

BEACHLANDS SOUTH – FAST TRACK

Beachlands South Fast Track Application – Wastewater Servicing Strategy (for Auckland Council consultation)

Date: 4th May 2026

By: Graeme Harvey in association with Marno Raath and supporting documentation from Tonkin and Taylor.

To: Auckland Council – Adonica Giborees and Brooke Dales
Wastewater Specialist – Chris Garton

Purpose: Provide Auckland Council and technical specialists with a clear, and staged wastewater strategy that supports early delivery while protecting receiving environments and providing a pathway to the ultimate long-term solution.

The proposed approach is based on a modular onsite wastewater treatment system utilising Combined Works (CW) technology. This enables progressive expansion of treatment capacity while maintaining consistent treatment performance, operational stability, and alignment with regulatory requirements across all stages of development.

1. Wastewater solution overview

This strategy is based on a single integrated treatment system that can be commissioned early and expanded modularly over time, maintaining consistent performance across all development stages. This paper sets out a staged wastewater servicing strategy for the Beachlands South development. It is designed to meet early-stage infrastructure requirements while providing a clear, scalable pathway for ultimate build-out.

The approach maintains continuity of treatment technology and avoids stranded infrastructure, supporting a robust solution.

The proposed approach uses a modular on-site wastewater treatment plant utilising Combined Works (CW) technology.

CW enables progressive expansion of treatment capacity while maintaining stable treatment performance and operational control.

This supports consistent compliance outcomes across staging by avoiding changes in treatment philosophy and reducing performance variability under changing loads.

1.1 Staged solution summary

The solution is staged to enable early occupation while progressing a long-term discharge outcome:

1. **Stage 1 (Interim):** Early servicing to support initial development and enable monitoring-led verification of performance.
 - a. Option A: Construct an on-site CW treatment plant to service Stage 1 (area currently covered by the Land Use Consent) with treated effluent discharged to land via drip/irrigation fields.
 - b. Option B (subject to Watercare capacity/upgrade delivery): Construct a rising main to Watercare's Beachlands WWTP to accommodate Stage 1 flows.

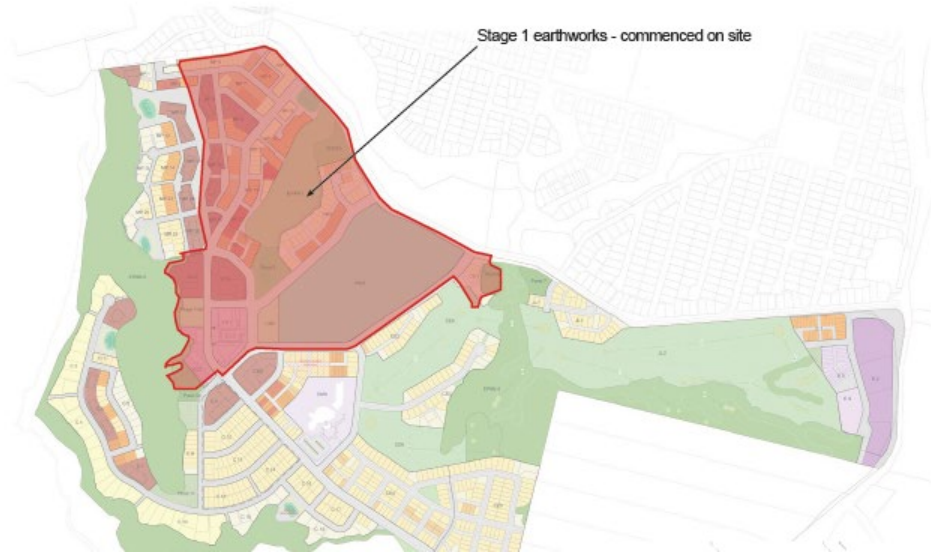
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- i. Watercare is evaluating interim upgrade options, including relocation of a modular membrane bioreactor (MBR) package plant from Clarks Beach to Beachlands WWTP.
 - ii. Indicative capacity: approximately 250 m³/day initially, with provision to expand to approximately 450 m³/day.
 - iii. If delivered, the interim upgrade could accommodate wastewater generated from the Beachlands South development (subject to final network design, consenting conditions, and commissioning timeframes).
 - iv. **Key risk (Option B):** reliance on third-party delivery/consenting timeframes.
Mitigation: maintain Option A as a deliverable fallback; continue coordinated engagement with Auckland Council, Watercare and Iwi.
2. **Stage 2 (Ultimate):** Expand treatment capacity in step with growth and transition to the long-term discharge outcome.
 - a. Treatment capacity increases via additional CW modules, maintaining consistent performance as flows increase.
 - b. Long-term discharge: treated effluent conveyed to a marine outfall (subject to assessment, monitoring evidence from interim operations, and consenting outcomes).
 - c. Watercare interface: Watercare's Beachlands WWTP upgrades remain under consideration in parallel and may form part of the ultimate servicing solution (subject to timing, capacity, and consenting).
 - i. Watercare's longer-term strategy includes a comprehensive upgrade of Beachlands WWTP, anticipated over approximately five years.
 - ii. Watercare are waiting to review the Tonkin + Taylor assessment to confirm opportunities for land-based disposal that minimise reliance on discharge to Te Puru Stream.
 - iii. A key objective is reducing discharge volumes to Te Puru Stream; Watercare is also considering enhancements to the existing land treatment area as part of any upgrade.

