

Taharoa Ironsands Limited
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**Taharoa Ironsands Limited - Central and Southern Blocks Mining
Fast-Track Application
Coastal Process Response to Natasha Willison-Reardon / Mirumiru Pā ki Marokopa –
Marokopa Marae**

1 Introduction

My Name is Eddie Beetham. I prepared a technical report assessing coastal process effects for Taharoa Ironsands Limited as part of their application for resource consents under the Fast Track Approvals Act in 2025 provided as Appendix Q to the Substantive Application Report. I also presented expert evidence at the council hearing on this matter in 2024.

I am a Senior Coastal Geomorphologist at Tonkin & Taylor Ltd (T+T), where I specialise in modelling and coastal processes. I have worked at T+T since 2019. Prior to joining T+T, I was a Research Fellow at the University of Auckland (2016 – 2018), and a PhD candidate (2012 – 2015). My expertise and experience is set out more fully in my initial technical report.

The purpose of this Letter is to respond to comments made in co-submission by Natasha Willison-Reardon / Mirumiru Pā ki Marokopa – Marokopa Marae (Invited Party) that relate to coastal processes. The submission points are broadly summarised into the following six points (all contained with the combined table in the Invited Party's comments):

- 1 A request for an independent sediment budget of the West Coast littoral cell.
- 2 A request that independent annual monitoring of beach profiles is undertaken.
- 3 A request that independent verification of alongshore transport modelling is undertaken.
- 4 A request that effects to the updrift coast at Marokopa are assessed.
- 5 A request that a cumulative sediment deficit is modelled for Marokopa to Kawhia.
- 6 A request that Marokopa River mouth is monitored with triggers for adaptive management.

I have read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in preparing this report. The content of this report is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this report.

A response to each point is presented in Section 2 below.

2 Response to submission points

2.1 Independent sediment budget

In the combined table of the Invited Party's comments, the Invited Party has requested that an independent West Coast littoral cell sediment budget assessment from south Marokopa to Kawhia is imposed as a precondition of consent.

With regards to the West Coast sand system, I agree that at a large scale, this operates as one connected littoral cell with the primary source in the Taranaki Volcanic Zone and a net drift north through Waikato, and Auckland to Northland. The supply of sand to the West Coast and northerly transport across the relatively wide sediment transport zone is generally well understood and accepted as referenced in the effects assessment and submission. However, there are also local scale effects that can impact specific parts of this system, including the presence of cliffs, changing coast alignments and the effects of river discharges. These factors can create localised differences in erosion and accretion trends at the coast.

Further investigation of the sand transport system is of academic and general interest but is not necessary to inform the TIL export operation. This is because TIL export sand from land-based deposits that are not part of the active littoral cell.

Therefore, the sand being exported is not part of the active littoral transport sediment budget and will not have an effect on sediment budgets.

2.2 Independent beach profile monitoring

In the combined table of the Invited Party's comments, the Invited Party has requested that an independent beach-dune assessment is required.

In general, independent monitoring of beach profiles is of value to the understanding of coastal landscapes. Monitoring is best undertaken by the Regional Council as state of the environment reporting. Community based monitoring is also possible with appropriate training, review and documentation.

Monitoring of beach profiles as a condition of consent is not necessary or appropriate because the proposed mining activity has negligible effect on the active dune system as presented in the coastal processes effects assessment (see the Assessment of Effects in the Executive Summary of Appendix Q – Coastal Processes to the Substantive Application Report).

2.3 Verification of longshore transport modelling

In the combined table of the Invited Party's comments, the Invited Party has requested that independent verification of longshore transport modelling by a coastal geomorphologist not engaged by TIL is undertaken with the verified model accompanying the consent.

A requirement for independent verification of longshore transport modelling is not appropriate as a condition of consent because the activities requiring consent in the Coastal Marine Area (CMA) have negligible effect on the coast.

2.4 Effects to the updrift coast at Marokopa

In the combined table of the Invited Party's comments, the Invited Party has requested that a dedicated updrift effects assessment for the Marokopa coast is undertaken.

