The output from the SMF does not need to be buried at the Southern Landfill. One of the key benefits is that the dewatered product can be easily transported and disposed of in a variety of ways, from other landfills to potential composting solutions.

The existence of the SMF will provide a backstop solution for processing of imported sewage sludge, in essence providing cover for regional wastewater treatment plants.

There is an ongoing conversation in WCC about how the operations of the Southern Landfill form part of our strategy for waste management. In a practical sense, WCC cannot start this conversation until it has confidence that sewage sludge has been decoupled from the landfill.

Benefits: WCC can pursue waste management planning in a manner that reflects community values and allows Wellington to expand its waste management options.

Beneficiaries: All Wellington ratepayers share in the benefit.

Reflecting Mana Whenua Principles in Wastewater Disposal

Mana Whenua were directly involved in the multi-criteria assessment process selecting the preferred technology for treating future wastewater in Wellington. As part of this engagement the key principles and values embraced include:

- The principles of rahui in disposing of human waste
- Harnessing the resources in sewage sludge to give them another life
- Kaitiakitanga – having a positive impact on the environment and our communities through the action we take.

It is important to WCC that the way it plans for its future embraces the above principles, to reflect the community expectations of council leadership and to demonstrate leadership at a national level as the capital city.

Benefits: WCC demonstrates a commitment to reflecting Manu Whenua values and principles in the development of a long-term solution for managing our wastewater.

Beneficiaries: All Wellington ratepayers.

Wastewater Source

The Moa Point Wastewater Treatment Plant services a large part, but not all the Wellington ratepayer based, cutting off approximately through the middle of Johnsonville and the start of Karori. This means approximately 80% of the ratepayer base would have their wastewater treated by the SMF. The important consideration here is the commercial sector in the city area which traditionally has as many as 70,000 people per weekday travel in for work or social purposes. While there are no measurements in place, this influx of people is generally accepted to be responsible for a large proportion of the wastewater created in the Moa Point Catchment.

Benefits: Ratepayers in the Moa Point Catchment will have their wastewater further treated by the SMF, converting the content into a non-hazardous dried substance. These ratepayers will enjoy knowing their waste is disposed of in an environmentally friendly manner.

Beneficiaries: Ratepayers in the Moa Point Wastewater Treatment Plant Catchment.

3.2.1 Beneficiary Analysis

The service level improvements created by the SMF are practically invisible to ratepayers insomuch as there is limited awareness or engagement with the processing of wastewater, and/or any correlated activities. In this regards the opportunity to create a suite of service level improvements that exist downstream from the treatment of wastewater at Moa Point is the primary benefit of this project, accrues at the WCC level, and is therefore attributable to all ratepayers.

The SMF does not produce additional capacity in the wastewater network as sufficient capacity already exists to accommodate anticipated growth in the Moa Point catchment. This existing capacity coupled with ongoing advancements in wastewater treatment technology, means that investing to accommodate growth is not a key benefit of the SMF.

The SMF will result in a decoupling of sludge from the Southern Landfill therefore opening opportunity for WCC to reduce risk within the wastewater network while creating opportunity to pursue new waste management initiatives that enable it to deliver to its policy and commitments.

The collective benefit from the SMF to the WCC and its ratepayers is the ability to plan its infrastructure in a manner that demonstrates respect for mana whenua and environmental community expectations.

Summary: The primary benefits flowing from the investment in the SMF accrue to all Wellington ratepayers, and accordingly the application of the cost of the SMF should be appropriately distributed across the ratepayer base.

3.2.2 Levy Calculation Options

Alignment with WCC existing rating methodology

WCC has a well-developed regime for charging for services which allocates cost across groups of ratepayers. The basic principles that guide the distribution of cost across the beneficiary group are that it should:

- reflect the actual distribution of the benefit, and
- seek to reflect a level of fairness, and
- consider the affordability in the hands of the beneficiary.

Where direct benefits are hard to ascertain the concept of fairness is primarily achieved through firstly allocating cost by estimated usage, and then by capital value, as a proxy for distribution according to wealth.

The costs associated with the SMF straddle existing WCC wastewater revenue and funding policy, insomuch as it is a wastewater treatment plant and will be operated within the water funding envelope, and essential council services cost allocation policy, by virtue of benefits primarily being non-water related.

Levy category selection

WCC ratepayers can be broken down into residential and commercial categories using "the activities that are permitted, controlled, or discretionary for the area in which the land is situated" (i.e. matter (2) in Schedule 2 of the LGRA). WCC already identify specific groups of rateable property for the purpose of setting wastewater rates. The IFF levy will adopt these for implementation.

3.3 Calculating the Levy

There are three components to calculating the levy:

- The cost of the project to be funded through a levy. (This is potentially lower than the actual cost of the project)
- The timeframe the levy will be spread across. The IFFA allows for up to 50 years, the current working assumption for Project Jasmine is 30 years.
- The number of beneficiaries subject to the final levy.

As each of these components moves up or down there can be a material impact on the final levy cost to be dispersed over the beneficiary group.

It is important to note that the cost of the project funded by the levy is not necessarily the total cost of the project. The total cost of the project will be funded from the following sources, and in this order:

1. Preliminary feasibility costs borne by the proposer, WCC, prior to engaging with CIP.
2. Eligible construction costs, through the imposition of a levy on identified beneficiaries.
3. Project contingency post standard construction contingency borne by WCC as the proposer, and
4. Cost blowout from unanticipated events funded by The Treasury, through the Government Support Package.

At the individual beneficiary's level there are two key influences on the final allocated levy cost:

- The number of beneficiaries over which the cost is spread.
- The methodology used to spread the cost.

Each year the number of beneficiaries is expected to change as growth occurs in Wellington. This should mean on average the cost of the annual sludge levy charge for beneficiaries will decrease over the period of the levy.

The biggest influence on the cost at an individual beneficiary level is the methodology chosen to spread the annual levy cost. The basic principles in play when considering the distribution of cost across the beneficiary group are that it should:

- reflect the actual distribution of the benefit, and
- seek to reflect a level of fairness, and
- consider the affordability in the hands of the beneficiary.

Modelling has been done to reflect 5 different cost allocation methodologies to provide a sense of the difference in cost produced by different models. The models are:

1. Scenario One - Allocating based on Capital Value with no distinction between Residential and Commercial properties
2. Scenario Two - Splitting the cost 60% Residential 40% Commercial then allocating by capital value in each category
3. Scenario Three - Splitting the cost 60% Residential 40% Commercial then allocating Residential 30% fixed and 70% by Capital Value, Commercial allocated by Capital Value
4. Scenario Four - Splitting the cost 60% Residential 40% Commercial then allocating by fixed rate by ratepayer
5. Scenario Five - Fixed by ratepayer account with no distinction between Residential and Commercial properties.

The 60:40 split is sourced from WCC finance policy and represents a historical split for water related costs that seeks to reflect usage differentials between the commercial sector, particularly during the work week, and the residential sector. Actual usage is not a measure available for wastewater.

Cost summaries by CV range for each scenario are included in Appendix B. These calculations were all performed using the same data set. A revised and updated data set was used for the proposed levy calculation methodology below, which results in a minor change in equivalent rates increase percentage.

3.3.1 Proposed Levy Calculation Methodology

The current proposal is to charge 60% of the Annual Levy to residential ratepayers and 40% to commercial ratepayers, then each cost envelope allocated by Eligible Capital Value (CV). The Eligible CV is the total CV relevant to calculating rates, therefore excluding non-rateable properties, in part or in full. This proposed approach is a hybrid of existing wastewater charging policy and macro level essential services charging policy.

The CV charge will be calculated as follows for each residential ratepayer:

CV charge for residential ratepayers (per dollar of CV):

$$\frac{\text{Annual Levy} \times 60\%}{\text{Total Eligible CV Value of Residential Ratepayers}}$$

The charge for commercial ratepayers will be set as a CV based charge. The CV charge will be calculated as follows for each commercial ratepayer:

CV charge for Commercial ratepayers (per dollar of CV):

$$\frac{\text{Annual levy} \times 40\%}{\text{Total Eligible CV Value of Commercial}}$$

The proposed IFF levy is calculated for a 30-year period across all WCC ratepayers. It is intended to commence the levy in the year following plant commissioning. Based on the above proposed formula, the estimated cost of the levy for ratepayers with varying CVs is outlined in the table below.

The indicative levy values below support $250m of IFFA funding, which accommodates the forecast cost of the project, an allowance for normal project contingency, SPV administrative costs, and capitalised interest costs associated with the levy being aligned with plant commissioning. The use of this amount is primarily focused on assessing affordability, rather than an indicator of the expected price of the facility.

Table 15: Estimated Cost of Levy for Ratepayers According to Capital Value.

Capital value	Estimated rates ($ p.a.)	IFF levy ($ p.a.)	Equivalent Rates Increase (%)
Residential[4]			
CV $250k	1,345	46	3.4%
CV $500k	2,330	91	3.9%
CV $750k	3,314	137	4.1%
CV $875k	3,806	160	4.2%
CV $1m	4,298	182	4.3%
CV $2m	8,236	365	4.4%
Commercial[5]			
CV $500k	3,305	117	5.0%
CV $1m	6,611	333	5.0%

[4] The estimated rates value for residential is based on billing category A1.

[5] The estimated rates value for commercial is based on a mixture of billing categories (including industrial, recreational, retail, utilities, transport etc).

Capital value	Estimated rates ($ p.a.)	IFF levy ($ p.a.)	Equivalent Rates Increase (%)
CV $2m	13,221	667	5.0%
CV $2.75m	18,179	917	5.0%
CV $5m	33,053	1,667	5.0%
CV $10m	66,106	3,335	5.0%
CV $25m	165,265	8,337	5.0%

Each year, in line with the rating cycle, the levy calculations above will be updated to include any new residential or commercial developments in the number of ratepayers or total CV values. This should reduce the quantum of the levy over time through the addition of new beneficiaries.

