



Porirua WWTP Odour Control System Best Practicable Option (BPO) Assessment

Community Meeting

26 October 2023

Meeting Agenda



- Introduction
- The Purpose of meeting – resource consent
- BPO presentation
- Project Timeline
- Questions

Key Messages

- Porirua WWTP has been granted with new air discharge consent which requires actions to be implemented to address odour from the site
- As a consent requirement, Wellington Water have engaged a specialist team to undertake the best practicable option (BPO) assessment for the proposed odour control system
- The result of the assessment will be publicly available, and the community can provide feedback on the result of the assessment

The purpose – Resource Consent requirements

Interim Control Measures – Condition #8A

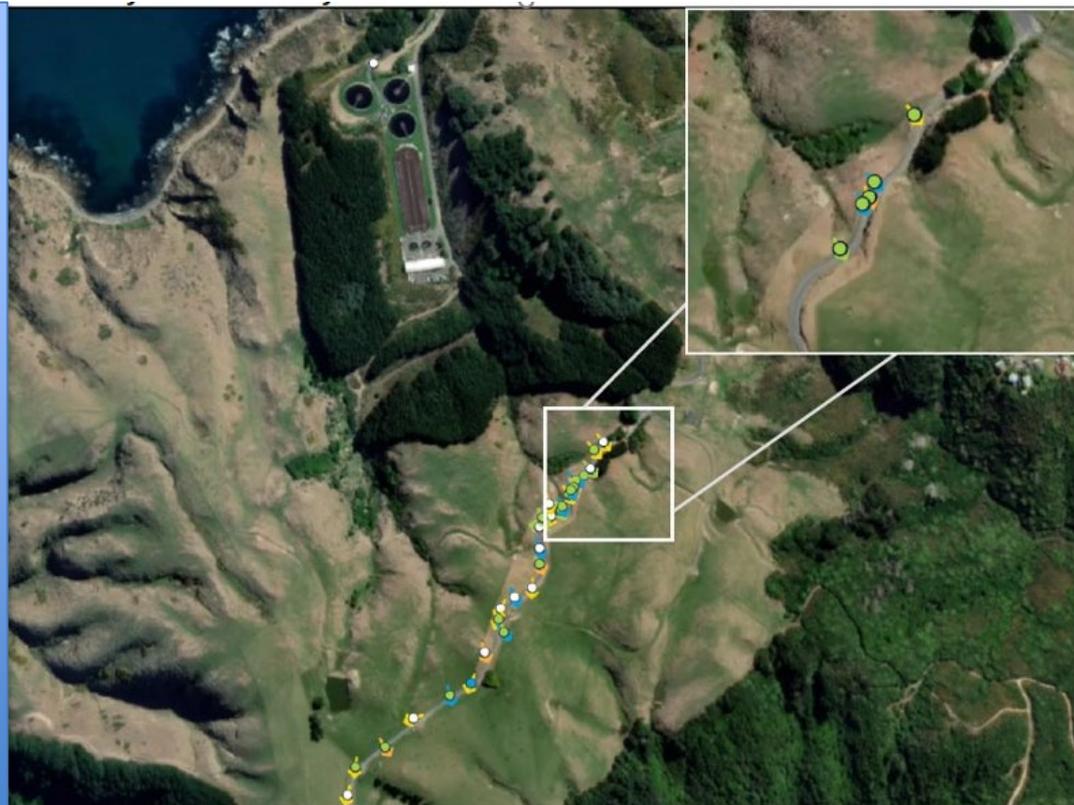
- Installed H₂S continuous monitors;
- Installed new weather station;
- Reconfigured the operation of the inlet tunnel vent fan to be automatically linked with the weather station measurements.



The purpose – Resource Consent requirements – continued

Condition #8B –

- Commission an independent, suitably qualified & experienced professional to undertake an odour survey
- Conditions #8C to #8J – repeating of odour surveys and escalating responses
- Odour survey was conducted by Air Quality Consulting NZ for 7 days between 13 July & 31 Aug 23
- Next odour will take place on December 23



Speed Scale (m/s) Note: Wind Vectors are not shown for calm winds (speed \leq 0.5 m/s)
< speed \leq 2 ↓ 2 < speed \leq 4 ↓ 4 < speed \leq 6 ↓ 6 < speed \leq 8 ↓ 8 < speed \leq 10 ↓ speed > 10

Intensity Scale
Not Detectable ● 1 Very Weak ● 2 Weak ● 3 Moderate ● 4 Strong ● 5 Very Strong ● 6 Extremely Strong

The purpose – Resource Consent requirements – continued



Condition #8K –

- commission an investigation of the best practicable option to mitigate the odour effects associated with the WWTP. The investigation shall:
 - a. Be undertaken by an independent suitably qualified and experienced professional.
 - b. Involve consultation with the members of the Odour Community Liaison Group (OCLG).
 - c. Assess all potential odour sources at the WWTP
 - d. Identify options to minimise the odour from the WWTP
 - e. Identify the Best Practicable Option, which may include a combination of odour control measures, to minimise odour from the WWTP.



Best Practicable Option (BPO) Definition

The Resource Management Act (RMA) 1991, as amended, defines BPO as follows:

“the most efficient and effective means of removing or reducing the adverse effects on the environment having regard, amongst other things, to:

- a. the nature of the discharge and the receiving environment; and
- b. the financial implications for the applicant of including that condition; and
- c. other alternatives, including a condition requiring the observance of minimum standards of quality of the receiving environment—

Key Messages

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- The result of the assessment will be publicly available, and the community can provide feedback on the result of the assessment

Odour Treatment Expert



Ari Shammay

Principal Process Engineer, Water



Dr Ari Shammay is a chemical engineer who has worked in odour and corrosion around Australia and New Zealand for over 15 years, the majority of this has been in controlling odours for wastewater systems. Ari completed his PhD thesis comparing the effectiveness of different odour control systems. He is currently the Australian and New Zealand practice lead for odour, air quality and septicity management for Global engineering consulting firm, Stantec

