



Nelson North Wastewater Treatment Plant (NWWTP) Resource Consent Project

**Public / Stakeholder Meeting
Presentation**

Nelson City Council & Stantec Consultants



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- ❑ Nelson City Council utilises two wastewater treatment plants for the treatment of its wastewater.
- ❑ Bell Island WWTP – this manages the wastewater from Stoke and Tahunanui
- ❑ Nelson WWTP – this manages the wastewater from Central Nelson (Bishopdale, Victory, Central City etc.) and Nelson North (Atawhai).



NWWTP Overview



Outfall construction 1969



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- ☐ Prior to 1970's, untreated wastewater discharged to Boat Harbour.
- ☐ 1970 – the construction of the pipeline from the city to the existing outfall into Tasman Bay was completed
- ☐ 1979 - The oxidation pond were constructed, to treat this effluent
- ☐ 1984 – The Fisheries outfall was constructed at the port. This separate the high saline and high strength effluent from the oxidation pond.
- ☐ 1996 - the existing oxidation ponds were sub-divided into two interlinked ponds to help improve discharge quality.
- ☐ In 23 November 2004 Council obtained its current suite of resource consents.
- ☐ 2007-2010 - WWTP upgrade including the construction of new pre-treatment facilities (including screens, clarifier, sludge tanks, trickling filter) and two wetland cells.
- ☐ Ongoing – active pond management team in place