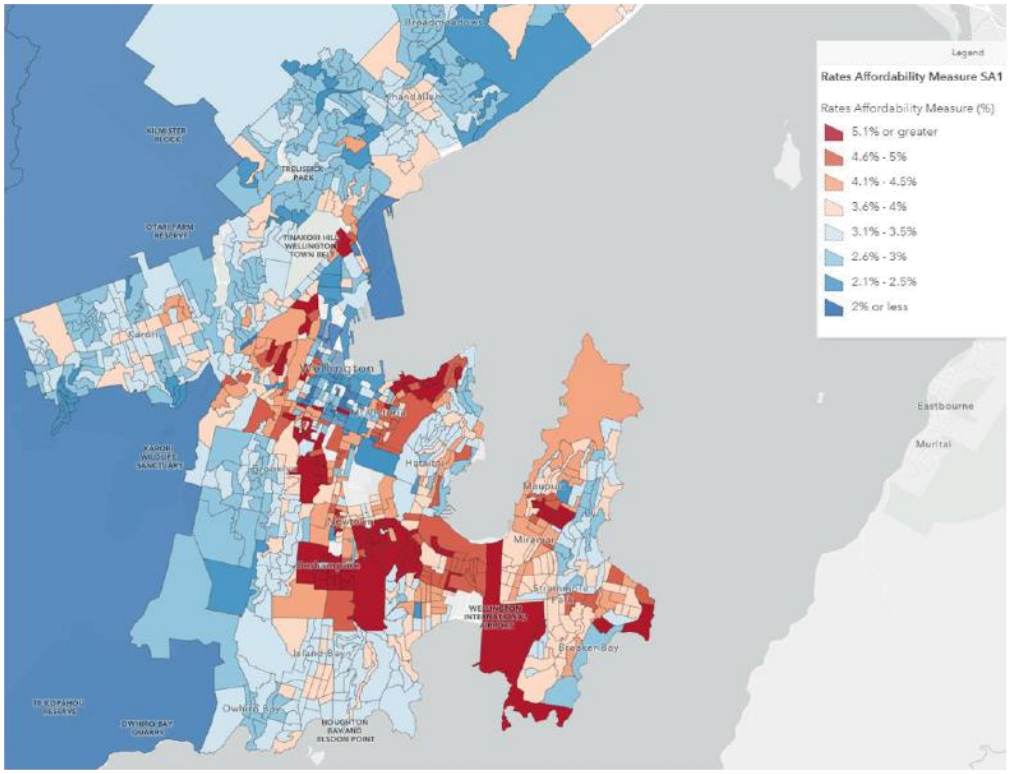
3.3.2 Affordability Analysis

WCC Approach to Rates Affordability

WCC undertook rates affordability analysis as part of the 2021-2031 long term plan process. The affordability rule of thumb is that if rates stay below 5% of average gross income, they are considered affordable for the ratepayer base.

The following map illustrates, by suburb and mess block, the areas where affordability is becoming more of a challenge and areas where there is significant affordability headroom.

Figure 3: Diagram of WCC Affordability Analysis.



The areas in red are primarily older established suburbs where property values are high, but population demographics are older, suggesting a higher propensity of lower fixed incomes. As a general rule there is

still sufficient affordability headroom in most suburbs. This suggests that the addition of a levy will be manageable.

3.4 Preliminary Project Budgets

The mechanics of the IFFA require the proposer to fund the initial project activities required to develop the requisite information to achieve financial close. Almost all costs funded by the proposer, with the exception of the land transaction as the land will remain in WCC ownership, will be refunded to the proposer following financial close and the establishment of the Special Purpose Vehicle that has the entitlement to levy beneficiaries.

The following table outlines the preliminary budgets by category. This budget is intended to see the project through to financial close, estimated to be September/October 2022.

Table 16: Preliminary Budget for Project Activity through to Financial Close.

Section Description	Cost Breakdown Description	Estimated Cost NZ$
Project Direct Costs	Seconded Team members	1,298,934
	Project Team Consultants	8,718,579
	WCC Personnel	831,140
	External Project Board Members	293,150
	Wellington Water Advisors	157,800
	Moa Point Operator (Veolia) support	170,950
	Probity Auditor	45,850
	Site Investigations, Surveys, etc	353,850
	SUBTOTAL - Project Direct Costs	**11,870,253**
Tier 1 & 2 Suppliers /ECI Contractor Costs	**SUBTOTAL - Tier 1 & 2 Suppliers**	**1,330,000**
Tenant Relocation Costs	AGS Relocation costs - Building	2,165,305
Land Acquisition Costs	Property Purchase	4,147,500
	SUBTOTAL - Land Acquisition	**6,312,805**
	TOTAL ESTIMATED COSTS	**19,513,058**
	Project Contingency	5,033,407
	Site Preparation and Access Contingency	6,887,000
	Management Contingency	4,715,020
	PROPOSED PROJECT BUDGET - Phase 3	**36,148,486**

WCC bears the risk of funding the preliminary stages if financial close was not achieved, or the project was not progressed past the preliminary stages.

3.5 Achieving Financial Close

CIP have identified a number of conditions precedent that will need to be satisfied in order to achieve Financial Close. The three core requirements are:

1. A sufficient level of design development and cost certainty (estimated to be P80 costing based on developed design or greater).
2. Consents (Resource Consents and Land Designation) have been obtained. (or clear consenting strategies are in place to indicate the likelihood of them being obtained)

3. Project land has been acquired (subject to settlement conditions linked to financial close)

The above budget and associated programme activities have been designed to deliver these requirements. WCC and CIP are working closely to ensure the project management plan supports the pathway to financial close while delivering the necessary project integrity.

CIP have indicated that these conditions are flexible where the, for example achieving resource consent may not be possible but having a clear consenting pathway and strategy may be sufficient when considered alongside the overall project progress and confidence levels.

3.6 Negotiating a Government Support Package (GSP)

The GSP is a key part of achieving finance through the IFFA. The GSP is intended to cover residual project risks that would ordinarily fall to the project owner.

In reality there are two separate GSP's;

1. Construction GSP - covering legitimate cost overruns under construction contracts.
2. Finance GSP - to be entered into between the Crown and the senior financiers or their agent covering residual risks that cannot be appropriately mitigated, managed or controlled by any other party.

WCC as the proposer will enter into a construction GSP with The Treasury. This agreement will protect WCC from the risk of the project not being completed through unforeseeable events, such as major cost blowouts.

The GSP is the third and final funding tool available to deliver the project where the initial agreed project budgets, and the proposer funded project contingency have been exhausted.

As part of negotiating the GSP, WCC will need to agree the quantum of risk it is willing to assume as the proposer. The process of assessing the appropriate level of risk will be part of the negotiation with The Treasury and need to be approved by Council.

3.7 Risk Management

A risk workshop was facilitated at project establishment, where key stakeholders identified and evaluated the key risks that might prevent, degrade or delay the achievement of the investment objectives. Further risk assessments have been undertaken, including a full risk workshop in October 2021 with WCC officials and funding participants. The outcomes of this risk workshop are being documented and will be incorporated into the full project Business Case.

In the interim, the following key risks have been identified.

Table 17: Summary of Key Risks for the Wellington Sludge Minimisation Project.

Risk Description	Mitigation	Residual Risk
Main ECI Contractor to accept novation of designer and key suppliers, including associated process and design risks.	Market sounding will be undertaken in November 2021 to test the market willingness to accept novation of the designer, and key suppliers. Feedback from market will be used to further refine the Procurement Strategy.	High
Market capacity for a project of this scale and complexity, considering other major projects pending or already in progress.	During market sounding in November 2021, the capacity of the potential bidders will be requested and evaluated. Based on this feedback, the Procurement Strategy will be further refined as necessary.	Medium
Engagement with the wider community before Christmas could be challenging given all the other engagements we have on the go – eg LGWM, District Plan and cycleways.	Strategic Communications and Engagement Plan has been prepared and endorsed by WCC Comms team. Pending Governance Group endorsement in November 2021. Consultation with community groups is continuing and feedback being monitored.	Medium

Risk Description	Mitigation	Residual Risk
	Consultation with Commercial ratepayers to be carried out in November.	
Proceeding with Preliminary design, Consenting, and other workstreams, before business case is completed in full.	Extensive work throughout the MCA process suggests it is unlikely that an alternative option would be preferred.	Low
Money expended on the project is at risk until financial close.	Maintain the process with CIP towards financial close and adhering to their processes and timeline.	Low
Consenting risk. Current plan allows for hearings but not environment court.	Consenting activities have progressed since mid-September 2021, with target to lodge consents in March 2022. The Project Plan has been prepared on the basis of notified consents. Early engagement with key stakeholders being undertaken to mitigate risk of appeals.	Medium
Escalating costs in the current market where both material and physical resources are constrained	Allowances and contingencies have been made for market escalation in the cost estimate ranges presented herein. An independent cost estimator will be engaged to perform a cost estimate in parallel with the Main ECI Contractor.	High
Operational risk and unfamiliar technology in New Zealand.	The project team will continue to work with the incumbent operator at Moa Point WWTP, noting the water reform may influence the final operating model.	Medium
The project timelines requiring planning and delivery activities to be run in parallel	Project management plan under development and WCC project management office monitoring and advising project.	Medium

3.8 Procurement Strategy (Service Delivery Model)

This project involves the selection and integration of complex technologies and the construction of a new facility adjacent to live wastewater treatment and airport operations. The selection of a delivery model, and ultimately the most appropriate suppliers to design, supply technology and construct the plant, requires careful consideration in light of the specific complexities that this project creates.

Key factors that influence the service delivery model, are described below. These factors are being considered in the development of a project procurement strategy.

Selection and Integration of Specialist, Complex Technology

The preferred option (Lysis-Digestion and Thermal Drying) requires the use of specialist technology from international vendors. The scale and technical risk of the project lends itself to large, reputable international vendors who have the capability to deliver the plant under performance-based vendor supply package contracts.

One of the key decisions required early in the design process is the selection of the preferred thermal hydrolysis technology. This is because the thermal hydrolysis plant (THP) is central to the whole sludge treatment process, and the particular vendor technology selected determines process requirements before and after the THP. If the preferred THP vendor were not selected early in the process design, it would require substantial re-work of the process design upon selection, and lead to inefficient design processes. Given the fast-track nature of this project, this is also undesirable.