BPO Presentation



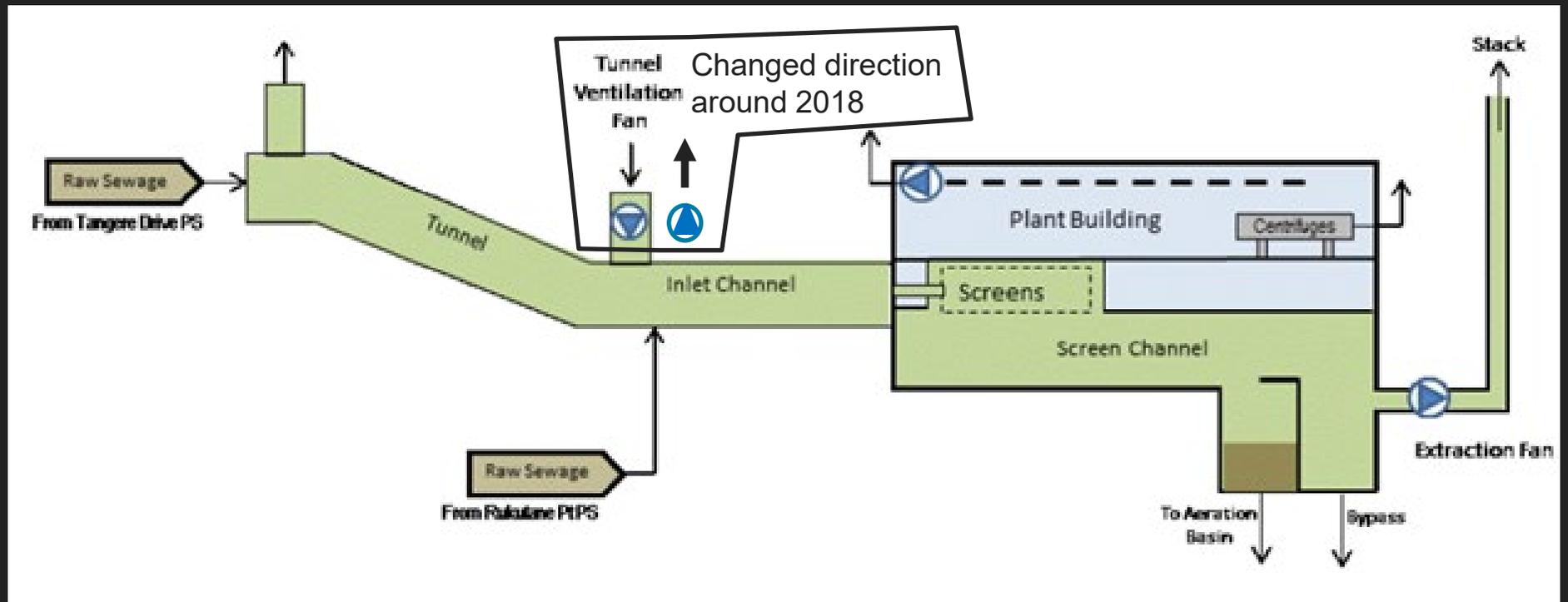
Porirua WWTP Odour BPO Assessment



INTRODUCTION

Purpose of this project:

- Investigate the odour impacts currently present at Porirua WWTP.
- Assess and recommend the Best Practicable Option for odour treatment to reduce odour impacts at the nearest sensitive receptor.