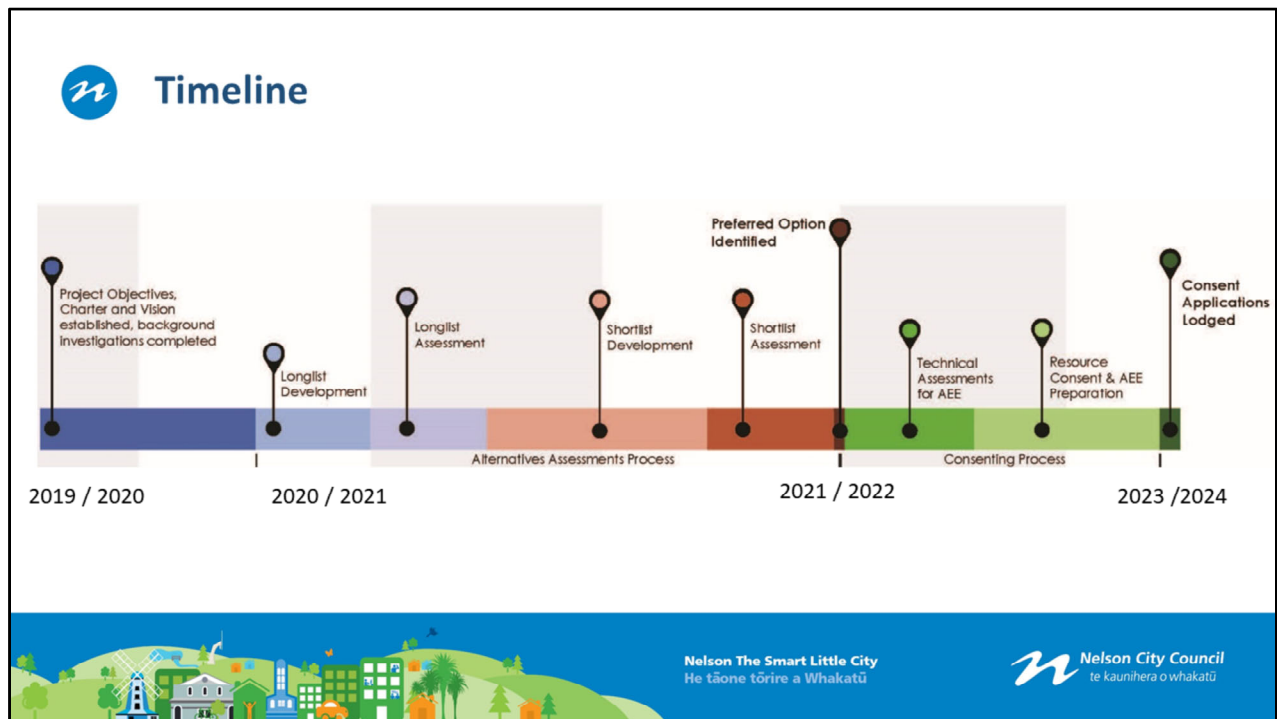
Project Overview



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- ☐ Current Consents allows for the discharge of treated wastewater to Tasman Bay, outfall structure, maintenance of structures, deposit on the seabed, discharge to air (odour), discharge to land.
- ☐ This consent will expire in December 2024 – in 4 years time.
- ☐ This is the driver for this project and its timeline.
- ☐ We started planning for the renewal of the resource consent in 2019 and have established a Technical team that comprises of Stantec (Lead consultants), Cawthron (receiving environment monitoring and mixing zone assessment), MetOcean (hydrodynamic modelling), NIWA (Public health risk assessment) with input from iwi partners, as well as other specialists and key stakeholders.



Key Dates

- ☐ November 2019 – Resource Consent project was initiated.
- ☐ August 2020 - Additional Environmental monitoring commenced.
- ☐ July 2020 - Letter to key external stakeholders was issued.
- ☐ July 2020 – July 2021 – Assessment of Alternatives
- ☐ August 2021 - NCC hope to identify Best Practicable Option (BPO).
- ☐ August 2022 - Complete Technical Assessment of Effects (AEE)
- ☐ Nelson Plan – notification currently planned for February 2022.
- ☐ Plan to lodge new consent applications before April 2024.
- ☐ The application must be lodged 6 months before expiry to ensure that wastewater treatment services

can continue to be provided at NWWTP.



Project Vision supported by Project Objectives

Management of the city's wastewater incorporating a Best Practicable Option (BPO) approach to enable growth, protect and enhance the environment and contribute to improving the health and mauri of Tasman Bay and Nelson Haven.



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- Objective 1** To recognise the importance of cultural values by working in partnership with the community, key stakeholders, and tāngata whenua to ensure a wastewater treatment and discharge solution that:
- Provides for current and future community well-being, health and safety.
 - Ensures acceptable environmental and cultural effects.
- Objective 2** To obtain long term consents that provide certainty for planned future population and industrial/commercial growth and security for ongoing investment in the infrastructure.
- Objective 3** To provide a solution that is the Best Practicable Option (BPO) for the treatment and discharge of the wastewater.
- Objective 4** To ensure that the option selected is serviceable, easily operational and economically affordable for the Nelson Community and achieves efficient use of existing infrastructure.
- Objective 5** To obtain reasonable and practical consent conditions in terms of treated wastewater quality that can be achieved in the short, medium and longer terms.
- Objective 6** To ensure that the treated wastewater discharge has no more than minor adverse effects on the receiving environments.



How The Plant Works



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How the NWWTP works

1. Wastewater flows to the Neale Park pump station by a variety of gravity and pressure pipes. It is then pumped to the treatment facility at Nelson North via the underground Atawhai rising main alongside SH6.
2. Flow Buffer – during periods of high rainfall, when the flow of stormwater into the sewerage system may be high, the flow buffer at the front of the treatment plant keeps the system from being overwhelmed. It temporarily stores the excess and controls the flow to the next stage: screening and grit removal.
3. Screening and Grit Removal -- the screening system removes non-organic material such as toilet paper, rags and plastics, from the waste stream. This rubbish is compressed to remove liquid, taken to the York Landfill and buried. The grit removal system removes sand and stones, which could have a harmful effect on the next stages of the pre-treatment works.
4. Clarifier -- a large, circular concrete tank with a sloping floor. Organic solids (sludge) settling out of the wastewater are forced to the centre of the tank by scrapers on a revolving mechanical arm inside the tank.
5. Sludge Tanks -- the organic sludge from the clarifier is thickened by mechanical removal of liquid wastewater and then stored for shipment to Bell Island, where it is treated and sprayed as fertiliser on Rabbit Island pine forests. The remaining wastewater is pumped to the trickling filter.
6. Trickling Filter biological treatment – a large circular concrete tank which contains plastic media (plastic longitudinal square-shaped grilles) over which the wastewater is distributed from rotating arms above the tank. Bacteria growing on the plastic media use the food from the sewage to break down the sewage further.