A market sounding study has been prepared by international sludge process engineering consultants, Black and Veatch. The market sounding study presents the range of thermal hydrolysis providers available globally and who adopt different types of thermal hydrolysis technologies. The key findings of this market study are:

- There are a range of Chinese THP vendors which do not supply to countries out of China, so can't be shortlisted for consideration.

- Of the remaining five global thermal hydrolysis suppliers, two have only one unit in operation globally of a similar size to the plant needed for Wellington. The lack of track record would create significant challenges in terms of providing ongoing support for what is a technically complex process.
- One of the remaining significant technology providers have advised that they are not able to supply their thermal hydrolysis technology into the Australian and New Zealand market, due to a re-structure of their global technology offerings and concerns about providing technical support.
- Of the two remaining vendors, only one is able to guarantee the production of Grade A biosolids under all operating circumstances for this plant. As previously noted in Section **Error! Reference source not found.**, this is a core requirement of investment Objective Two.

On that basis, it is considered that there is only one suitable global supplier of the thermal hydrolysis technology. The proposed supplier is the most prevalent global supplier of thermal hydrolysis technology and has plants operational or under construction in Australia and New Zealand, which de-risks the operation of the plant further. A recommendation has been made to the Project Governance Group on this basis.

In addition to selection of a thermal hydrolysis supplier, suppliers for other plant packages will also be required. A review of these plant procurement packages, and how these should be managed, is underway based on consultation with international specialists who have relevant skills and experience in similar plant construction.

Collaborative Contracting Model

This project presents some unique challenges and risks, particularly in delivering the construction of the plant via a main contractor. These include:

- The contractor will require a high level of skill and relevant experience in the management and integration of a range of technologies into a single, working system. This will require the skills of specialist process industry contractors not normally associated with major civil infrastructure projects. T
- This project involves a high level of technical and structural construction complexity, within a small site.
- The design of the plant will be heavily dependent on the construction methodology, which is in turn driven by the tight site and complex construction techniques notes above.
- COVID-19 has led to increases in material costs and pressures on the labour market which are driving up costs. This may also put pressure on the project programme, which will increase costs to either accelerate or prolong the project programme.
- The risks associated with process performance are relatively unfamiliar to the main contractor fraternity in New Zealand. This means that, under the very buoyant market conditions, main contractors may be less willing to engage in a procurement process if they deem the risks to be too high or too difficult to manage. Careful consideration therefore needs to be given to how process risk is managed, and who owns this risk.

All of these challenges create uncertainty in cost and may impact the ability to arrive at a capital cost estimate for the proposed funding model.

Analysis of procurement options shows that this project strongly favours a collaborative model involving early contractor engagement to support the design process. Noting the specialist skills required, it is proposed that a market sounding exercise by way of a Request for Information (RFI) is undertaken to inform the construction market of the project and provide the Principal's appraisal of key complexities, issues and risks. This then enables the market to form partnerships as required to meet the specific requirements of the project. Furthermore, WCC will seek information about matters such as contractor appetite for risk and current constraints and opportunities in the market. The RFI document will include:

- An overview of the project drivers and objectives
- A description of the proposed works
- Site specific complexities

- Options for delineation of scope (between design, plant supply and construction).
- The proposed procurement process following the RFI
- Specific questions that Wellington City Council seeks response for, to further inform the Principal on the most appropriate construction methodology which will influence the procurement documentation.

Interactive workshops with respondents may occur during and/or after the RFI and Officers will report back to the Governance Group on the findings of the RFI.

On the basis the market signals an ECI is appropriate, we anticipate undertaking a competitive procurement process and a separate procurement plan will be prepared to document the procurement process in its entirety. If the market signals otherwise, an appropriate alternative construction model will be recommended.

Wellington City Council will prepare a Request for Proposal to select a contractor based on attributes outlined in the Evaluation criteria further below. This will incorporate feedback received from the Stage A RFI process. A preferred contractor will be selected based on a weighted attribute methodology. This contractor will be taken forward into the ECI process. At this stage, the Contractor will be engaged on a contract which prescribes the scope and requirements for the ECI stage only.

At the completion of the ECI design stage, the contractor will submit a Schedule of Prices for execution of the works. A reconciliation and negotiation process will be undertaken to agree a Schedule of prices with an appropriate allocation of risk. Upon agreement, a contract can be awarded to the main contractor to deliver the works. In the event, and through provisions in the Terms and Conditions of the ECI Contract, Wellington City Council may terminate the contractor' participation further in the project in the event that agreement on an appropriate price, terms and the like cannot be reached.

This will enable complexity, innovative approaches and particularly risk management to be proactively managed, and lead to greater cost certainty earlier. Through the Early Contractor Involvement model, the contractor will engage with the designers and international technology providers to provide an integrated solution and establish more certain cost estimates earlier.

Meeting the Condition Precedents for the Funding Model

Conditions 1 and 2 can only be met if the design has been sufficiently well advanced. The proposed timeframe for achieving the funding agreement is approximately September/October 2022, which necessitates that the design is advanced as soon and as quickly as possible. For this reason, a decision was taken early to retain the incumbent designer through the preliminary design phase, so that:

- The time to commence preliminary design is reduced so that uncertainties in process plant consenting and land acquisition can be addressed as early as possible. This is because the incumbent team already understand the project and can transition rapidly to these activities.
- The duration of preliminary design is minimised by utilising resources familiar with the project.
- Existing relationships between the project team and key stakeholders (iwi, Wellington City Council, Wellington International Airport, Wellington Water Limited, and community stakeholders) can be leveraged to advance consenting, design and incorporate stakeholder needs into the design.

Parallel to this, it is proposed that a design peer review / challenge team be selected review and challenge the design and ensure that innovation is not lost. It is also suggested that value for money be tested by comparing the proposed / actual cost of the incumbent against typical market ranges, and/or adopting pain / gain mechanisms to drive value for money.

3.8.1 Land Acquisition Strategy

Acquisition of land is required from Wellington International Airport Limited (WIAL) at the location of the proposed Sludge Minimisation Facility. The proposed new facility will be constructed across two land parcels – an existing one owned by WCC, and another owned by WIAL. The sites have mixed designations relating

to both airport operations and wastewater operations activities. An extension of the wastewater designation will be required, and discussions between WCC and WIAL are underway to define new designation boundaries.

3.8.2 Consenting Stakeholder Engagement

A Stakeholder and Community Engagement Plan has been developed for this project. It identifies the key stakeholders that require engagement, the objectives of engagement with each party, and who is responsible for that engagement. It is based on the following guiding principles:

- Partnership management: WCC ensures that its partnership responsibilities are being appropriately recognised and provided for in all its activities.
- Understanding and awareness: we acknowledge, respect, and provide for the diversity of needs of the groups we engage with.
- Proactive engagement: We look after our partners, stakeholders, customers, and communities of interest by placing the quality and timeliness of engagement and communications practices.
- Reputation management: The maintenance and enhancement of WCC's and Wellington Water's reputation is actively recognised and provided for in the planning and delivery of its engagement and communications services.
- Accessibility: We acknowledge the differing information capabilities and requirements of the groups when we plan pour engagement and communications activities.
- Clarity: The information we provide is appropriately tailored so that it can be readily understood and actively used by our partners, stakeholders, customers, and communities of interest.

3.9 Delivery Programme

The following diagram provides a high-level summary of the proposed programme for delivery of the Wellington Sludge Minimisation Facility. A detailed programme has been developed with to enable detailed task planning.

In summary, the project will be delivered in three key stages:

- **Consent Preparation** (and Preliminary Design to inform Consenting) . During this period, technical analysis and design development is being undertaken for the preferred option to meet a target date for lodgement of resource consent applications and notices of requirement by 31 March 2022. This milestone is critical to support the IFF funding process and ensure that construction can commence in time to get the plant operational by 2026.
- **Plant and contractor selection:** This will be undertaken in parallel to the consenting / preliminary design process so that the design and consenting can be informed by actual technology selection and enable early engagement of the construction contractor as noted below.
- **The ECI design phase:** This will enable the contractor and designer to work together to develop the design to a point that reasonable certainty is provided in capital cost estimates for funding. The target date for completion of the funding process (financial close) is 30 September 2022.
- Execution Phase: This involves the final detailed design and construction of the plant. The target for completion of construction is Quarter 1 2026, prior to the expiry of the existing Southern Landfill consent later that year.