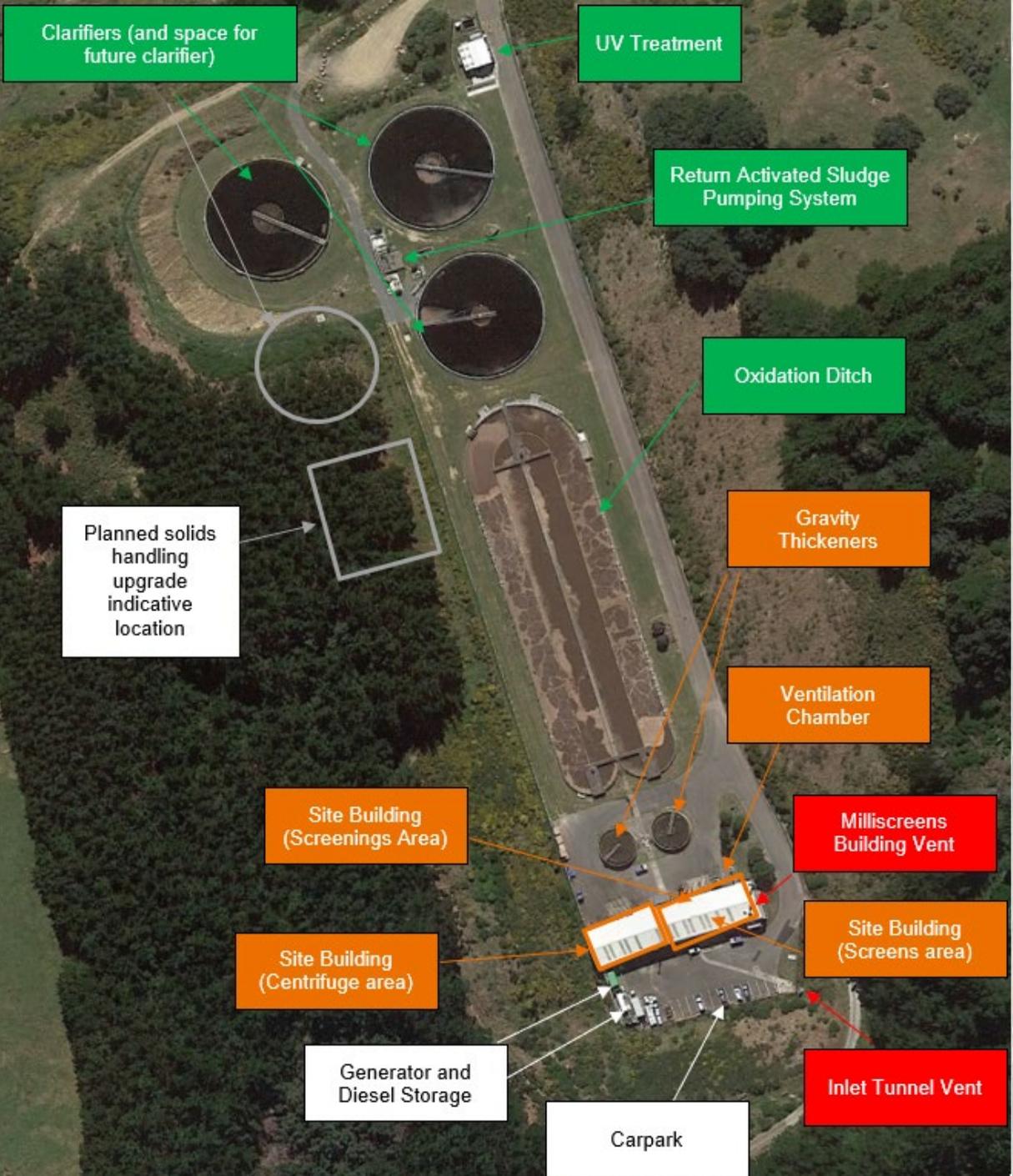
SaferTogether™

Safety Moment



Source: Youtube - [\(1\) A Word of Care - YouTube](#)







Odour Sources

- Inlet tunnel vent
- Milliscreen building vent
- Screenings Room
- Sludge Dewatering room (*)
- Dewatered sludge bins (*)
- Gravity thickeners (low)
- Ventilation chamber
- No discernible offensive odour was identified from the oxidation ditch to the UV treatment area.

(*) odour treatment is included within Sludge Handling Upgrade project – implementation time is 2026





Scope of project

- Best Practicable Option Project
 - Kick off meeting
 - Multi Criteria Assessment (MCA) conditions
 - Development of options
 - Assessment of options against MCA criteria
 - Reporting
 - Workshop with Wellington Water
 - Odour Community Liaison Group meeting (this meeting)