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1.2 Interim wastewater solution (Phase 1)

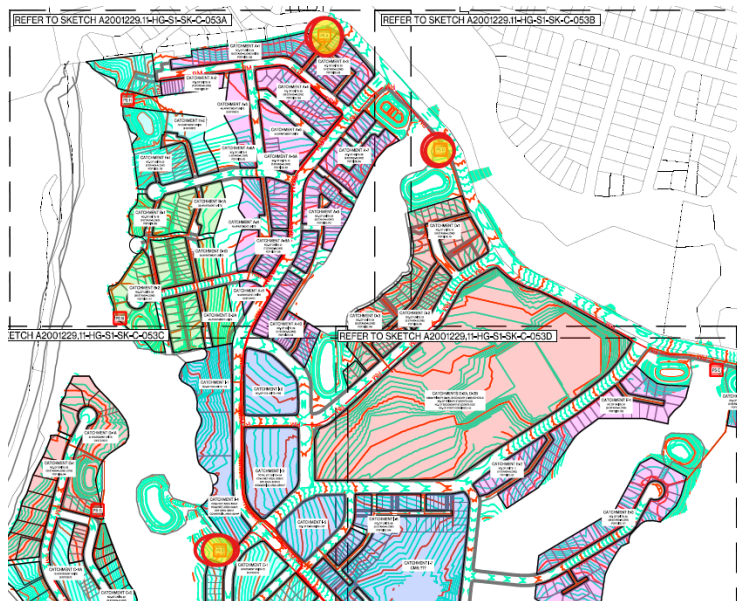
A Phase 1 CW treatment plant with capacity of up to 450 m³/day is proposed to service the initial development stage (approximately 400 to 500 household unit equivalents (HUE) plus a school).



Design flows have been assessed in accordance with Auckland Council criteria, providing a conservative and compliant basis for reporting and consent assessment.

The interim solution is supported by upstream network infrastructure comprising three pump stations, each designed with 24-hour storage capacity. This approach provides effective hydraulic buffering, enabling the treatment plant to operate under controlled and stable flow conditions.

In addition, a 100,000-litre emergency storage tank is incorporated within the treatment process, located between the inlet works and the mixing chamber. This provides operational resilience during abnormal events and enhances overall system robustness.



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Treated effluent from the interim plant will be discharged to land via controlled irrigation systems within the forest area and the 620 site. This discharge pathway has been selected as the preferred interim solution due to:

- Reduced ecological risk relative to direct stream discharge
- Alignment with anticipated consenting requirements
- Ability to demonstrate environmental performance through monitoring

Monitoring and reporting (Phase 1): the discharge consent application will include a monitoring framework (influent/effluent quality, land application volumes, and receiving environment indicators as applicable) and an adaptive management approach to demonstrate performance and inform the transition to the ultimate discharge outcome.

The detailed design and assessment of the land disposal system will be undertaken separately by GWE, with findings to support the discharge consent application.



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1.3 Staged development and system expansion (Phase 2)

As development progresses, the wastewater system will be expanded in a staged and controlled manner. The treatment plant will be augmented through the addition of further CW modules, increasing overall capacity while maintaining consistent treatment performance.

Transition triggers: indicative triggers may include development scale/flow thresholds, monitoring results demonstrating sustained performance, availability of the preferred long-term discharge solution, and completion of any required receiving environment assessments.

The upstream network will expand to include an additional six pump stations, each incorporating 24-hour storage capacity, ensuring continued hydraulic buffering and operational stability under increased loading conditions. The design and configuration of the pump stations and associated network infrastructure will be undertaken by Harrison Grierson, with integration into the overall system architecture.

1.4 Ultimate wastewater solution (long-term)

At full build-out, the wastewater treatment system will accommodate the ultimate development demand. The long-term discharge strategy transitions from land-based disposal and has been explored with Tonkin and Taylor in association with Raath and Associates.