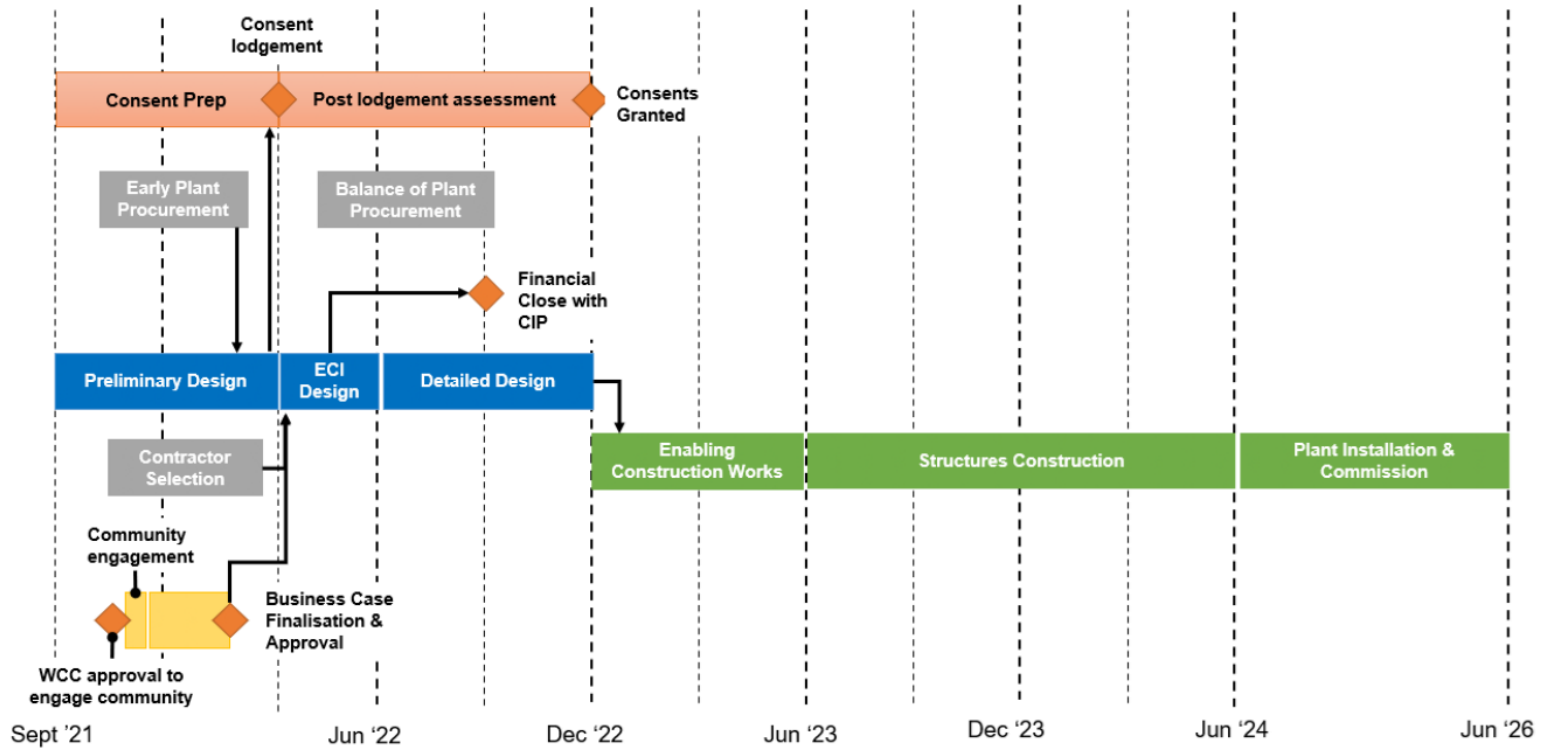


Figure 4: High Level Programme for Project Jasmine.


A
Appendix A – List of Potential Options

Option 1: Status Quo (Or Do nothing Option)
Continuation of base case dewatering operations at Carey's Gully. Moa Point sludge is transferred via a pipeline to the Carey's Gully SDP and then disposed in landfill. Karori dewatered sludge is carted to the same landfill.

Option 2: Electrostatic Belt Filter Press

This option would mean that Moa Point Sludge is dewatered through electrostatic belt filter press and the wet cake is landfilled. Karori dewatered sludge is carted to the same landfill.

Option 3: Heated Filter Press

Moa Point sludge is thickened. Karori sludge is blended in with the thickened Moa Point sludge. The blend is fed to a heated filter press and the wet cake is landfilled.

Option 4: Solar Drying

Moa Point sludge is dewatered by means of centrifuge. It is then blended with Karori sludge and dried in a solar drying greenhouse. The dried product can be applied to land or landfill.

Option 5: Aerobic Digestion and Solar Drying

Moa Point and Karori sludges are mixed and fed to an aerobic digestion facility. After stabilisation the sludge is dewatered and dried in a greenhouse. The dried product can be applied to land or landfilled.

Option 6: Mesophilic Anaerobic Digestion (MAD) + Solar Drying

Moa Point sludge is thickened. Karori sludge is mixed in and fed to an anaerobic digestion facility. After stabilisation the sludge is dewatered and dried in a greenhouse. The dried product can be applied to land or landfilled. Biogas can be used for heating and/or electricity production.

Option 7: Autothermal Aerobic Digestion + Thermal Dryer

Moa Point and Karori sludges are mixed and fed to an autothermal aerobic digestion facility. After stabilisation the sludge is dewatered and dried in a thermal dryer. The dried product can be applied to land or landfilled.

Option 8: Mesophilic Anaerobic Digestion (MAD) + Composting

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an anaerobic digestion facility. After stabilisation the sludge is dewatered and composted. The product must be applied to land. Biogas can be used for heating and or electricity production.

Option 9: Mesophilic Anaerobic Digestion (MAD) + Vermicomposting

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an anaerobic digestion facility. After stabilisation the sludge is dewatered and vermicomposted. The product can be applied to land.

Biogas can be used for heating and/or electricity production.

Option 10: Thermal Hydrolysis (THP) + Mesophilic Anaerobic Digestion (MAD) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to a THP followed by anaerobic digestion. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the hydrolysis process and/or the dryer.

Biosolids can be applied to land or be landfilled.

Option 11: Mesophilic Anaerobic Digestion (MAD) + Thermal Hydrolysis (THP) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an anaerobic digester followed by a thermal hydrolysis. After hydrolysis the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the hydrolysis process and/or the dryer.

Biosolids can be applied to land or be landfilled.

Option 12: Digestion Lysis Digestion (DLD) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to a process consisting of two anaerobic digestion steps with thermal hydrolysis in between. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the hydrolysis process and/or the dryer.

Biosolids can be applied to land or be landfilled.

Option 13: Mechanical Hydrolysis + Mesophilic Anaerobic Digestion (MAD) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to a mechanical hydrolysis process followed by anaerobic digestion. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the dryer.

Biosolids can be applied to land or be landfilled.

Option 14: Ultrasonic Hydrolysis + Mesophilic Anaerobic Digestion (MAD) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an ultrasonic hydrolysis process followed by anaerobic digestion. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the dryer. Biosolids can be applied to land or be landfilled.

Option 15: Biological Hydrolysis + Mesophilic Anaerobic Digestion (MAD) + Thermal Dryer (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to a biological hydrolysis process followed by anaerobic digestion. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the dryer. Biosolids can be applied to land or be landfilled.

Option 16: Mesophilic Anaerobic Digestion (MAD) + Struvite Recovery (SR)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an anaerobic digestion process. After stabilisation struvite is received from the sludge. The sludge is then is dewatered and applied to land or landfilled.

Option 17: Mesophilic Anaerobic Digestion (MAD) + Thermal Drying (TD)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to an anaerobic digestion step. After stabilisation the sludge is dewatered and thermally dried. Biogas can be used to satisfy the heat requirements of the dryer. Biosolids can be applied to land or be landfilled.

Option 18: Thermal Dryer

Moa Point sludge is dewatered and combined with Karori sludge. The blend is fed to a thermal dryer. The biosolids are a low-grade fuel but can be landfilled.

Option 19: Thermal Drying (TD) + Gasification

Moa point sludge is dewatered and combined with Karori sludge in a thermal dryer. The dried solids are gasified. Syngas can be used to partially satisfy the thermal dryer energy needs.

The biosolids can be applied to land or be landfilled.

Option 20: Thermal Dryer + Pyrolysis

Moa Point sludge is dewatered and combined with Karori sludge in a thermal dryer. The dried solids are pyrolyzed. The biosolids can be applied to land or be landfilled.

Option 21: Mesophilic Anaerobic Digestion (MAD) + Thermal Dryer (TD) + Pyrolysis

Moa point sludge is thickened and combined with Karori sludge in an anaerobic digester. After stabilisation the sludge is dewatered and thermally dried. The dried solids are pyrolyzed. The biosolids can be applied to land or be landfilled.

Option 22: Hydrothermal liquefaction + Oil upgrading

Moa Point sludge is dewatered and combined with Karori sludge in a hydrothermal liquefaction unit. The waste solids are landfilled. The biocrude is refined to oil products.

Option 23: Wet Air Oxidation (WAO) [MAD optional]

Moa Point sludge is dewatered and combined with Karori sludge in an anaerobic digester. The stabilised solids are fed to a WAO unit. The biosolids can be landfilled or used as construction material. Biogas can contribute to the WAO energy need.

Option 24: Thermal Hydrolysis Process (THP) + Mesophilic Anaerobic Digestion (MAD) + Wet Air Oxidation (WAO)

Moa Point sludge is thickened. Karori sludge is mixed in and the blend is fed to a thermal hydrolysis process followed by anaerobic digestion. The stabilised solids are fed to a Wet Air Oxidation unit. The biosolids can be landfilled or used as construction material. Biogas can contribute to the WAO energy need.

Option 25: Incineration [TD optional]

Moa Point sludge is dewatered. Karori sludge is mixed in and the blend is fed to an incinerator. Potentially a thermal drying step is required for partial drying of the sludge blend. Residual ash can be partially used for construction purposes but must otherwise be landfilled.