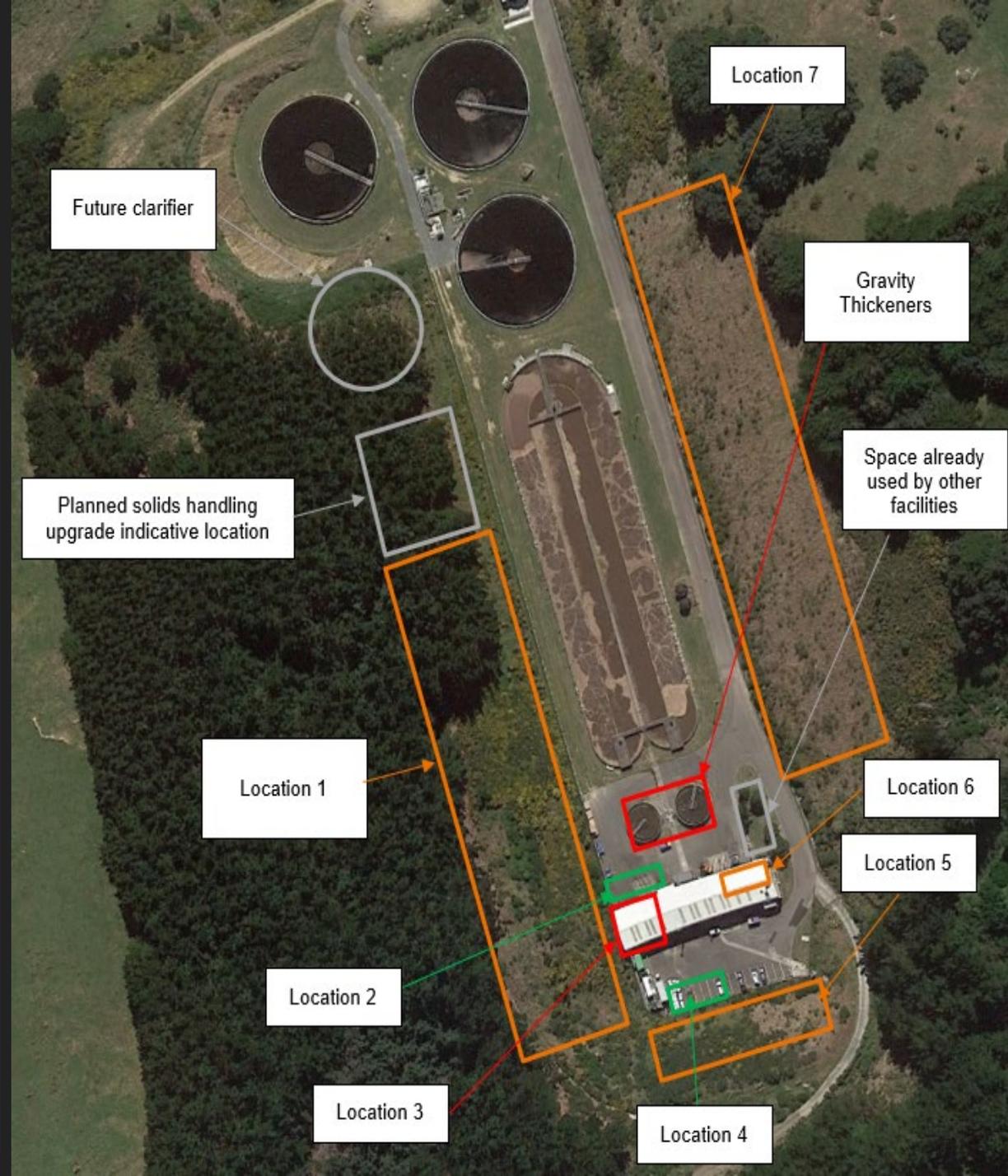




Porirua WWTP BPO Assessment – Options development

Location for OCUs

Location	Description	Conclusion
Gravity Thickeners	Gravity thickeners will become redundant when the solids handling upgrade occurs. However this is currently planned for a year after the odour works are due to be completed. Therefore it will not be available for use by an OCU.	Cannot use
Location 1	West of site - Area currently earmarked for treatment upgrade. Steep slopes meaning significant earthworks would be required to use this area. No access behind existing building.	Undesirable to use
Location 2	North of existing solids handling – Area will become unused and redundant after solids handling upgrade. Building itself will be reused for other works, so access will still be required. Access to building will need to be maintained. Area would need to still allow truck movements (particularly during solids handling upgrade works). Area is limited so would only be able to be used for Option 2b (small flow) and non-biofilter type OCU. As location is lower than process units, a small pump station would be needed for drain returns.	Available to use
Location 3	Existing centrifuge area – This area within the building, where the existing centrifuges are, will become available once the solids handling upgrade works are complete. However this is currently planned for a year after the odour works are due to be completed. Therefore it will not be available for use by an OCU.	Cannot use
Location 4	Car park area – Area is limited, yet flat and available. Currently used for storage and car parking which can be relocated or removed.	Available to use
Location 5	Area to the south of car park – Steep slopes meaning significant earthworks would be required to use this area.	Undesirable to use
Location 6	Storage area within building – Poor access and small area. Is fine to use, however it is too small for any OCU under consideration.	Undesirable to use
Location 7	Area to east of site - Large area available however on a steep slope where significant earthworks are required. Duct bridge would be needed across main site access road if this area is used. Area furthest away from areas needing to be ventilated.	Undesirable to use

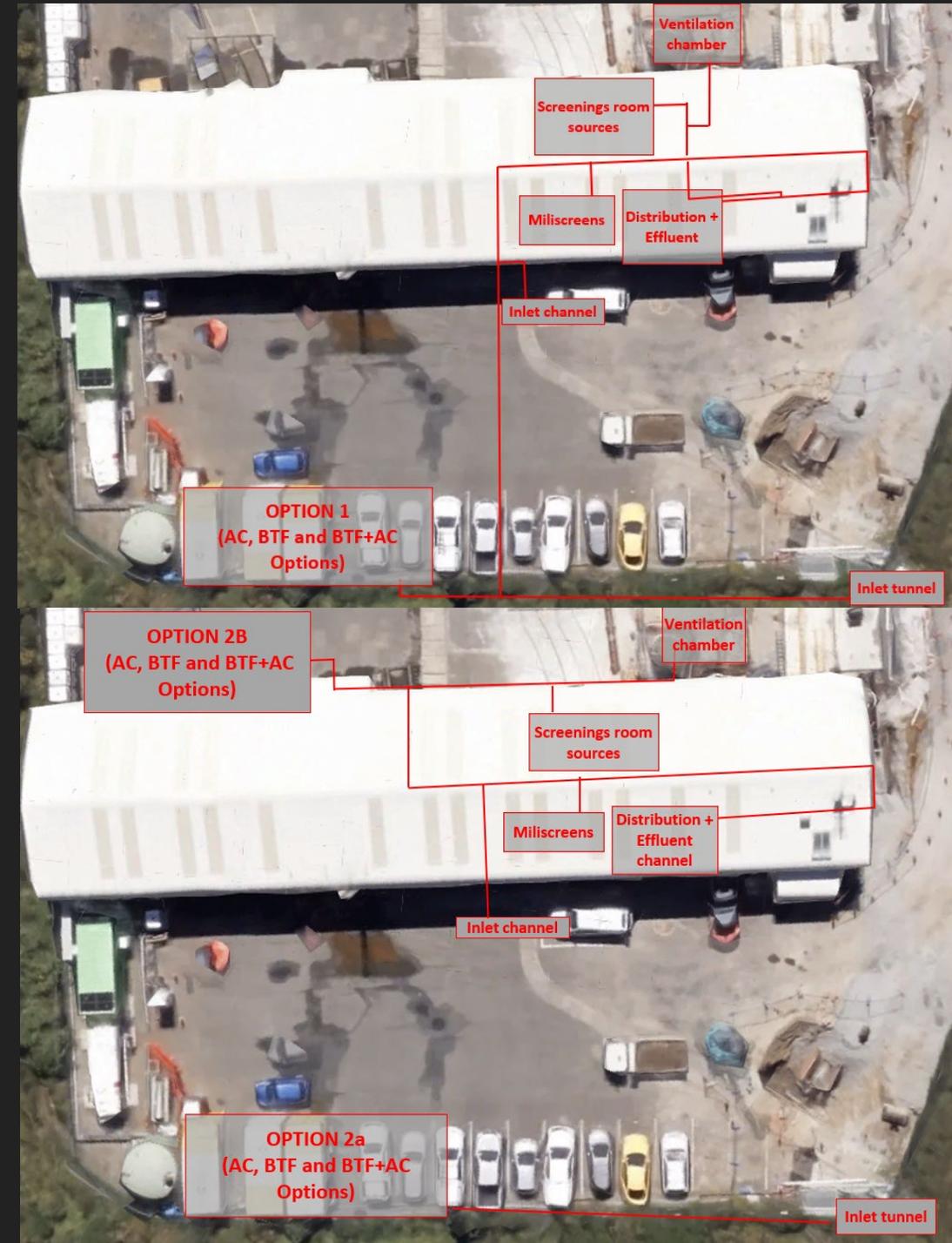




Porirua WWTP BPO Assessment – Options development

Options investigated

- Option 1 – A single OCU
- Option 2 – Separate treatment systems:
 - Option 2a – One OCU for the Inlet Tunnel air flow.
 - Option 2b – One OCU for the rest of the extraction points.

