

# Final Executive Summary of Alternative Sand Sources

Prepared for Bream Bay Guardians

Prepared by Beca Ltd.

3 October 2025

**make  
everyday  
better.**

## Contents

---

<b>Executive Summary .....</b>	<b>3</b>
<b>1 Introduction (Updated) .....</b>	<b>7</b>
<b>2 Scope of the Review (Updated) .....</b>	<b>7</b>
<b>3 Existing Scenario (Updated) .....</b>	<b>7</b>
3.1 North Auckland Marine Sand Characteristics (Updated) .....	8
3.2 Ready-mix Concrete Sand Requirements .....	8
<b>4 Alternative Sources .....</b>	<b>9</b>
4.1 Probable Alternative Supply Options .....	9
4.2 Possible Alternative Supply Options .....	14
4.3 Unlikely Alternative Supply Options .....	17
4.4 Non-viable Alternative Supply Options .....	18
4.5 Transport .....	19
<b>5 Comparison of Characteristics .....</b>	<b>20</b>
<b>6 Discussion (Updated) .....</b>	<b>20</b>
<b>7 Conclusion (Updated) .....</b>	<b>22</b>
<b>8 Bibliography .....</b>	<b>23</b>

## Appendices

---

Appendix A – Sand Supply Alternatives Comparison Table

### Revision History

Revision N°	Prepared By	Description	Date
01	Terilee Wickens	Draft for Client Comment	05/06/2025
02	Terilee Wickens	Final Report	06/06/2025
03	Jennifer Hart	Final with Minor Updates	14/07/2025
04	Jennifer Hart	Updated Final	3/10/2025

### Document Acceptance

Action	Name	Signed	Date
Prepared by	Terilee Wickens, Jennifer Hart		3/10/2025
Reviewed by	Eleanor Grant		3/10/2025
Approved by	Jennifer Hart		3/10/2025
on behalf of			

© Beca 2025 (unless Beca has expressly agreed otherwise with the Client in writing).  
This report has been prepared by Beca on the specific instructions of our Client. It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.

# Executive Summary

---

## Introduction

Sand sources for ready-mix concrete in Auckland were reviewed in 2022. The review considered a range of sand sources in Northland, Auckland, Waikato, and Bay of Plenty. The review investigated these sources as alternatives to marine sand from the Pākiri embayment, looking at sand characteristics and properties, sand volumes available, consent status, and transportation options. The alternative sand sources review has been updated in 2025 based on publicly available information on current ready-mix concrete demand in the Auckland region and sand sources. The following sections cover the current sand demand for ready-mix concrete, and existing and potential sand sources. It is understood the updated report may be used to support submissions opposing resource consent applications for sand extraction in Bream Bay.

## Current Auckland Ready-Mix Sand Demand

Current annual ready-mix concrete demand in Auckland market is estimated as 1.37 million cubic metres per year. This based on Statistics New Zealand data. The estimated demand for fine sand associated with this ready-mix concrete is approximately 310,000 to 610,000 cubic metres per year<sup>1</sup>, adopting previously published fine sand contents for ready-mix concrete. While there may be different views on the accuracy of official Statistics New Zealand data, the lower value of 310,000 cubic metres per year is consistent (within 10%) with other published estimates for present ready-mix sand demand.

## Bream Bay Sand Extraction

Sand extraction has recently been proposed in Bream Bay, on the east coast of Northland. A total maximum quantity of volume of 8,540,000 cubic metres would be extracted over 35 years, based on up to 150,000 cubic metres per year extracted for the first three years and up to 250,000 cubic metres per year extracted for the remaining 32 years. It is understood from project information that the sand would be barged to central Auckland and then trucked to ready-mix concrete plants around Auckland. The barge landing location in central Auckland is approximately 15km from the Rosebank / Te Atatū / Glendene and Penrose / Mt Wellington industrial hubs, 20-25km from the Wiri / East Tāmaki industrial hub, and 25-40km from the Orewa / Silverdale / Albany industrial hub.