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B

Appendix B – Supporting Information for Levy Calculations

Estimated Cost of the SMF to beneficiaries	The total potential cost to be funded through IFF Levy
Estimated Annual Levy GST inclusive	The annual cost of the levy to distributed across the beneficiary group
CV Ranges	The CV range used to summarise levy outcomes
Count of Wufi	The number of ratepayers in each CV range
Sum of CV	The sum of capital value in the CV range
% of Total	The percentage of capital value as a proportion of total capital value – note this differs by scenario.
Fixed	The total fixed cost component allocated by CV range
Variable	The total variable cost allocated by CV range
Total	The sum of fixed and variable cost componnts
Average	The average cost for ratepayers in this CV range
$$ Range	The range of costs for ratepayers within the CV range
% Range	The % increase of the levy compared to WCC rates

Scenario One – Allocating based on Capital Value with no distinction between Residential and Commercial properties	Estimated Cost of the SMF to beneficiaries		$ 250,000,000	
	Estimated Annual Levy GST inclusive		$ 19,780,000	

Residential

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	$$ Range			% Range		
0 - $249,999	4,037	$ 427,276,600	0.65%	$ -	$ 104,440	$ 104,440	$ 26	$ 12	-	$ 61	8.1%	-	8.1%
$250,000 - $499,999	9,466	$ 3,804,819,000	5.78%	$ -	$ 930,021	$ 930,021	$ 98	$ 61	-	$ 122	8.1%	-	5.3%
$500 000 - $749,999	26,464	$ 16,748,449,000	25.46%	$ -	$ 4,093,863	$ 4,093,863	$ 155	$ 122	-	$ 183	5.3%	-	5.6%
$750,000 - $999,999	21,192	$ 18,112,596,000	27.54%	$ -	$ 4,427,304	$ 4,427,304	$ 209	$ 183	-	$ 244	5.6%	-	5.8%
$1,000,000 - $1,249,999	7,923	$ 8,709,803,000	13.24%	$ -	$ 2,128,958	$ 2,128,958	$ 269	$ 244	-	$ 306	5.8%	-	5.9%
$1,250,000 - $1,499,999	3,118	$ 4,191,955,000	6.37%	$ -	$ 1,024,649	$ 1,024,649	$ 329	$ 306	-	$ 367	5.9%	-	5.9%
$1,500,000 - $2,499,999	2,997	$ 5,455,578,000	8.29%	$ -	$ 1,333,520	$ 1,333,520	$ 445	$ 367	-	$ 611	5.9%	-	6.1%
$2,500,000 - $3,499,999	547	$ 1,578,215,000	2.40%	$ -	$ 385,767	$ 385,767	$ 705	$ 611	-	$ 856	6.1%	-	6.1%
$3,500,000 - $4,999,999	227	$ 922,735,000	1.40%	$ -	$ 225,546	$ 225,546	$ 994	$ 856	-	$ 1,222	6.1%	-	6.2%
$5,000,000 - $7,499,999	130	$ 777,158,000	1.18%	$ -	$ 189,963	$ 189,963	$ 1,461	$ 1,222	-	$ 1,833	6.2%	-	6.2%
$7,500,000 - $9,999,999	38	$ 329,625,000	0.50%	$ -	$ 80,571	$ 80,571	$ 2,120	$ 1,833	-	$ 2,444	6.2%	-	7.1%
$10,000,000 - $14,999,999	66	$ 797,727,000	1.21%	$ -	$ 194,990	$ 194,990	$ 2,954	$ 2,444	-	$ 3,666	7.1%	-	7.1%
$15,000,000 - $19,999,999	23	$ 401,840,000	0.61%	$ -	$ 98,223	$ 98,223	$ 4,271	$ 3,666	-	$ 4,889	7.1%	-	7.1%
> $20,000,000	63	$ 3,517,048,000	5.35%	$ -	$ 859,680	$ 859,680	$ 13,646	$ 4,889			7.1%		
Total	76,291	$ 65,774,824,600	100.00%	$ -	$ 16,077,495	$ 16,077,495	$ 211						

Commercial

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range		
0 - $249,999	1,546	$ 160,678,300	1.06%	$ -	$ 39,275	$ 39,275	$ 25	$ 12	-	$ 61
$250,000 - $499,999	987	$ 350,451,000	2.31%	$ -	$ 85,662	$ 85,662	$ 87	$ 61	-	$ 122
$500 000 - $749,999	556	$ 338,012,000	2.23%	$ -	$ 82,621	$ 82,621	$ 149	$ 122	-	$ 183
$750,000 - $999,999	394	$ 337,307,000	2.23%	$ -	$ 82,449	$ 82,449	$ 209	$ 183	-	$ 244
$1,000,000 - $1,249,999	248	$ 277,111,000	1.83%	$ -	$ 67,735	$ 67,735	$ 273	$ 244	-	$ 306
$1,250,000 - $1,499,999	205	$ 279,293,000	1.84%	$ -	$ 68,268	$ 68,268	$ 333	$ 306	-	$ 367
$1,500,000 - $2,499,999	409	$ 776,797,000	5.13%	$ -	$ 189,874	$ 189,874	$ 464	$ 367	-	$ 611
$2,500,000 - $3,499,999	243	$ 707,168,000	4.67%	$ -	$ 172,855	$ 172,855	$ 711	$ 611	-	$ 856
$3,500,000 - $4,999,999	158	$ 664,058,000	4.38%	$ -	$ 162,317	$ 162,317	$ 1,027	$ 856	-	$ 1,222
$5,000,000 - $7,499,999	120	$ 698,344,000	4.61%	$ -	$ 170,698	$ 170,698	$ 1,422	$ 1,222	-	$ 1,833
$7,500,000 - $9,999,999	77	$ 670,365,000	4.43%	$ -	$ 163,859	$ 163,859	$ 2,128	$ 1,833	-	$ 2,444
$10,000,000 - $14,999,999	92	$ 1,112,030,000	7.34%	$ -	$ 271,816	$ 271,816	$ 2,955	$ 2,444	-	$ 3,666
$15,000,000 - $19,999,999	48	$ 817,985,000	5.40%	$ -	$ 199,942	$ 199,942	$ 4,165	$ 3,666	-	$ 4,889
> $20,000,000	138	$ 7,957,760,000	52.54%	$ -	$ 1,945,134	$ 1,945,134	$ 14,095	$ 4,889		
Total	5,221	$ 15,147,359,300	100.00%	$ -	$ 3,702,505	$ 3,702,505	$ 709			

Scenario Two - Splitting the cost 60% Residential 40% Commercial then allocating by capital value in each category	Estimated Cost of the SMF		$ 250,000,000	
	Estimated Annual Levy GST inclusive		$ 19,780,000	

Residential

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range	% Range
0 - $249,999	4,037	$ 427,276,600	0.65%	$ -	$ 77,095	$ 77,095	$ 19	$ 9 - $ 45	5.9% - 5.9%
$250,000 - $499,999	9,466	$ 3,804,819,000	5.78%	$ -	$ 686,518	$ 686,518	$ 73	$ 45 - $ 90	5.9% - 3.9%
$500 000 - $749,999	26,464	$ 16,748,449,000	25.46%	$ -	$ 3,021,986	$ 3,021,986	$ 114	$ 90 - $ 135	3.9% - 4.1%
$750,000 - $999,999	21,192	$ 18,112,596,000	27.54%	$ -	$ 3,268,124	$ 3,268,124	$ 154	$ 135 - $ 180	4.1% - 4.2%
$1,000,000 - $1,249,999	7,923	$ 8,709,803,000	13.24%	$ -	$ 1,571,543	$ 1,571,543	$ 198	$ 180 - $ 226	4.2% - 4.3%
$1,250,000 - $1,499,999	3,118	$ 4,191,955,000	6.37%	$ -	$ 756,370	$ 756,370	$ 243	$ 226 - $ 271	4.3% - 4.4%
$1,500,000 - $2,499,999	2,997	$ 5,455,578,000	8.29%	$ -	$ 984,371	$ 984,371	$ 328	$ 271 - $ 451	4.4% - 4.5%
$2,500,000 - $3,499,999	547	$ 1,578,215,000	2.40%	$ -	$ 284,763	$ 284,763	$ 521	$ 451 - $ 632	4.5% - 4.5%
$3,500,000 - $4,999,999	227	$ 922,735,000	1.40%	$ -	$ 166,493	$ 166,493	$ 733	$ 632 - $ 902	4.5% - 4.6%
$5,000,000 - $7,499,999	130	$ 777,158,000	1.18%	$ -	$ 140,226	$ 140,226	$ 1,079	$ 902 - $ 1,353	4.6% - 4.6%
$7,500,000 - $9,999,999	38	$ 329,625,000	0.50%	$ -	$ 59,475	$ 59,475	$ 1,565	$ 1,353 - $ 1,804	4.6% - 5.2%
$10,000,000 - $14,999,999	66	$ 797,727,000	1.21%	$ -	$ 143,937	$ 143,937	$ 2,181	$ 1,804 - $ 2,707	5.2% - 5.2%
$15,000,000 - $19,999,999	23	$ 401,840,000	0.61%	$ -	$ 72,506	$ 72,506	$ 3,152	$ 2,707 - $ 3,609	5.2% - 5.2%
> $20,000,000	63	$ 3,517,048,000	5.35%	$ -	$ 634,594	$ 634,594	$ 10,073	$ 3,609	5.2%
Total	76,291	$ 65,774,824,600	100.00%	$ -	$ 11,868,000	$ 11,868,000	$ 156		

Commercial

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range
0 - $249,999	1,546	$ 160,678,300	1.06%	$ -	$ 83,928	$ 83,928	$ 54	$ 26 - $ 131
$250,000 - $499,999	987	$ 350,451,000	2.31%	$ -	$ 183,053	$ 183,053	$ 185	$ 131 - $ 261
$500 000 - $749,999	556	$ 338,012,000	2.23%	$ -	$ 176,556	$ 176,556	$ 318	$ 261 - $ 392
$750,000 - $999,999	394	$ 337,307,000	2.23%	$ -	$ 176,187	$ 176,187	$ 447	$ 392 - $ 522
$1,000,000 - $1,249,999	248	$ 277,111,000	1.83%	$ -	$ 144,745	$ 144,745	$ 584	$ 522 - $ 653
$1,250,000 - $1,499,999	205	$ 279,293,000	1.84%	$ -	$ 145,885	$ 145,885	$ 712	$ 653 - $ 784
$1,500,000 - $2,499,999	409	$ 776,797,000	5.13%	$ -	$ 405,748	$ 405,748	$ 992	$ 784 - $ 1,306
$2,500,000 - $3,499,999	243	$ 707,168,000	4.67%	$ -	$ 369,379	$ 369,379	$ 1,520	$ 1,306 - $ 1,828
$3,500,000 - $4,999,999	158	$ 664,058,000	4.38%	$ -	$ 346,861	$ 346,861	$ 2,195	$ 1,828 - $ 2,612
$5,000,000 - $7,499,999	120	$ 698,344,000	4.61%	$ -	$ 364,770	$ 364,770	$ 3,040	$ 2,612 - $ 3,918
$7,500,000 - $9,999,999	77	$ 670,365,000	4.43%	$ -	$ 350,155	$ 350,155	$ 4,547	$ 3,918 - $ 5,223
$10,000,000 - $14,999,999	92	$ 1,112,030,000	7.34%	$ -	$ 580,852	$ 580,852	$ 6,314	$ 5,223 - $ 7,835
$15,000,000 - $19,999,999	48	$ 817,985,000	5.40%	$ -	$ 427,262	$ 427,262	$ 8,901	$ 7,835 - $ 10,447
> $20,000,000	138	$ 7,957,760,000	52.54%	$ -	$ 4,156,619	$ 4,156,619	$ 30,120	$ 10,447
Total	5,221	$ 15,147,359,300	100.00%	$ -	$ 7,912,000	$ 7,912,000	$ 1,515	