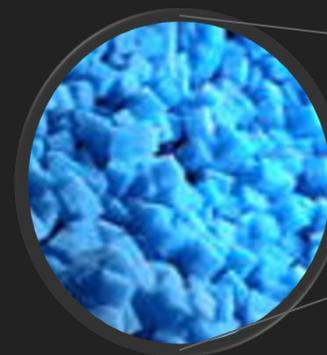
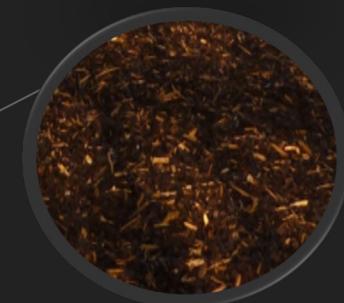
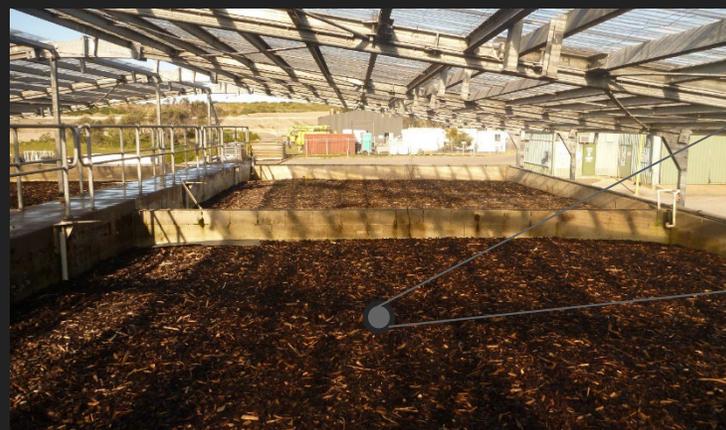
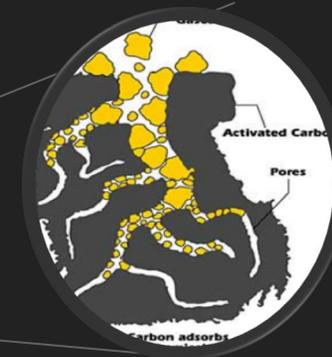




Porirua WWTP BPO Assessment – Options development

Treatment Technologies investigated:

- Activated Carbon (AC)
- Biofilter (soil beds)
- Biological Trickling Filter (BTF)
- BTF + AC in series





Porirua WWTP BPO Assessment – Options development

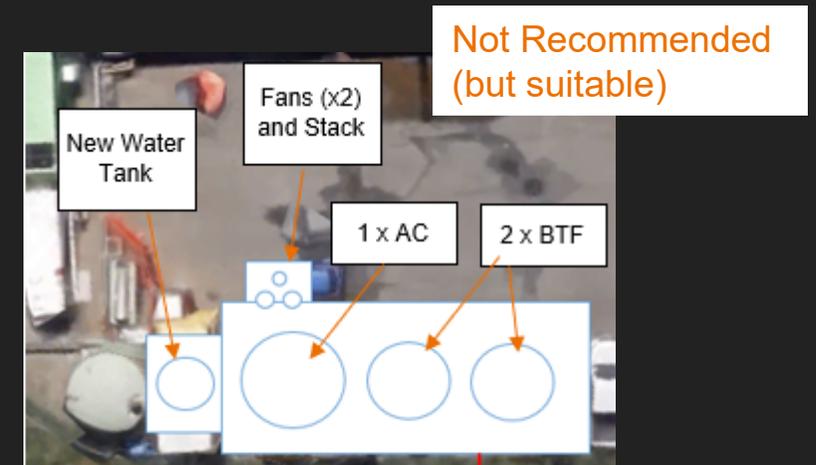
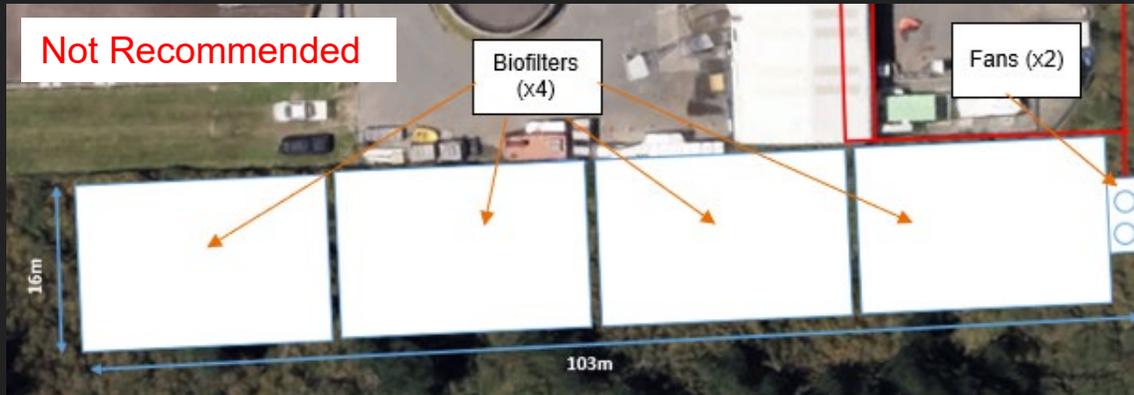
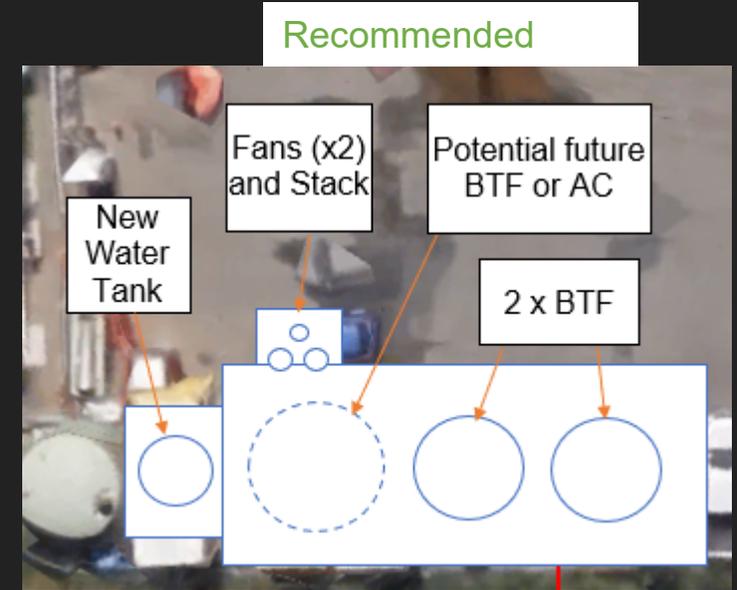
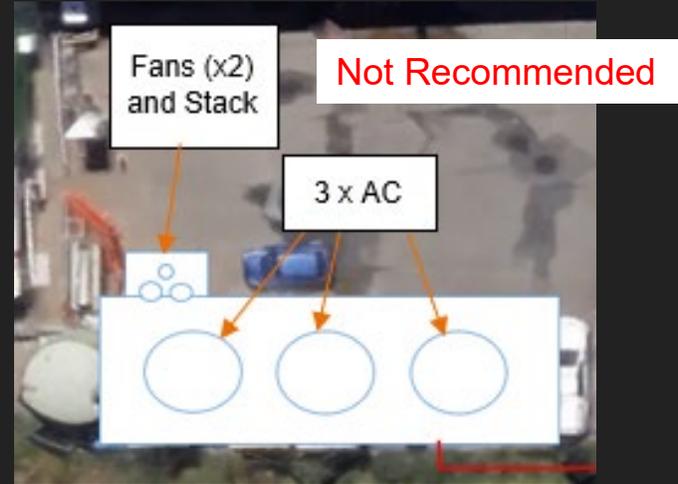
Multi Criteria Analysis