## Taporapora Banks, Kaipara Harbour

Sand extracted from the Taporapora Banks in the Kaipara Harbour presently supplies Auckland's ready-mix concrete industry. Extraction from this source has a current resource consent until 2027. In 2024, 308,000 cubic metres of sand was extracted and supplied to Auckland ready-mix concrete and other industries. This is approximately 50% of the total consented volume of 600,000 cubic metres per year, leaving approximately 290,000 cubic metres per year of the consented sand volume unutilised.

A 2008 report found that sand in the Kaipara Harbour is replenished by natural processes. The Taporapora Banks were estimated to have an annual replenishment rate of approximately 2.6 million cubic metres per year. It was estimated that a sustainable volume of sand extraction could range from 780,000 to 1.3 million cubic metres per year.

Sand is barged from the extraction site on the Taporapora Banks to a distribution yard near Parakai. The yard is adjacent to State Highway 16 and the North Auckland Line (rail line). Sand is presently trucked from the distribution yard to ready-mix concrete plants around Auckland. The yard is approximately 25-30km from the Orewa / Silverdale / Albany industrial hub, 40km from the Rosebank / Te Atatū / Glendene industrial hub, 50-60km from the Penrose / Mt Wellington industrial hub, and 60-70km from the Wiri / East Tāmaki industrial hub. Rail is a potential transport alternative, noting additional infrastructure would be required and rail freight charges would apply.

---

<sup>1</sup> Sand extraction consents typically give sand quantities in cubic metres and cubic metres per year. Sand demand and supply quantities in this summary are therefore given in cubic metres and cubic metres per year for ease of comparison.

## Manufactured / Engineered Sand

Brookby Quarry in southeast Auckland presently supplies manufactured (or engineered) sand to the Auckland ready-mix concrete industry. The manufactured sand has been reported as a key component in the majority of Auckland concrete mixes from a national ready-mix concrete company. Brookby Quarry has a reported production capacity of 210,000 cubic metres per year with potential to increase to 420,000 cubic metres per year dependent on demand. The quarry, east of Whitford, is approximately 20km from the Wiri / East Tāmaki industrial hub, 25-30km from the Penrose / Mt Wellington industrial hub, 40-50km from the Rosebank / Te Atatū / Glendene industrial hub and 55-70km from the Orewa / Silverdale / Albany industrial hub. There is potential for other Auckland suppliers to expand into manufactured/engineered sand from quarry waste, with processing equipment available in New Zealand and quarries presently producing sand.

Further manufactured sand alternatives using materials such as recycled crushed concrete and glass are under development. Crushed recycled concrete is currently used in New Zealand concrete manufacturing, however, typically only for large aggregates in concrete mix. The technology for crushing concrete into sand-sized particles is relatively new. Recycled glass is used at a small scale in ready-mix concrete production across New Zealand, including Auckland, as a partial sand replacement material.

Pressure on the construction industry to reduce emissions and increase resource efficiency could drive increased awareness and use of manufactured sands. Manufactured sands for concrete production are being covered in New Zealand and international industry publications, for example.

## Bream Bay Consented Dredging

Extraction of significant volumes of sand from Bream Bay, Northland, is presently consented as part of Marsden Point navigation channel dredging. The 35-year dredging consent, granted to Channel Infrastructure Ltd in 2018, is for a total of up to 8,000,000 cubic metres of dredging. This comprises 3,700,000 cubic metres of initial (capital) dredging followed by 56,000 to 122,000 cubic metres per year of maintenance dredging. The majority of this would be fine to medium sand from the same sand body as the proposed Bream Bay extraction, described above. The existing consent allows sand to be dredged from Bream Bay and the Whangarei Harbour entrance (refer to figure below). Under the consent, most of the dredged material (up to 97.5%) would be disposed of offshore in 45m deep water and dredging would be undertaken between January and October each year.