Scenario Three – Splitting the cost 60% Residential 40% Commercial then allocating Residential 30% fixed and 70% by Capital Value, Commercial allocated by Capital Value	Estimated Cost of the SMF		$ 250,000,000	
	Estimated Annual Levy		$ 19,780,000	

Residential

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range			% Range		
0 -$249,999	4,037	$ 427,276,600	0.65%	$ 188,401	$ 53,967	$ 242,368	$ 60	$ 53	-	$ 78	32.9%	-	9.9%
$250,000 - $499,999	9,466	$ 3,804,819,000	5.78%	$ 441,766	$ 480,563	$ 922,328	$ 97	$ 78	-	$ 110	9.9%	-	4.6%
$500 000 - $749,999	26,464	$ 16,748,449,000	25.46%	$ 1,235,040	$ 2,115,390	$ 3,350,430	$ 127	$ 110	-	$ 141	4.6%	-	4.2%
$750,000 - $999,999	21,192	$ 18,112,596,000	27.54%	$ 989,003	$ 2,287,687	$ 3,276,689	$ 155	$ 141	-	$ 173	4.2%	-	4.0%
$1,000,000 - $1,249,999	7,923	$ 8,709,803,000	13.24%	$ 369,756	$ 1,100,080	$ 1,469,836	$ 186	$ 173	-	$ 205	4.0%	-	3.9%
$1,250,000 - $1,499,999	3,118	$ 4,191,955,000	6.37%	$ 145,513	$ 529,459	$ 674,972	$ 216	$ 205	-	$ 236	3.9%	-	3.8%
$1,500,000 - $2,499,999	2,997	$ 5,455,578,000	8.29%	$ 139,866	$ 689,059	$ 828,925	$ 277	$ 236	-	$ 362	3.8%	-	3.6%
$2,500,000 - $3,499,999	547	$ 1,578,215,000	2.40%	$ 25,528	$ 199,334	$ 224,862	$ 411	$ 362	-	$ 489	3.6%	-	3.5%
$3,500,000 - $4,999,999	227	$ 922,735,000	1.40%	$ 10,594	$ 116,545	$ 127,139	$ 560	$ 489	-	$ 678	3.5%	-	3.4%
$5,000,000 - $7,499,999	130	$ 777,158,000	1.18%	$ 6,067	$ 98,158	$ 104,225	$ 802	$ 678	-	$ 994	3.4%	-	3.4%
$7,500,000 - $9,999,999	38	$ 329,625,000	0.50%	$ 1,773	$ 41,633	$ 43,406	$ 1,142	$ 994	-	$ 1,310	3.4%	-	3.8%
$10,000,000 - $14,999,999	66	$ 797,727,000	1.21%	$ 3,080	$ 100,756	$ 103,836	$ 1,573	$ 1,310	-	$ 1,941	3.8%	-	3.7%
$15,000,000 - $19,999,999	23	$ 401,840,000	0.61%	$ 1,073	$ 50,754	$ 51,827	$ 2,253	$ 1,941	-	$ 2,573	3.7%	-	3.7%
> $20,000,000	63	$ 3,517,048,000	5.35%	$ 2,940	$ 444,216	$ 447,156	$ 7,098	$ 2,573			3.7%		
Total	76,291	$ 65,774,824,600	100.00%	$ 3,560,400	$ 8,307,600	$ 11,868,000	$ 156						

Commercial

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range			
0 -$249,999	1,546	$ 160,678,300	1.06%	$ 702,851	$ 58,750	$ 761,601	$ 493	$ 473	-	$ 546	
$250,000 - $499,999	987	$ 350,451,000	2.31%	$ 448,715	$ 128,137	$ 576,852	$ 584	$ 546	-	$ 637	
$500 000 - $749,999	556	$ 338,012,000	2.23%	$ 252,772	$ 123,589	$ 376,361	$ 677	$ 637	-	$ 729	
$750,000 - $999,999	394	$ 337,307,000	2.23%	$ 179,122	$ 123,331	$ 302,454	$ 768	$ 729	-	$ 820	
$1,000,000 - $1,249,999	248	$ 277,111,000	1.83%	$ 112,747	$ 101,321	$ 214,069	$ 863	$ 820	-	$ 912	
$1,250,000 - $1,499,999	205	$ 279,293,000	1.84%	$ 93,198	$ 102,119	$ 195,317	$ 953	$ 912	-	$ 1,003	
$1,500,000 - $2,499,999	409	$ 776,797,000	5.13%	$ 185,942	$ 284,024	$ 469,966	$ 1,149	$ 1,003	-	$ 1,369	
$2,500,000 - $3,499,999	243	$ 707,168,000	4.67%	$ 110,474	$ 258,565	$ 369,039	$ 1,519	$ 1,369	-	$ 1,734	
$3,500,000 - $4,999,999	158	$ 664,058,000	4.38%	$ 71,831	$ 242,803	$ 314,633	$ 1,991	$ 1,734	-	$ 2,283	
$5,000,000 - $7,499,999	120	$ 698,344,000	4.61%	$ 54,555	$ 255,339	$ 309,894	$ 2,582	$ 2,283	-	$ 3,197	
$7,500,000 - $9,999,999	77	$ 670,365,000	4.43%	$ 35,006	$ 245,109	$ 280,115	$ 3,638	$ 3,197	-	$ 4,111	
$10,000,000 - $14,999,999	92	$ 1,112,030,000	7.34%	$ 41,826	$ 406,597	$ 448,422	$ 4,874	$ 4,111	-	$ 5,939	
$15,000,000 - $19,999,999	48	$ 817,985,000	5.40%	$ 21,822	$ 299,084	$ 320,906	$ 6,686	$ 5,939	-	$ 7,767	
> $20,000,000	138	$ 7,957,760,000	52.54%	$ 62,738	$ 2,909,633	$ 2,972,371	$ 21,539	$ 7,767			
Total	5,221	$ 15,147,359,300	100.00%	$ 2,373,600	$ 5,538,400	$ 7,912,000	$ 1,515				

Scenario Four – Splitting the cost 60% Residential 40% Commercial then allocating by fixed rate by ratepayer	Estimated Cost of the SMF		$ 250,000,000	
	Estimated Annual Levy		$ 19,780,000	

Residential

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range			% Range		
0 - $249,999	4,037	$ 427,276,600	0.65%	$ 628,005	$ -	$ 628,005	$ 156	$ 156	-	$ 156	102.6%	-	20.5%
$250,000 - $499,999	9,466	$ 3,804,819,000	5.78%	$ 1,472,552	$ -	$ 1,472,552	$ 156	$ 156	-	$ 156	20.5%	-	6.8%
$500 000 - $749,999	26,464	$ 16,748,449,000	25.46%	$ 4,116,800	$ -	$ 4,116,800	$ 156	$ 156	-	$ 156	6.8%	-	4.8%
$750,000 - $999,999	21,192	$ 18,112,596,000	27.54%	$ 3,296,675	$ -	$ 3,296,675	$ 156	$ 156	-	$ 156	4.8%	-	3.7%
$1,000,000 - $1,249,999	7,923	$ 8,709,803,000	13.24%	$ 1,232,520	$ -	$ 1,232,520	$ 156	$ 156	-	$ 156	3.7%	-	3.0%
$1,250,000 - $1,499,999	3,118	$ 4,191,955,000	6.37%	$ 485,043	$ -	$ 485,043	$ 156	$ 156	-	$ 156	3.0%	-	2.5%
$1,500,000 - $2,499,999	2,997	$ 5,455,578,000	8.29%	$ 466,220	$ -	$ 466,220	$ 156	$ 156	-	$ 156	2.5%	-	1.5%
$2,500,000 - $3,499,999	547	$ 1,578,215,000	2.40%	$ 85,093	$ -	$ 85,093	$ 156	$ 156	-	$ 156	1.5%	-	1.1%
$3,500,000 - $4,999,999	227	$ 922,735,000	1.40%	$ 35,313	$ -	$ 35,313	$ 156	$ 156	-	$ 156	1.1%	-	0.8%
$5,000,000 - $7,499,999	130	$ 777,158,000	1.18%	$ 20,223	$ -	$ 20,223	$ 156	$ 156	-	$ 156	0.8%	-	0.5%
$7,500,000 - $9,999,999	38	$ 329,625,000	0.50%	$ 5,911	$ -	$ 5,911	$ 156	$ 156	-	$ 156	0.5%	-	0.4%
$10,000,000 - $14,999,999	66	$ 797,727,000	1.21%	$ 10,267	$ -	$ 10,267	$ 156	$ 156	-	$ 156	0.4%	-	0.3%
$15,000,000 - $19,999,999	23	$ 401,840,000	0.61%	$ 3,578	$ -	$ 3,578	$ 156	$ 156	-	$ 156	0.3%	-	0.2%
> $20,000,000	63	$ 3,517,048,000	5.35%	$ 9,800	$ -	$ 9,800	$ 156	$ 156			0.2%		
Total	76,291	$ 65,774,824,600	100.00%	$ 11,868,000	$ -	$ 11,868,000	$ 156						