Criteria	Low	Moderate	High
Operational complexity	Low - No additional input from staff required for operation once installed.	Moderate - Some additional input from staff required for operation once installed.	High – Significant increase in staff input required for operation once installed.
Odour performance	Low - No improvement to existing odour performance.	Moderate - Improvements to odour performance with some limitations.	High - The odour levels are likely to be improved.
H ₂ S gas exposure performance	Low - No change to H ₂ S gas release concentration profile in working areas.	Moderate – Improvement in containment and/or treatment of H ₂ S with high residual concentrations possible.	High – Improvement in containment and/or treatment of H ₂ S, with low residual concentrations possible.
Non-H ₂ S WHS performance This considers performance in relation to non-H ₂ S related hazards that the option introduces, such as acidic blowdown or frequent medium to high-risk operation and maintenance activities.	Low - Frequent staff handling of hazardous chemicals for operation or other medium to high-risk operation and maintenance activities.	Moderate – Periodic staff handling of hazardous chemicals for operation and infrequent medium to high-risk operation and maintenance activities.	High - No material non-H ₂ S related WHS risk increase due to implementing this option.
Future Flexibility to Service Additional Loads	Low - Additional loads from existing sources will not be treated without additional upgrades.	Moderate - Additional loads from existing sources will be partially treated.	High - Additional loads from existing sources will be treated.
Construction/ Commissioning Requirement	Low - No construction is required in this option.	Moderate - Construction is required, and there is adequate space on-site.	High - Construction is required, and there is insufficient space on-site.
Estimated Capital Cost	Estimated capital cost.		
Annual O&M Cost	Annual operational and maintenance costs.		
NPV	Total cost to implement option.		
Recommendation	Recommended; Not recommended (but suitable); Not recommended.		



Porirua WWTP BPO Assessment – Options development

Summary of Option 1





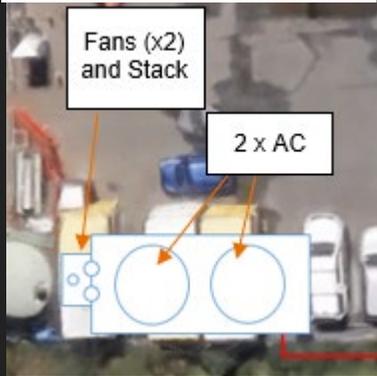
Porirua WWTP BPO Assessment

– Options development

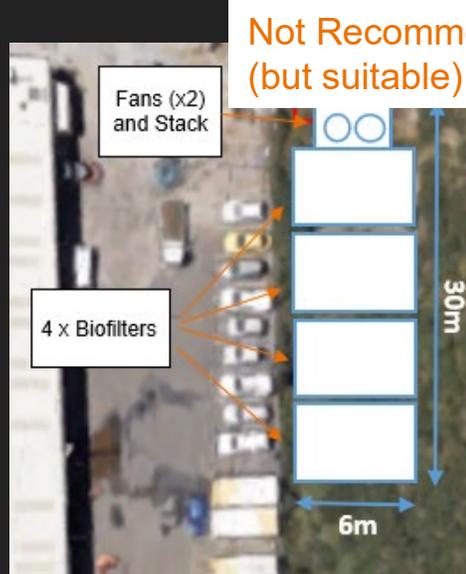
Summary of Option 2a

Summary of Option 2b

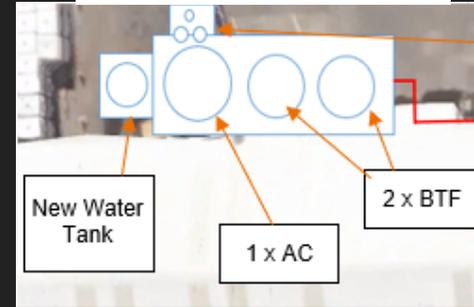
Not Recommended (but suitable)



