Job No. 250398Q-01
5 November 2025

Te Runanga o Ngai Tahu
PO Box 13-046
Christchurch 8141

C/o [redacted]

Attention: Mr Tom Hopper

Re : Homestead Bay – Fast Track Application

Dear Tom

As per our brief Team's and phone conservations I have reviewed the documentation provided in relation to the Homestead Bay – Fast Track Application. With a particular focus on the to land wastewater disposal and any potential residue long term risks that it may pose in relation to the water quality of the downstream stream receiving environment and ultimately Lake Wakatipu.

The amount of material provided was substantial >2000 pages. It was thoroughly prepared to a high quality & standard as one should expect. I focused primarily on reviewing the wastewater specific documents :-

- Appendix HH - Wastewater assessment of effects (updated).pdf
- Appendix PP - Water quality and aquatic ecology effects (new).pdf

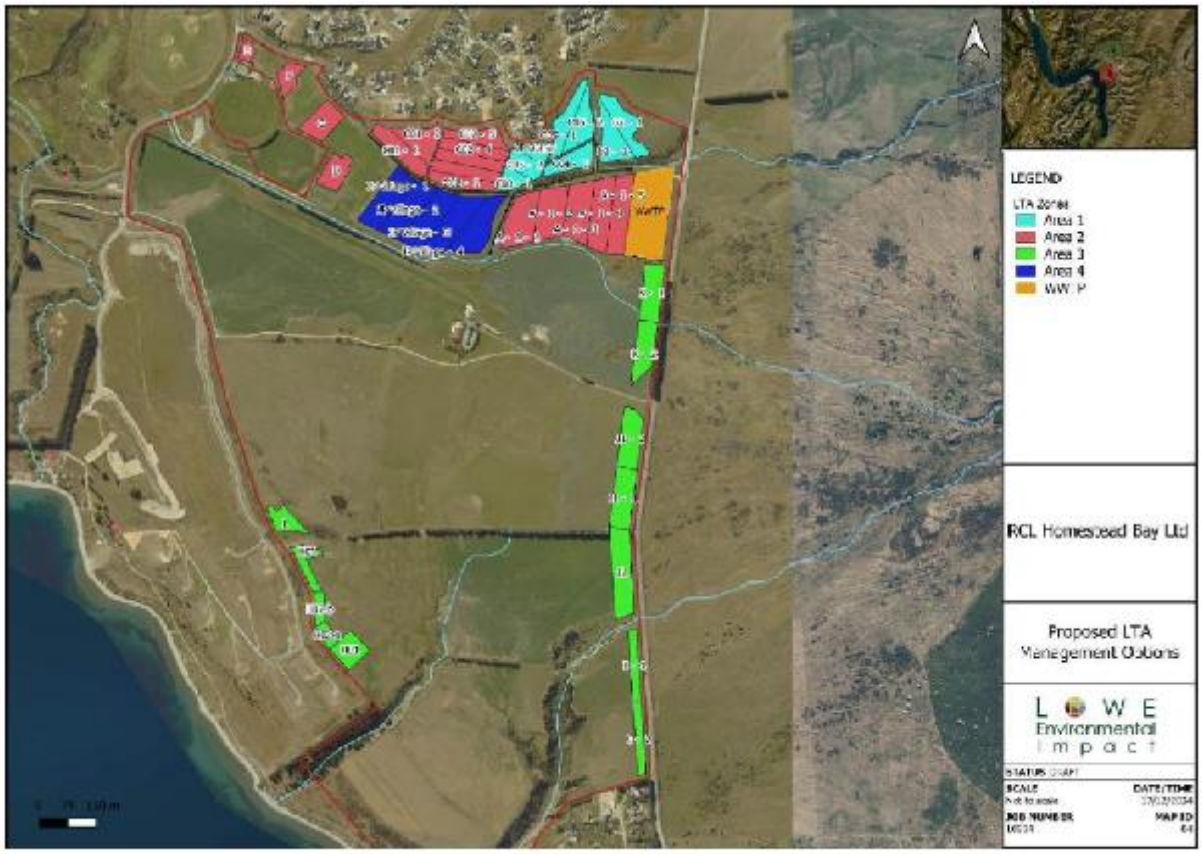
These provide the applicant's description of the system and initial assessment of effect and reviewers comments and recommendations.