7. Oxidation Pond -- the oxidation pond system is a natural biological process which further breaks down the sewage. The NWWTP has two ponds -- a facultative pond and a maturation pond. The facultative pond further aids in the breakdown of incoming sewage, while the maturation pond reduces faecal coliforms and other microorganisms thereby reducing the pathogens - disease-causing bacteria / germs.

8. Wetlands – shallow planted ponds

9. Outfall – the treated wastewater flows from the oxidation ponds out to Tasman Bay through the outfall pipe.

10. Bio-Filter – Sometimes objectional odours from sewage treatment plants can drift long distances with unpleasant results for nearby residents. A large 'bio-filter', using air, water and bark to neutralise odours, has been constructed so that objectional smells don't reach State Highway 6.



Environmental Assessments and Monitoring



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- ☐ Maori Cultural Impact Assessment (CIA)
- ☐ WWTP and Sludge Monitoring (look at performance to the system)
- ☐ Surface and Groundwater monitoring (impact of seepage)
- ☐ Oceanographic monitoring programme (to confirm mixing zone from existing outfall)
- ☐ Ecological monitoring (both terrestrial and aquatic ecology)
- ☐ Land application assessment (look at available land for alternative discharge environment)
- ☐ Dilution and Dispersion Modelling (to determine Coastal dilution and mixing zones for coastal discharges)
- ☐ Odour assessments
- ☐ QMRA – Public Health Assessment (need input from stakeholders on how the area is used)
- ☐ Archaeology
- ☐ Recreation including public access to the Coastal Marine Area (CMA)
- ☐ Wetland management
- ☐ Contaminated land

Statutory and Other Wider Considerations



Statutory Considerations

- ☐ Resource Management Act, - maybe new legislation e.g. Natural and Built Environment Act by time of application
- ☐ Local Government Act 2002, Marine and Coastal Area (Takutai Moana) Act 2011, Heritage New Zealand Pouhere Taonga Act 2014 & Te Tau Ihu Iwi Statutory Acknowledgments 2014
- ☐ Iwi Management Plans - The Ngāti Tama Ki Te Waipounamu Trust Environmental Management Plan (2018); Ngā Taonga Tuku Iho Ki Whakatū Plan (2004); Ngati Koata's No Rangitoto Ki Te Tonga Plan (2002); Te Rūnanga o Ngāti Kuia (2008) tuna (eel) management plan
- ☐ Reserves Act 1977 – wetlands adjacent to reserve land (Department of Conservation)
- ☐ Operative Nelson Resource Management Plan (NRMP)
- ☐ Proposed Whakamahere Whakatū Nelson Plan (non-statutory basis until notification)

Climate Change and Natural Hazard Considerations

- ☐ Sea level rise
- ☐ Increase flooding / wet period
- ☐ Increased dry periods
- ☐ Natural hazards

Growth & development Considerations

- ☐ Atawhai rising main

Environmental Standards

- ☐ Carbon Emissions and Councils commitment
- ☐ Current National Policy Statements (NPS) and National Environmental Standards (NES) for Contaminated Soil (HAIL site) & NZ Coastal Policy Statement 2010
- ☐ New and Emerging Regulatory matters e.g. NPS, Proposed National Environmental Standards on Wastewater and Overflows, RMA Reform.

Ecological and social values of surrounding area

- ☐ Significant natural areas
- ☐ Enhancement of Wakapuaka flats
- ☐ Boulder bank heritage

Technical and management advances

- ☐ Inputs management – Water supply demand, Trade waste management, Stormwater Inflow and infiltration management
- ☐ Treatment technologies – increasing use of fine membranes
- ☐ Resource Recovery / beneficial reuse, the treatment plant being / becoming a ‘product factory’ e.g. well treated wastewater reuse, energy production, nutrient production (Phosphorous)