The Marokopa coast is located 13 km to the south of Taharoa and is separated by a sequence of rocky headlands. There is also a rock coast to the south of Marokopa and to some degree this coast and Marokopa are in the lee of a significant promontory some 11 km to the south.

The UoA shoreline change data in this location shows a variable trend with some sections showing erosion and others accretion (Figure 3.1). In general, the shoreline along the Marokopa coast appears to be trending more towards erosion than accretion. This is more likely to be a “lee side” erosion effect as result of the promontory to the south and a change in shoreline alignment that could have the combined effect of deflecting of littoral drift to the more seaward parts of the littoral zone in this area, connecting back to the coast further up the coast.

Independent analysis of historic shoreline change by the University of Auckland (UoA) shows that the sand dunes along the Taharoa coast are accreting, which means they are storing increasing volumes of sand each year. The representative trend adjacent to the TIL mine was assessed as 0.5 m/yr in the coastal effects report (see section 3.3.4 of Appendix Q – Coastal Processes Assessment). It is possible that this suggests the littoral zone connection is in the vicinity of Taharoa.

There are two key matters regarding the potential of effects of the proposed activities at Taharoa affecting the coastal processes at Marokopa, with these being:

- 1 The TIL sand export is from land-based deposits behind the beach and dune system. This means there is no effect of this activity on the littoral sand budget between Taharoa and Marokopa.
- 2 Taharoa is located 13 km north of Marokopa and is separated from Taharoa by a sequence of rocky headlands. The net littoral drift along the west coast is northward, with sand passing Marokopa then travelling north towards Taharoa, although as set out above, this is more complex than a uniform and contiguous source of sand. However, even if there were activities that affected the sand budget at Taharoa, this would affect the shorelines to the north, rather than those to the south of Taharoa.

Settlement of the de-watering plume was modelled by MetOcean solutions and does show some fine sediment has the potential to drift south to Marokopa in the summer months with sediment concentrations less than 0.3 mg/l above background levels (Appendix FF – Discharge and Dispersion Modelling Assessment). This suspended sediment concentration and total volume is very small, being orders of magnitude below the sediment yield assessed for the Marokopa River catchment and from alongshore littoral sediment transport. These volumes are too small to have any measurable effect on coastal processes.

2.5 Cumulative sediment deficit Makokopa to Kawhia

In the combined table of the Invited Party’s comments, the Invited Party has requested that explicit modelling of cumulative sediment deficit over the consent term across the Marokopa to Kawhia coast.

The TIL operation exports land-based sand deposits and therefore has no material effect on the littoral drift sediment budget between Makokopa to Kawhia. Is not necessary to assess whether there is a cumulative sediment deficit as a condition of consent as this is not an impact of the proposed mining activity.

2.6 Marokopa River mouth monitoring

In the combined table of the Invited Party’s comments, the Invited Party has requested annual monitoring (bar position, depth, salinity intrusion gauge) as a binding condition.

Suspended sediment concentrations for the 90th percentile output as modelled by Metocean Solutions show that a very diluted fraction of the plume can reach Marokopa in the summer months (Appendix FF – Discharge and Dispersion Modelling Assessment). The concentration is less than 0.3 mg/l above background levels. This is orders of magnitude below the sediment concentration associated with river discharge events or from sediment suspended in the littoral transport zone during moderate to high wave events. It is, therefore, not necessary to monitor the Marokopa River mouth as a condition of consent, as the effect of the proposed TIL activities is negligible.

3 Conclusion

The comments of the Invited Party raise valid concerns about the natural flow of sediment on the West Coast of Waikato and shows a good understanding of coastal processes. While I generally agree that more research and motioning is good to support understanding of the environment, the monitoring requested by the Invited Party is not necessary or appropriate as conditions associated with TIL's consents.

TIL source land-based sand for export that does not influence the natural littoral cell. TIL activities that do operate in the CMA (e.g., plume and marine structures) have been assessed in my previous report provided with the Substantive Application Report to have negligible effect on coastal processes and landforms.