The team has looked at the issue with conventional Wastewater treatment systems

- Variability in effluent quality under changing loads
- Higher nutrient discharge (nitrogen and phosphorus)
- Dependence on chemicals for performance stability
- Increased sludge production and handling requirements
- Long-term operational complexity and cost
- Focus is often on compliance rather than environmental enhancement

Versus the Combined Works philosophy of “A Natural Biological Treatment Approach

- Uses natural biological processes to treat wastewater
- No reliance on chemical dosing
- Stable performance under varying load conditions
- Long sludge age supports complete treatment processes
 - Reduced sludge production compared to conventional systems
 - Lower requirement for sludge transport and disposal
 - Reduced truck movements and associated emissions
 - Smaller overall environmental footprint
 - Supports sustainable long-term operation
- Designed for consistency, simplicity, and reliability
- Minimises environmental risk through process stability

The result of this gives greater effluent Quality and Environmental Protection

- BOD: 3–8 mg/L
- TSS: 3–5 mg/L
- Total Nitrogen (TN): ≤ 5 mg/L
- Total Phosphorus (TP): ≤ 2 mg/L
- Faecal Coliforms: < 200 CFU/100 mL

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These levels are aligned with protecting sensitive receiving environments such as coastal waters with the impact being:

- Reduced nutrient loading to coastal waters
- Lower risk of algal growth and eutrophication
- Improved water clarity and ecological balance
- Reduced pathogen risk to marine and human health
- Supports long-term environmental sustainability
- No chemicals

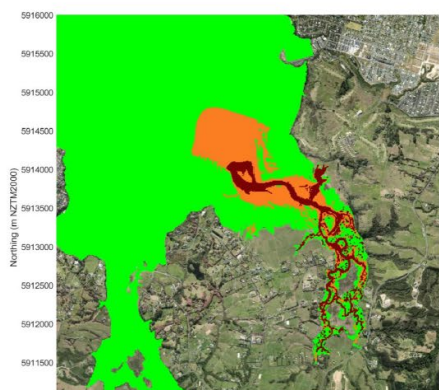
With Tonkin and Taylor, we have further explored what will be the preferred wastewater discharge option. T&T have refined their hydrodynamic model to include treated wastewater discharges and subsequent water quality modelling that simulates the dilution of coastal discharges under three scenarios.



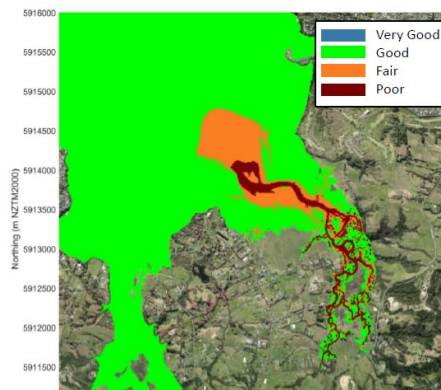
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Wetland discharge and channel discharge gave similar results with a minor improvement of water quality when polishing of the discharge was introduced.

Wetland no polishing



Channel no polishing



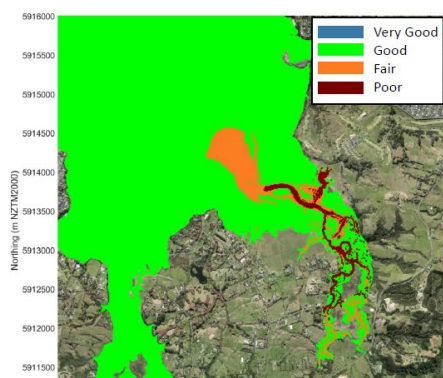
Input:
TN = 5.4 mg/L

Assumed
background:
TN = 0.05 mg/L

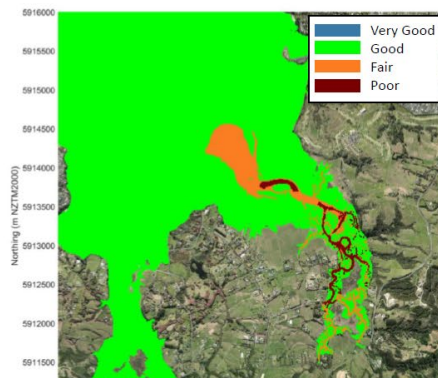
TN Levels - After Polishing + Background