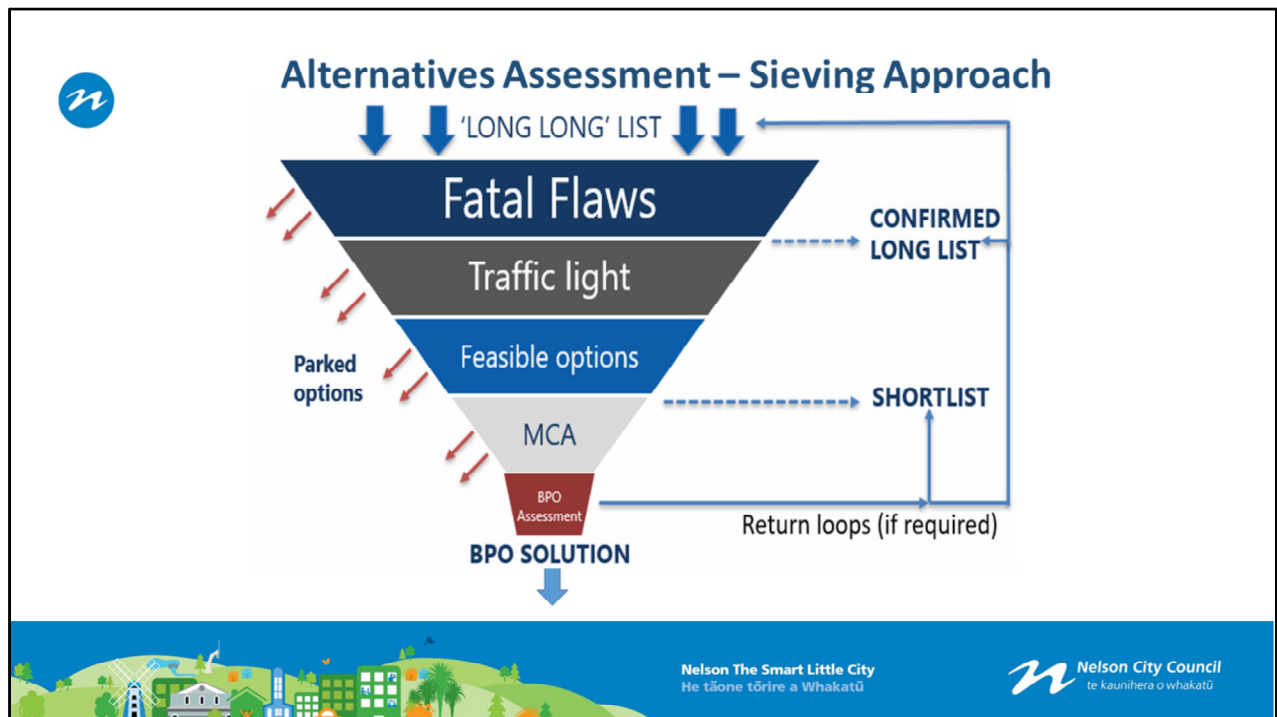
Long-term strategy of wastewater management for the Nelson region

- ❑ Interconnection between this project and the long term strategy



- ☐ BPO is a key project objective
- ☐ BPO is defined under the RMA and means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to—
 - (a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and
 - (b) the financial implications, and the effects on the environment, of that option when compared with other options; and
 - (c) the current state of technical knowledge and the likelihood that the option can be successfully applied
- ☐ The BPO approach is to be adopted as not only is it compatible with a key regional coastal plan policy, NRMP and RMA in relation to the method treatment prior to discharge, it gives a very strong direction and sets a framework for the project to be undertaken in. This will inform the resource consents, assessment of effects on the environment report and technical information required for the reconsenting project.
- ☐ It is often used by local authorities as the objective in projects like this. BPO approach works with tāngata whenua, key stakeholders and other communities of interests in determining the most appropriate solution.
- ☐ Nelson Resource Management Plan – Policy CM6.7 also requires a BPO to be undertaken in respect to of the method of treatment prior discharge.

- ❑ BPO is a balance of the four well beings.



- ☐ Under the Resource Management Act alternatives need to be considered for discharge of contaminants to the environment
- ☐ A robust process needs to be shown to have taken place
- ☐ Typically a progressive sieving or funnelling approach is used
- ☐ Brief description of each step noting MCA is a proven and accepted tool that helps the decision making process to considering various factors such as social, economic, financial and cultural and compare one with another.
- ☐ If new information, technology or roadblocks comes along there is a return loop to allow this to be incorporated



<https://shape.nelson.govt.nz/renewing-nwwtp-consent>



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