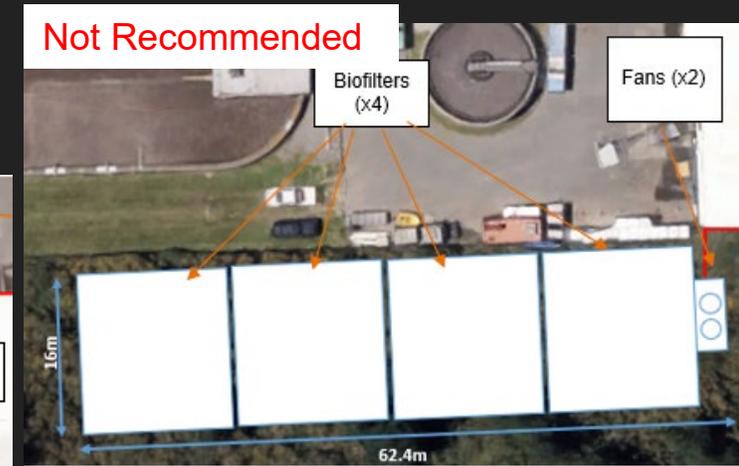
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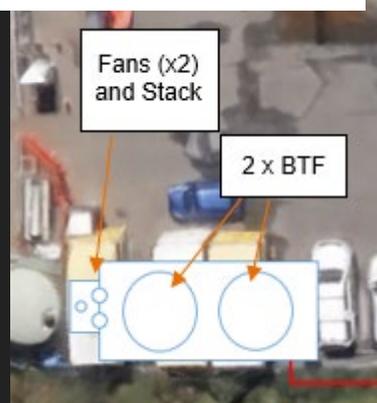
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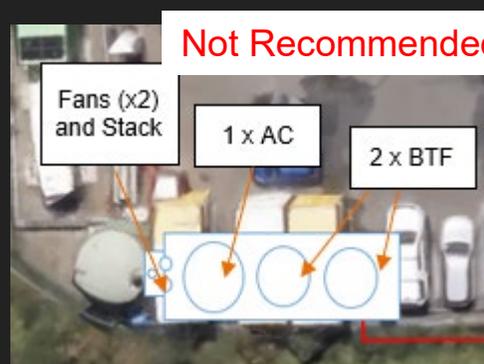
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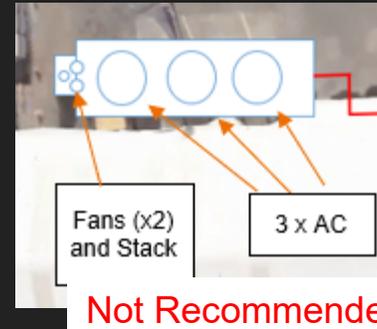
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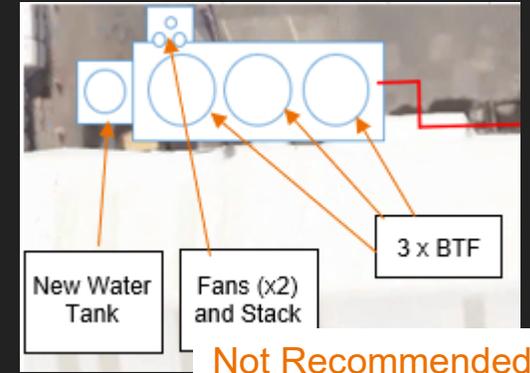
Not Recommended



Not Recommended



Not Recommended (but suitable)

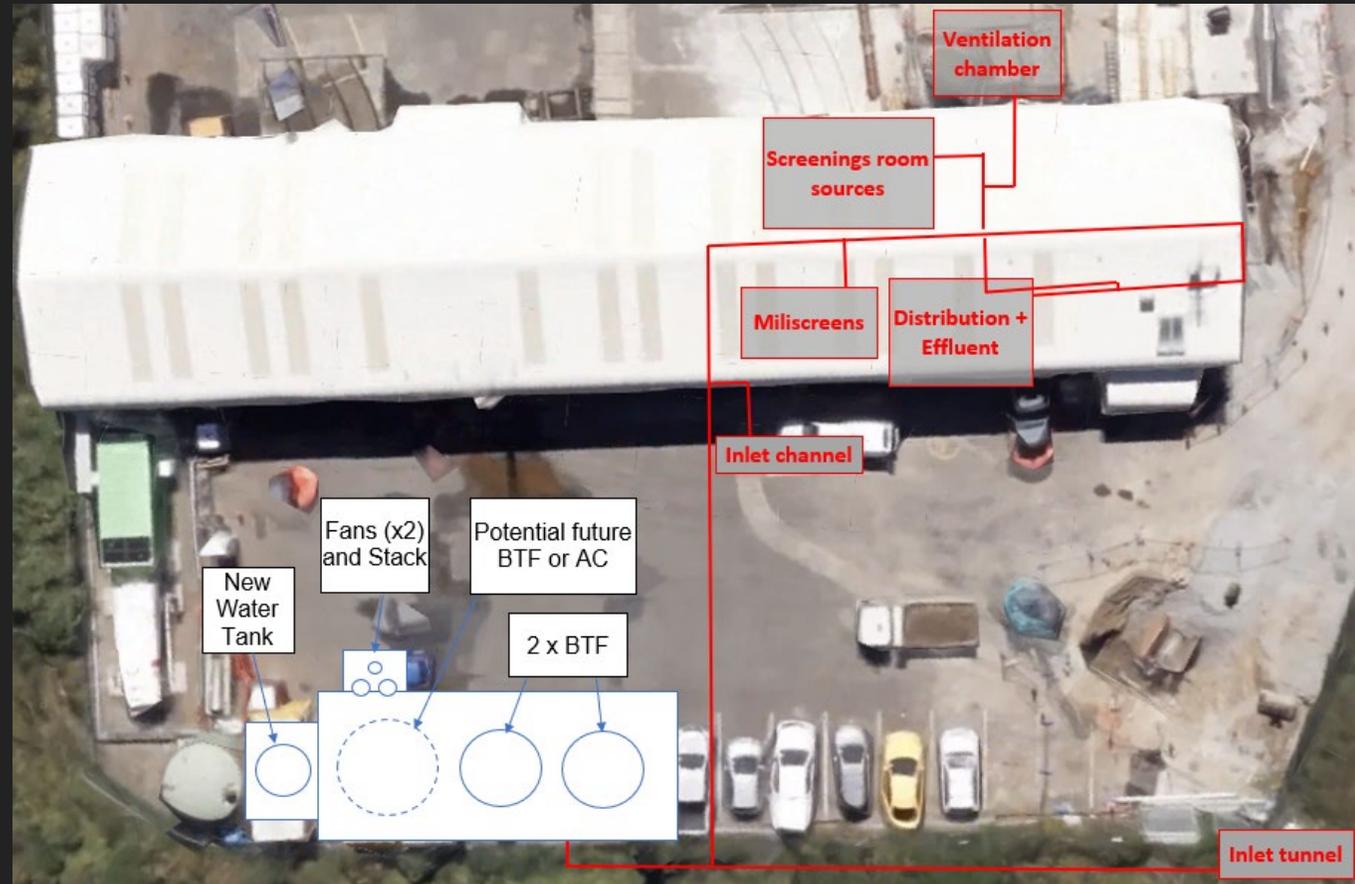




Porirua WWTP BPO Assessment – Options development

Conclusions and Recommendations

- No benefit of Option 2 (split flows) over Option 1 (combined flows)
- Biofilters too big and highest risk of breakthrough.
- Activated carbon highest treatment, but very high operating cost (and environmentally unfriendly)
- **Biotrickling filter suitable and appropriate**
- Biotrickling filter + Activated carbon suitable, but overkill