Tonkin+Taylor

Wetland



Channel



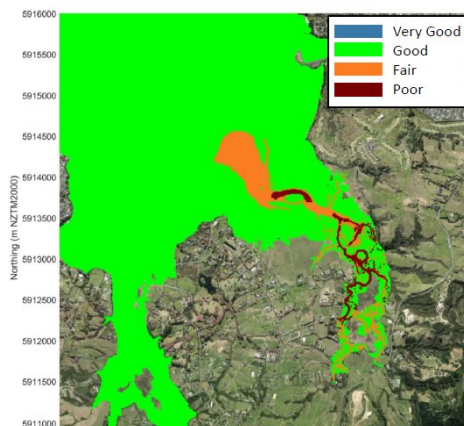
Input:
TN = 3.5 mg/L

Assumed
background:
TN = 0.05 mg/L

Finally, we looked to an Ocean Discharge to see the effects with the following results as a comparison:

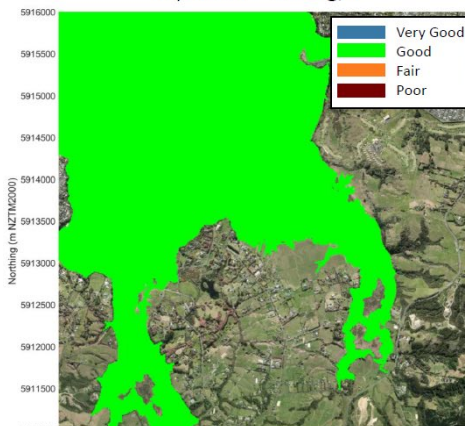
Channel with polishing

Input: TN = 3.5 mg/L



Ocean no polishing

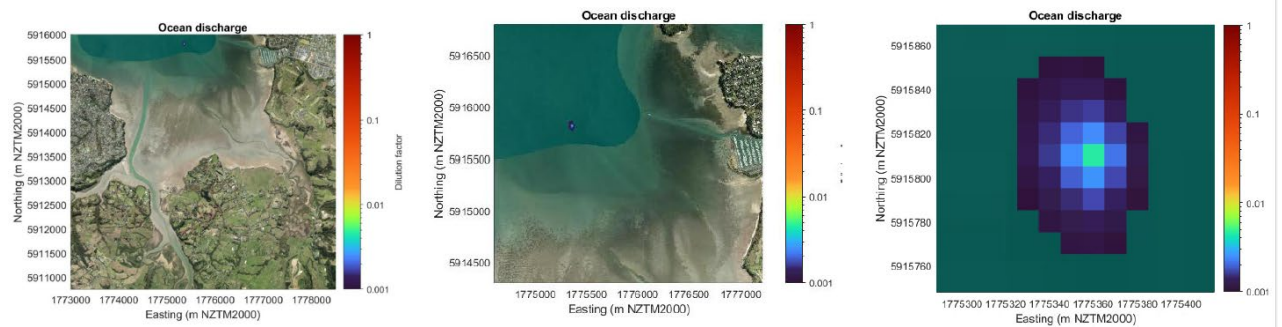
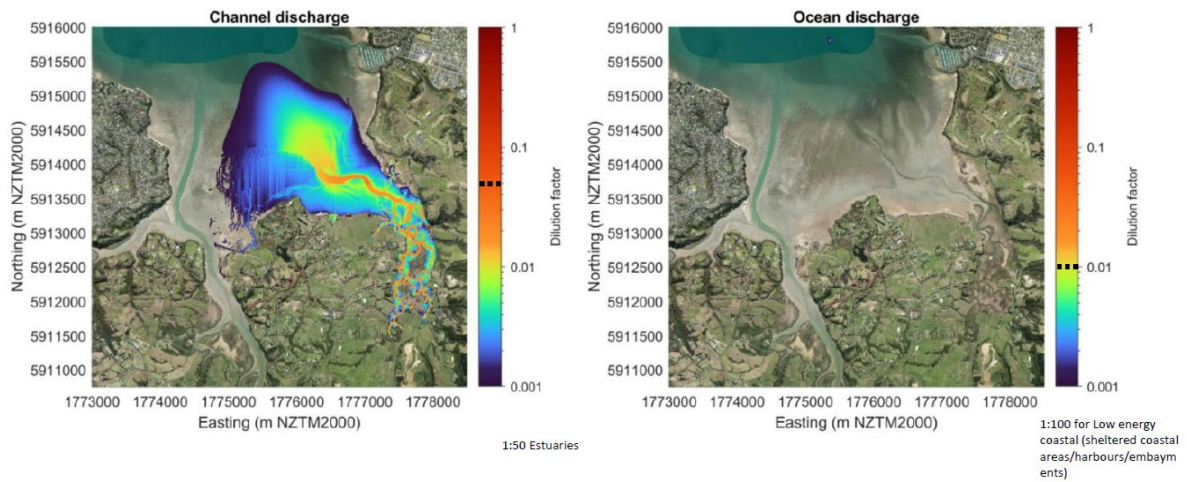
Input: TN = 5.4 mg/L