Commercial

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range		
0 - $249,999	1,546	$ 160,678,300	1.06%	$ 2,342,837	$ -	$ 2,342,837	$ 1,515	$ 1,515	-	$ 1,515
$250,000 - $499,999	987	$ 350,451,000	2.31%	$ 1,495,718	$ -	$ 1,495,718	$ 1,515	$ 1,515	-	$ 1,515
$500 000 - $749,999	556	$ 338,012,000	2.23%	$ 842,573	$ -	$ 842,573	$ 1,515	$ 1,515	-	$ 1,515
$750,000 - $999,999	394	$ 337,307,000	2.23%	$ 597,075	$ -	$ 597,075	$ 1,515	$ 1,515	-	$ 1,515
$1,000,000 - $1,249,999	248	$ 277,111,000	1.83%	$ 375,824	$ -	$ 375,824	$ 1,515	$ 1,515	-	$ 1,515
$1,250,000 - $1,499,999	205	$ 279,293,000	1.84%	$ 310,661	$ -	$ 310,661	$ 1,515	$ 1,515	-	$ 1,515
$1,500,000 - $2,499,999	409	$ 776,797,000	5.13%	$ 619,806	$ -	$ 619,806	$ 1,515	$ 1,515	-	$ 1,515
$2,500,000 - $3,499,999	243	$ 707,168,000	4.67%	$ 368,247	$ -	$ 368,247	$ 1,515	$ 1,515	-	$ 1,515
$3,500,000 - $4,999,999	158	$ 664,058,000	4.38%	$ 239,436	$ -	$ 239,436	$ 1,515	$ 1,515	-	$ 1,515
$5,000,000 - $7,499,999	120	$ 698,344,000	4.61%	$ 181,850	$ -	$ 181,850	$ 1,515	$ 1,515	-	$ 1,515
$7,500,000 - $9,999,999	77	$ 670,365,000	4.43%	$ 116,687	$ -	$ 116,687	$ 1,515	$ 1,515	-	$ 1,515
$10,000,000 - $14,999,999	92	$ 1,112,030,000	7.34%	$ 139,419	$ -	$ 139,419	$ 1,515	$ 1,515	-	$ 1,515
$15,000,000 - $19,999,999	48	$ 817,985,000	5.40%	$ 72,740	$ -	$ 72,740	$ 1,515	$ 1,515	-	$ 1,515
> $20,000,000	138	$ 7,957,760,000	52.54%	$ 209,128	$ -	$ 209,128	$ 1,515	$ 1,515		
Total	5,221	$ 15,147,359,300	100.00%	$ 7,912,000	$ -	$ 7,912,000	$ 1,515			

Scenario Five – Fixed by ratepayer account with no distinction between Residential and Commercial properties.	Estimated Cost of the SMF		$ 250,000,000	
	Estimated Annual Levy		$ 19,780,000	

Residential

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range			% Range		
0 - $249,999	4,037	$ 427,276,600	0.65%	$ 979,633	$ -	$ 979,633	$ 243	$ 243	-	$ 243	159.9%	-	32.0%
$250,000 - $499,999	9,466	$ 3,804,819,000	5.78%	$ 2,297,054	$ -	$ 2,297,054	$ 243	$ 243	-	$ 243	32.0%	-	10.5%
$500 000 - $749,999	26,464	$ 16,748,449,000	25.46%	$ 6,421,851	$ -	$ 6,421,851	$ 243	$ 243	-	$ 243	10.5%	-	7.4%
$750,000 - $999,999	21,192	$ 18,112,596,000	27.54%	$ 5,142,528	$ -	$ 5,142,528	$ 243	$ 243	-	$ 243	7.4%	-	5.7%
$1,000,000 - $1,249,999	7,923	$ 8,709,803,000	13.24%	$ 1,922,624	$ -	$ 1,922,624	$ 243	$ 243	-	$ 243	5.7%	-	4.6%
$1,250,000 - $1,499,999	3,118	$ 4,191,955,000	6.37%	$ 756,625	$ -	$ 756,625	$ 243	$ 243	-	$ 243	4.6%	-	3.9%
$1,500,000 - $2,499,999	2,997	$ 5,455,578,000	8.29%	$ 727,263	$ -	$ 727,263	$ 243	$ 243	-	$ 243	3.9%	-	2.4%
$2,500,000 - $3,499,999	547	$ 1,578,215,000	2.40%	$ 132,737	$ -	$ 132,737	$ 243	$ 243	-	$ 243	2.4%	-	1.7%
$3,500,000 - $4,999,999	227	$ 922,735,000	1.40%	$ 55,085	$ -	$ 55,085	$ 243	$ 243	-	$ 243	1.7%	-	1.2%
$5,000,000 - $7,499,999	130	$ 777,158,000	1.18%	$ 31,546	$ -	$ 31,546	$ 243	$ 243	-	$ 243	1.2%	-	0.8%
$7,500,000 - $9,999,999	38	$ 329,625,000	0.50%	$ 9,221	$ -	$ 9,221	$ 243	$ 243	-	$ 243	0.8%	-	0.7%
$10,000,000 - $14,999,999	66	$ 797,727,000	1.21%	$ 16,016	$ -	$ 16,016	$ 243	$ 243	-	$ 243	0.7%	-	0.5%
$15,000,000 - $19,999,999	23	$ 401,840,000	0.61%	$ 5,581	$ -	$ 5,581	$ 243	$ 243	-	$ 243	0.5%	-	0.4%
> $20,000,000	63	$ 3,517,048,000	5.35%	$ 15,288	$ -	$ 15,288	$ 243	$ 243			0.4%		
Total	76,291	$ 65,774,824,600	100.00%	$ 18,513,053	$ -	$ 18,513,053	$ 243						

Commercial

Row Labels	Count of Wufi	Sum of CV	% of Total	Fixed	Variable	Total	Average	Range		
0 - $249,999	1,546	$ 160,678,300	1.06%	$ 375,158	$ -	$ 375,158	$ 243	$ 243	-	$ 243
$250,000 - $499,999	987	$ 350,451,000	2.31%	$ 239,509	$ -	$ 239,509	$ 243	$ 243	-	$ 243
$500 000 - $749,999	556	$ 338,012,000	2.23%	$ 134,921	$ -	$ 134,921	$ 243	$ 243	-	$ 243
$750,000 - $999,999	394	$ 337,307,000	2.23%	$ 95,609	$ -	$ 95,609	$ 243	$ 243	-	$ 243
$1,000,000 - $1,249,999	248	$ 277,111,000	1.83%	$ 60,181	$ -	$ 60,181	$ 243	$ 243	-	$ 243
$1,250,000 - $1,499,999	205	$ 279,293,000	1.84%	$ 49,746	$ -	$ 49,746	$ 243	$ 243	-	$ 243
$1,500,000 - $2,499,999	409	$ 776,737,000	5.13%	$ 99,249	$ -	$ 99,249	$ 243	$ 243	-	$ 243
$2,500,000 - $3,499,999	243	$ 707,168,000	4.67%	$ 58,967	$ -	$ 58,967	$ 243	$ 243	-	$ 243
$3,500,000 - $4,999,999	158	$ 664,058,000	4.38%	$ 38,341	$ -	$ 38,341	$ 243	$ 243	-	$ 243
$5,000,000 - $7,499,999	120	$ 698,344,000	4.61%	$ 29,120	$ -	$ 29,120	$ 243	$ 243	-	$ 243
$7,500,000 - $9,999,999	77	$ 670,365,000	4.43%	$ 18,685	$ -	$ 18,685	$ 243	$ 243	-	$ 243
$10,000,000 - $14,999,999	92	$ 1,112,030,000	7.34%	$ 22,325	$ -	$ 22,325	$ 243	$ 243	-	$ 243
$15,000,000 - $19,999,999	48	$ 817,985,000	5.40%	$ 11,648	$ -	$ 11,648	$ 243	$ 243	-	$ 243
> $20,000,000	138	$ 7,957,760,000	52.54%	$ 33,488	$ -	$ 33,488	$ 243	$ 243		
Total	5,221	$ 15,147,359,300	100.00%	$ 1,266,947	$ -	$ 1,266,947	$ 243			

FORWARD PROGRAMME

Kōrero taunaki

Summary of considerations

Purpose

1. This report provides the Forward Programme for the Pūroro Waihanga | Infrastructure Committee for the next two meetings.

Strategic alignment with community wellbeing outcomes and priority areas

	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy
Strategic alignment with priority objective areas from Long-term Plan 2021–2031	☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	Not applicable.

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Sean Johnson, Senior Democracy Advisor
Authoriser	Siobhan Procter, Chief Infrastructure Officer

Taunakitanga

Officers' Recommendations

Officers recommend that Pūroro Waihanga | Infrastructure Committee:

1. Receive the information.

Whakarāpopoto

Executive Summary

2. The Forward Programme sets out the reports planned for Pūroro Waihanga | Infrastructure Committee meetings in the next two meetings that require committee consideration.

3. The Forward Programme is a working document and is subject to change on a regular basis.

Kōrerorero

Discussion

4. Thursday 9 December 2021
    - Earthquake prone buildings (Chief Infrastructure Officer)
    - Insourcing traffic management (Chief Infrastructure Officer)
    - Priority Investments – Health Check (Chief Infrastructure Officer)
    - Omororo Reservior (Chief Infrastructure Officer)

5. Thursday 10 February 2022
    - Traffic Bylaw Implementation (Chief Infrastructure Officer)
    - Kerbside service review waste modelling options (Chief Infrastructure Officer)
    - Oral hearings for Development Contributions Policy (Chief Strategy and Governance Officer)

Attachments

Nil

ACTIONS TRACKING

Kōrero taunaki
Summary of considerations

Purpose

1. This report provides an update on the past actions agreed by the Pūroro Waihanga - Infrastructure Committee at its previous meetings.

Strategic alignment with community wellbeing outcomes and priority areas

Strategic alignment with priority objective areas from Long-term Plan 2021–2031	Aligns with the following strategies and priority areas: ☐ Sustainable, natural eco city ☐ People friendly, compact, safe and accessible capital city ☐ Innovative, inclusive and creative city ☐ Dynamic and sustainable economy ☐ Functioning, resilient and reliable three waters infrastructure ☐ Affordable, resilient and safe place to live ☐ Safe, resilient and reliable core transport infrastructure network ☐ Fit-for-purpose community, creative and cultural spaces ☐ Accelerating zero-carbon and waste-free transition ☐ Strong partnerships with mana whenua
Relevant Previous decisions	Not applicable.