The proposed wastewater system and it's design basis can be summarised simply as follows:-

- All wastewater will be collected and treated varier a new treatment plant to be located next to the state highway. The orange area in the north east corner of the site on the image below. Once water has gone thru the treatment plant it will be disposed of to ground, generally to area along the north and east of the site. Shown as the various other coloured areas on the image below.

Airey Consultants Ltd | Queenstown Office
PO BOX 2069, Wakatipu Queenstown, 9349 | Level 2, 26 Hawthorne Drive, Queenstown
T: [redacted] E: [redacted]

Engineering *Ingenuity*



Appendix B: Proposed Land Treatment Areas

- A number of different types of modern treatment plant are suggested, of which one will be chosen and expected to treat the wastewater to a standard of approximately twice as good as the current ORC permitted target levels for various contaminates.
- Once treated the water will be applied to a large area by dripper irrigation 200mm below the surface at a flow rate of approximately half of the permitted rate.
- It is expected that excess nitrogen still in the wastewater will be taken up but vegetation or bound into the soil. Phosphorus is also expected to be bound into the soil matrix. With pathogens if any being neutralised within the soil matrix within a short distance of the discharge point.
- Calculations have been undertaken looking at the current land use (aka farming) nutrient discharge versus the proposed and indicate a small potential increase of 11% dependant on wastewater volumes and treatment level. It is also noted that this increase will be diluted more than the existing land use scenario.

Based on the design some of the risks that need to be considered are:-

- Operational Risk – If the treatment plant does not operate correctly then the contaminate levels will be higher than planned.

- Climate – the use of vegetation uptake of nitrogen is relied upon, local winter growing conditions are poor and factored into the modelling to a certain base level. These will be subject to seasonal change and variability.
- Flow path short circuiting to ground water and/or lake – Soil ground profiles have been mapped on a limited amount of bore holes and test pits and assumptions made that these reflect the overall ground profile. Variations in ground conditions could lead to short circuiting of flow paths.

To mitigate against the risks summarised above it is proposed to have extensive downstream water quality monitoring requirements of both the existing streams and ground water at the lake fore shore.

Based on the information supplied and the assumption that the system is operated in accordance with the design intent, I am of the option that the long term residue risk to Lake Wakatipu are low.

That said there is ultimately the backup plan of routing the wastewater from the development to the main Queenstown Wastewater Treatment Plant at the Shotover River. Future proofing for this option needs to be considered early on in the layout of the subdivision reticulation. QLDC have asked for this to be done, but no information was supplied to indicated that has been actioned to date.

Yours sincerely
AIREY CONSULTANTS LTD

[redacted]

AIREY CONSULTANTS LTD

Justin Ralston
Manager Queenstown
CPEng(NZ), CMEngNZ, BE (Civil)

Supplied Documents :-

AEE - Homestead Bay (updated - clean version).pdf
AEE - Homestead Bay (updated - track changes).pdf
Appendix AA - Lizard Management Plan (updated).pdf
Appendix B - Engineering Feasibility Report - Part 5 - Appendix A.pdf
Appendix B - Engineering Feasibility Report - Part 5 (new).pdf
Appendix C - Wetland assessment (updated).pdf
Appendix CC - Groundwater monitoring bore locations (updated).pdf
Appendix HH - Wastewater assessment of effects (updated).pdf
Appendix KK - Acoustic memo (updated).pdf
Appendix NN - Detailed site investigation (new).pdf
Appendix OO - Odour Impact Assessment (new).pdf
Appendix PP - Water quality and aquatic ecology effects (new).pdf
Appendix QQ - Wetland management plan (new).pdf
Appendix R - Proposed wastewater reserves to vest plan (updated).pdf
Appendix RR - Otago Regional Council Peer Reviews.pdf
Appendix T - Proposed Conditions (updated).pdf
Appendix X - Construction Management Plan (updated).pdf
Appendix Y - Ecological Effects Assessment (updated).pdf
Memo to Panel - updated application documents.pdf

References of interest

https://www.sciencelearn.org.nz/resources/2364-inhibiting-nitrification