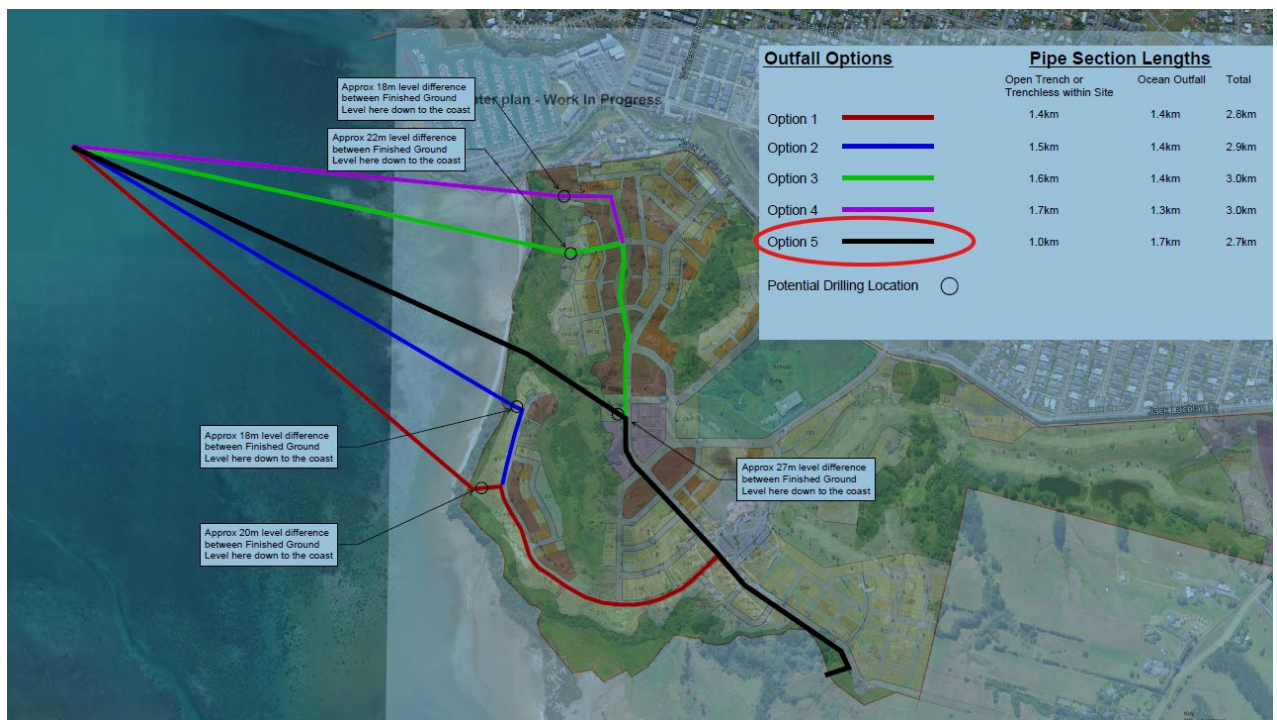
Assumed
background:
TN = 0.05 mg/L

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With stable plant performance under varying load conditions, a marine outfall option can provide a permanent and sustainable discharge solution (subject to modelling, receiving environment assessment, and consenting).



Zooming in



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Under this final configuration:

- The expanded CW treatment plant will continue to provide high-quality effluent
- Land-based discharge will be progressively reduced and ultimately replaced
- Treated effluent will be conveyed via a marine outfall to the receiving environment

1.5 Integrated infrastructure strategy

A key strength of the approach is continuity between interim and ultimate solutions: the Phase 1 plant is the first stage of the long-term system (not a temporary installation), avoiding rework and enabling performance evidence to inform later consenting steps.

This methodology enables:

- No stranded or redundant infrastructure
- No change in treatment technology or process philosophy
- Efficient capital deployment aligned with development staging
- Operational resilience through integrated storage and buffering systems

The combination of upstream pump station storage and on-site emergency storage allows the treatment plant to operate at a controlled hydraulic loading regime, supporting both performance and compliance.

1.7 Conclusion

The proposed staged wastewater servicing strategy provides a practical, robust, and environmentally responsible pathway for the Beachlands South development.

By integrating treatment, storage, and discharge infrastructure into a single framework, the strategy supports immediate delivery while establishing a clear and defensible pathway to the ultimate long-term solution.