Financial considerations

☒ Nil	☐ Budgetary provision in Annual Plan / Long-term Plan	☐ Unbudgeted $X

Risk

☒ Low	☐ Medium	☐ High	☐ Extreme

Author	Sean Johnson, Senior Democracy Advisor
Authoriser	Siobhan Procter, Chief Infrastructure Officer

Taunakitanga
Officers' Recommendations

Officers recommend the following motion

That the Pūroro Waihanga | Infrastructure Committee:

1. Receive the information.

Whakarāpopoto
Executive Summary

2. This report lists the dates of previous committee meetings and the items discussed at those meetings.
3. Each clause within the resolution has been considered separately and the following statuses have been assigned:
   - In progress: Resolutions with this status are currently being implemented.
   - Complete: Clauses which have been completed, either by officers subsequent to the meeting, or by the meeting itself (i.e. by receiving or noting information).
4. All actions will be included in the subsequent monthly updates, but completed actions will only appear once.

Takenga mai
Background

5. At the 13 May 2021 Council meeting, the recommendations of the Wellington City Council Governance Review (the Review Report) were endorsed and agreed to be implemented.
6. At the 13 May 2021 Council meeting, the recommendations of the Wellington City Council Governance Review (the Review Report) were endorsed and agreed to be implemented.
7. The purpose of this report is to ensure that all resolutions are being actioned over time. It does not take the place of performance monitoring or full updates. The committee could resolve to receive a full update report on an item if it wishes.

Kōrerorero
Discussion

8. Following feedback, the status system has been changed so that resolutions either show as ‘in progress’ or ‘complete’.
9. Of the 46 resolutions of the Pūroro Waihanga | Infrastructure Committee in October 2021:
   - 11 are in progress.
   - 35 are complete.
10. 1 in progress action was carried forward from the last action tracking report. It is still in progress.
11. Further detail is provided in Attachment One.

Attachments

Attachment 1. Action Tracking - November ⇩ Page 121

Meeting Date	Committee	Item	Clause	Status	Comments
Wednesday, 23 June 2021	Pūroro Waihanga | Infrastructure Committee	2.1 Te Ngākau General Update	3. Note that a reporting dashboard will be developed that encompasses the range of workstreams across Te Ngākau Civic Precinct covering the status of each workstream for future reporting to the Infrastructure Committee	In progress	Still a work in progress.
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	2.1 Petition - Bus Shelter Installation	1. Receive the information.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.1 Storm Event 17-18 July 2021	1. Receive the information.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.1 Storm Event 17-18 July 2021	2. Note that overland flow paths on public and private land are designed to convey water, and that the presence of water in these areas is not necessarily considered flooding.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.1 Storm Event 17-18 July 2021	3. Note that more intense rainfall will result in more events of this nature, further placing pressure on infrastructure.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.1 Storm Event 17-18 July 2021	4. Note that the draft District Plan incorporates a Natural Hazards Chapter, including flood risk layers.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	1. Receive the information.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	2. Note that a Strategic Waste Review has been undertaken, and that the draft Waste Minimisation Roadmap (Attachment 1) is the final deliverable from the Review.	Complete	

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	3. Note that the draft Waste Minimisation Roadmap, He Ara, He Para Iti, provides a pathway for Wellington to become a leader in waste minimisation.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	4. Note that this report should be read in conjunction with the draft Waste Minimisation Roadmap, and the Pūroro Waihanga Infrastructure Committee report on Residual Waste Disposal Options.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	5. Note that estimates suggest that, together, potential national-level and Council-level initiatives have the potential to reduce the waste stream entering the Southern landfill by half over the next 15 years.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	6. Note it will be necessary to phase in the implementation (and funding) of a new waste minimisation programme over the next decade or more.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	7. Agree to adopt in principle the draft Waste Minimisation Roadmap, and continue to build on the initiatives and how they will be delivered in co-design with the community.	In progress	This will be ongoing for several years to come
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	8. Note that commencing detailed planning for waste minimisation activity is not bound by the sludge ratio requirements.	Complete	

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	9. Agree that waste minimisation initiatives will be progressed in parallel with the sludge initiative so they can be quickly implemented and scaled up once the sludge constraint is removed.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	10. Note that in years one to three Council will be engaging on: • the review of kerbside waste service arrangements with a goal to incentivise recycling and support waste diversion activities, • Investigation into organic processing technology options and end markets. Including community-based composting and technology-based processors, • Assessment of the feasibility of a community resource recovery facility and /or expansion of existing facilities supported by a review of available Council infrastructure and catchment mapping.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.3 Strategic Waste Review Update He Ara, He Para Iti/A Pathway, Minimal Waste	11. Request officers to report back in six months, in order to feed into the Annual Plan, with a roadmap implementation plan for the strategic waste review which will increase the ambition around the name, initiatives, timeline, and reduction goals including ongoing co-design and collaboration with mana whenua, key stakeholders and the community. The implementation plan will include the following: • Financial implications of accelerating the strategic waste minimisation roadmap. • A strong narrative about the social, cultural, economic, and environmental benefits of the waste minimisation roadmap.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	1. Receive the information.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	2. Note that the city is on a pathway to minimal waste, and that this will take time and investment and, in the meantime, residual waste must still be disposed of safely	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	3. Note that the current consents for the Southern landfill expire in 2026 and that it is important that plans are progressed to ensure the safe disposal of residual waste beyond 2026.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	4. Note that receiving consent for a landfill extension does not commit Council to constructing the landfill extension nor to using the full extent of any constructed landfill capacity.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	5. Note that there are two options for a landfill extension, known as stage 4 which brings waste closer to Zealandia and the 'piggy-back' which develops on top of stage 2, an area of previously closed landfill.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	6. Note that five residual waste management options are set out in this report: landfill extension (either stage 4 or 'piggy-back' option), export to a landfill outside the city, and three technological options able to reduce waste by between 15% and 75%.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	7. Note that alternative waste disposal options other than a landfill were assessed, and all the short-listed options resulted in by-product that require landfill disposal. There is currently no waste disposal option that removes the need for a landfill.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	8. Note the anticipated four year lead in and construction time periods for a possible extension of the Southern landfill, and any significant capital projects undertaken for waste minimisation.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	9. Direct officers to progress two parallel work streams (in order to ensure that all reasonably practicable options are available for the Council's consideration of the issue of the disposal of residual waste beyond 2026): a. Continue to investigate and analyse further minimisation and waste disposal options and consultation requirements, reporting to Infrastructure b. Undertake the work to initiate and lodge the necessary resource consent applications to extend the Southern landfill	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	10. Note that the residual waste disposal options, in particular the option to retire the Southern landfill, might trigger the Council's significance and engagement policy which in turn may require consultation to be undertaken via a Special Consultative Process (SCP) or Long-term Plan (LTP) amendment.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	11. Note that the stage 4 landfill extension option may be a reasonably practicable option for dealing with residual waste disposal and as such may need to be included as an option under an SCP.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	12. Request officers develop a set of principles and evaluation criteria against which options can be assessed and a preferred option identified, that meets the threshold for a SCP (if required), including the strategic review roadmap outcomes and carbon impacts.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	13. Request officers to provide information regarding prolonging the life of the current landfill and the results of those investigations.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	14. Agree to consult on the residual waste disposal options and the strategic waste review roadmap together with the purpose of engaging Wellington in a joined-up approach which articulates Wellington's waste aspirations and the co-benefits of waste minimisation initiatives in line with our declaration of a climate and ecological emergency, Te Atakura, Wellington Waste Minimisation Plan (WWMP), and our commitments to Te Tiriti o Waitangi.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	15. Request that the consultation signals the city's intended journey to minimal waste as outlined in the roadmap. This will be based on future residual waste quantities while noting that investment decisions will need to be made via LTP.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	16. Note that this report should be read in conjunction with the Future Waste Management Options Report prepared by Beca.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	17. Agree in principle, if the piggy-back landfill extension option is selected, to support waste minimisation via the tip shop and compost, subject to funding decisions via the LTP.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	18. Request officers to update on the timeline of the sludge removal project as a priority.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	19. Note that there is an existing regional waste management and minimisation plan, and that Wellington City will continue to work in collaboration with other Councils on waste minimisation and residual waste developments where there is alignment.	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.2 Residual Waste Disposal Options	20. Request officers embark on a working party process with Ōwhiro Bay Residents Association, Friends of Ōwhiro Stream, members of the Community Liaison Group, and other relevant groups to develop recommendations on the next stages of the residual waste.	In progress
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	1. Agree to recommend to Council that it declare pursuant to the Local Government Act 1974 section 462 and the Long-term Plan 2021-31, that the portion of wastewater laterals in the road, between a property boundary and a wastewater main, as specified in the proposed Wellington City Council Wastewater Laterals Policy (2021), are public drains owned by the Council.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	2. Agree to the specifications for the portion of wastewater laterals considered to be in the road, as defined and described in the proposed Wellington City Council Wastewater Laterals Policy (2021) (Attachment 1).	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	3. Note that under the proposed declaration at (1) and proposed policy at (2): a) the Council will be responsible for maintenance and renewal of any part of the wastewater lateral in the road, and b) property owners remain responsible for the maintenance and renewal of the parts of the wastewater lateral on their property, or on an adjacent private property or other land (for example, a recreation reserve).	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	4. Agree to adopt the proposed Wellington City Council Wastewater Laterals Policy 2021 (Attachment 1).	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	5. Agree to withdraw the Lateral Policy 2005 (applying to wastewater laterals connected to public mains).	Complete
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	6. Note the Local Government Act 1974 Section 462 requires at least 14 days' public notice of the meeting to consider the declaration at recommendation (1), and a public notice was published on 30 September 2021.	Complete

Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.4 Wastewater Laterals Policy (2021)	7. Agree to delegate to the Chief Executive and the Chair of the Committee to sign off on any minor amendments discussed and agreed by the Committee.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.5 Forward Programme	1. Receive the information.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	3.6 Actions Tracking	1. Receive the information.	Complete	
Thursday, 14 October 2021	Pūroro Waihanga | Infrastructure Committee	4.1 Proposed Land Acquisition	All clauses	Complete	This was reported to the Te Kaunihera o Pōneke | Council meeting of 28 October 2021.