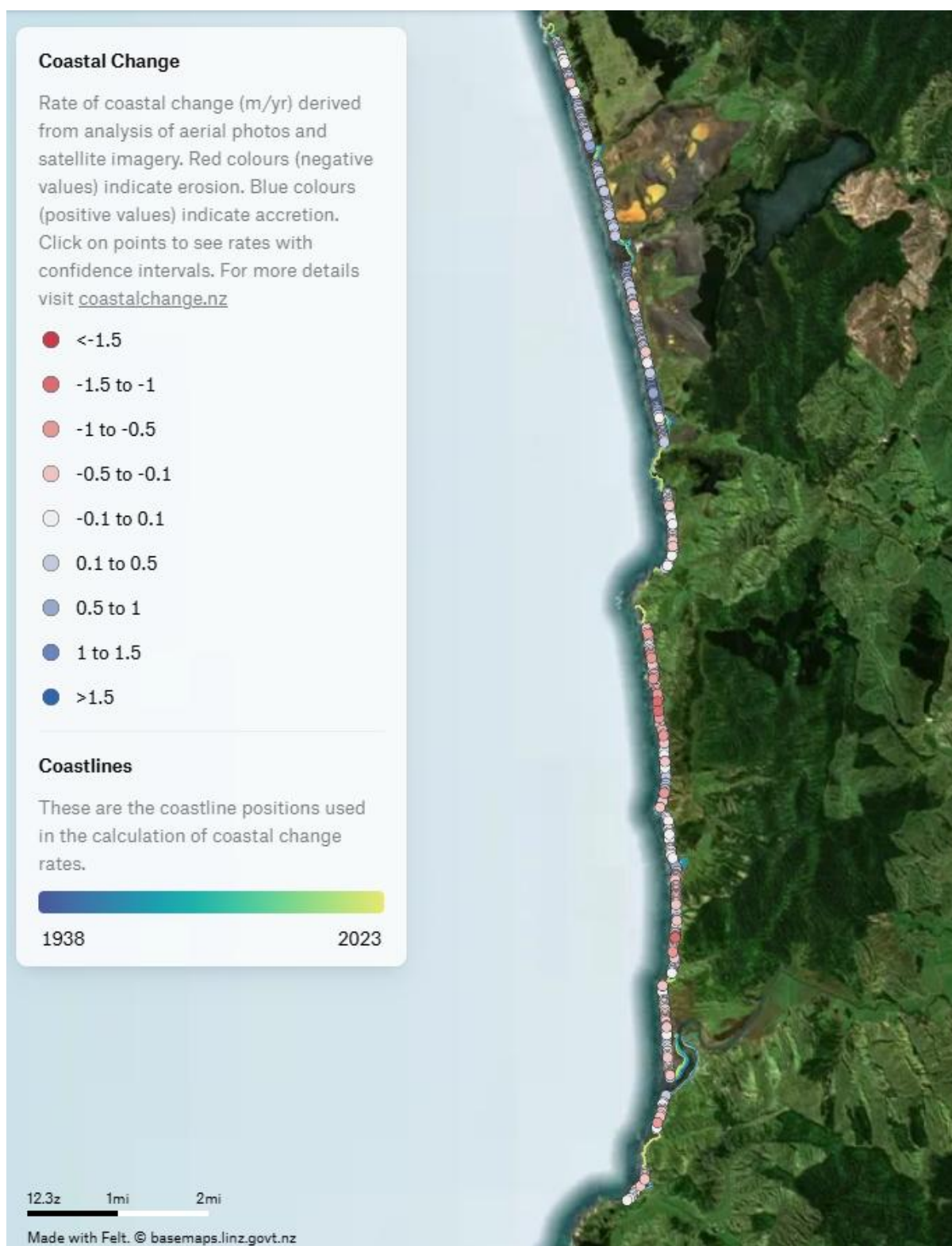


Figure 3.1: Map of Taharoa to Marakopa showing rates of historic shoreline change from the University of Auckland

4 Applicability

I understand and agree that this report will be used by the Fast-track Expert Panel in undertaking its regulatory functions in connection with the Central and Southern Block Mining Project [FTAA-2512-1153].

Tonkin & Taylor Ltd

Report prepared by:

A handwritten signature in blue ink, appearing to read 'E Beetham', is written over a horizontal dotted line.

Dr Eddie Beetham
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Technical Review by:

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22-Jun-26

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