Porirua WWTP BPO Assessment – Options development

Conclusions and Recommendations

Next Steps -

- Interim Odour Control
 - Implemented fan restriction under unfavorable meteorological conditions
 - Re-conduct odour survey to determine impact of changes
- Submission of BPO report to Greater Wellington Regional Council by 31st Oct 23
- Communications plan – ongoing (including website)



Porirua WWTP BPO Assessment – Options development

Conclusions and Recommendations

Next Steps – Main BPO

- Confirm residual design issues for customized covers over screenings bins
- Concept design of preferred option
- Detailed design of preferred option
- Procurement
- Construction
- Commissioning
- Final completion





Questions?



Working together

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Project Timeline

Project Timeline



Task Name	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
Porirua WWTP Odour Management																							
Concept Design																							
Concept Design Approval																							
Detailed Design																							
Procurement (Contract and long lead items)																							
Construction																							
Commissioning																							
Practical Completion																							

Odour associated with Dewatering system will be completed in 2026 as part of Solid Handling Upgrade project

Key Messages

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- As a consent requirement, Wellington Water have engaged a specialist team to undertake the best practicable option (BPO) assessment for the proposed odour control system
- The result of the assessment will be publicly available, and the community can provide feedback on the result of the assessment

Project Updates



- The report will be made available on Wellington Water's website
- Feedback on the report can be sent to: wwtpfeedback@wellingtonwater.co.nz
- Regular updates will be given to the public through emails to the interested parties list and in Wellington Water's website
- If you'd like to subscribe as an interested party, please email customer@wellingtonwater.co.nz

Feedback and Questions?



Thank You

Minutes of the Meeting 26th October 2023

MINUTES

SUBJECT **Porirua WWTP Odour Management Public Information Meeting**

DATE 26 October 2023 5:30 to 7:30 pm

WHERE Te Rauparaha Arena, 17 Parumoana Street, Porirua City Centre, Porirua

ATTENDEES	Name	Organisation
	Blair Johnson (BJ)	Wellington Water
	Asli Crawford (AC)	Wellington Water
	Joemar Cacnio (JC)	Wellington Water
	Amanda O'Brien (AO)	Greater Wellington Regional Council
	Mike Fisher (MF)	Regional Public Health
	Dan Stevenson (DS)	Member of the Community
	Warwick Bernon (WB)	Member of the Community
	Ari Shamma (AS)	Stantec
	Stephan Pretorius (SP)	Stantec
	Alex Phelan (AP)	Veolia

1. Introduction

Attendees were asked to introduce themselves and the organisation they represent.

2. Presentation

- 2.1 BJ gave an introduction on the purpose and the context of why the meeting was held. An update on the implementation interim odour control measure was also given.
- 2.2 AS presented the scope of the Best Practicable Option (BPO) assessment and the technologies being considered. Based on the multi-criteria assessment, biotrickling filter (BTF) is recommended as the preferred technology to be used.
- 2.3 AC presented a “fast track” timeline for the implementation of the outcome of the BPO. The high-level project schedule forecast that the project will be completed in October 2025.
- 2.4 BJ informed the attendees that the Odour Control BPO report will be publicly available on the week of 30th October and the community will be given an opportunity to provide feedback on the report by sending it to wwtpfeedback@wellingtonwater.co.nz. The project team will also provide regular updates on the project on a 6-monthly interval during the design phase via Wellington Water’s website.

3. Questions and Feedback from the Attendees

- 3.1 MF queried who has been consulted on the air discharge consent renewal. BJ mentioned that consultation on the consent renewal was undertaken with the following stakeholders being involved: Porirua City Council, Wellington Water, Greater Wellington Regional Council, Regional Public Health and members of the community.
- 3.2 A member of the community would like to review the presentation and report online before giving feedback.
- 3.3 A member of the community gave a background on where they think the odour is coming from the plant and what the weather conditions, they usually smell it which is during lower wind speed northerlies.
- 3.4 A member of the community queried the implementation of the interim odour control measure and whether they would expect the reduction of odour from the site. Wellington Water explained that the objective of the implementation of the odour control measures was to prevent the inlet tunnel vent fan from operating when the wind direction from the weather station is detecting northerly winds. This will minimise the odour being detected from the Pikarere farm. There is no reduction of the odour causing compound from the plant which can be associated with the interim odour control. An odour survey will be conducted in December 2023 to determine the effectiveness of the implementation of the interim odour control measure.
- 3.5 A community member queried whether the odour control being used in the wastewater pumping station such as a biofilter will be appropriate for the plant. AS explained that the due to the space requirements of the biofilter, it might not be appropriate for this site.
- 3.6 A member of the community asked whether the whole milliscreen building will be connected to the odour control system. The project team answered that the main odour

sources will be connected to the odour control system such as the milliscreens rather than the whole building.

- 3.7 A member of the community mentioned that they can still detect odour from the plant even after the implementation of the interim odour control measure but with lesser intensity and frequency. The incidents were not forwarded to Wellington Water or GWRC though. BJ encouraged the member of the public to report it to Wellington Water so that we can investigate it. GWRC also mentioned that the public can send the odour complaints directly to them and they can carry out the investigation on the same day.
- 3.8 A member of the community appreciated that the Porirua City Council and Wellington Water is progressing the work to address the odour issues on site.