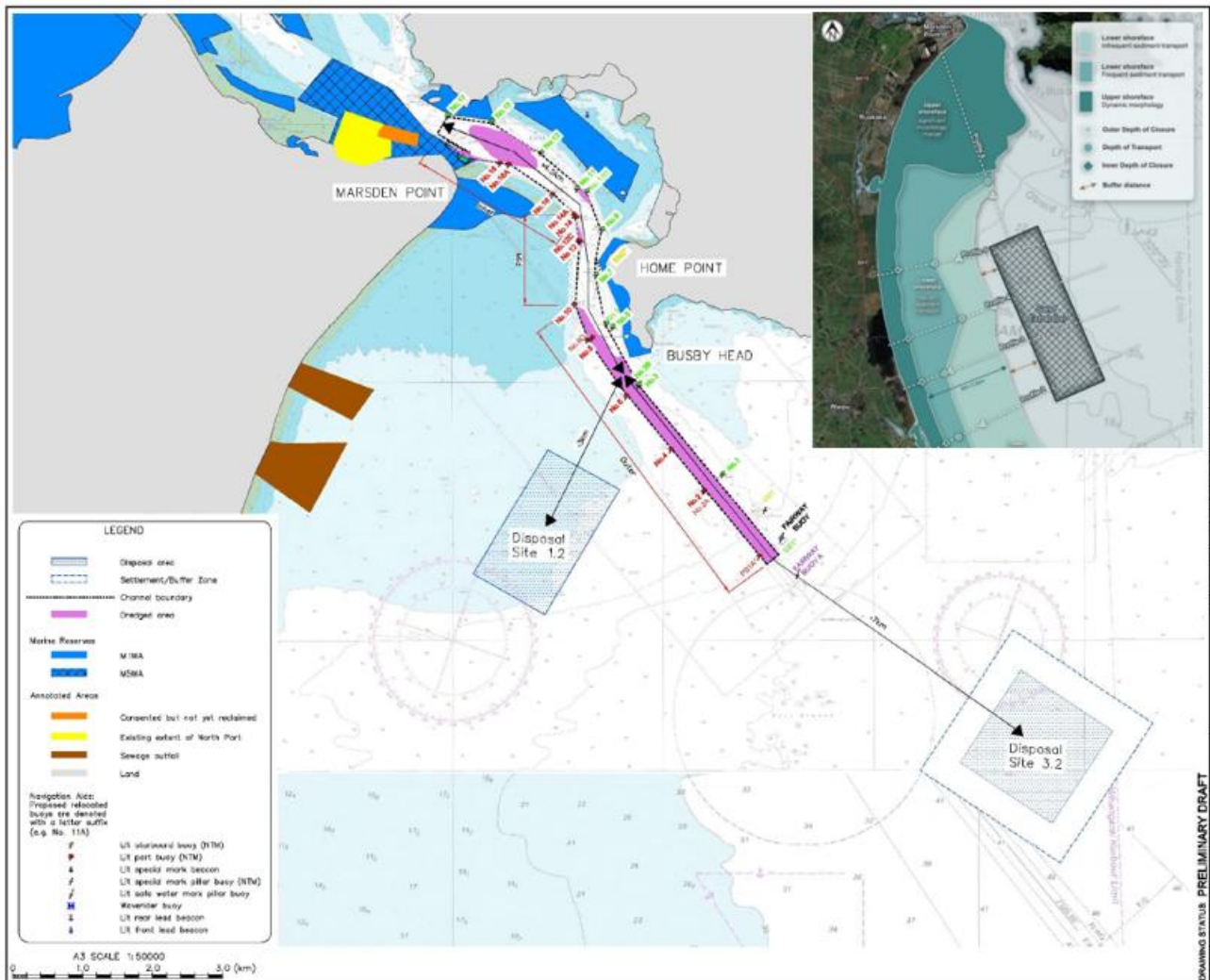
Sand dredged under this consent could potentially help to supply the Auckland and Northland regions, similar to the proposed Bream Bay sand extraction. Variations to the existing consent may be required if more of the dredged material is utilised onshore, for example to supply the construction industry. Stockpile facilities would also assist in balancing supply with industry demand. Sand from the channel dredging could be barged to central Auckland, as for the and/or Northland and distributed further by land transport.

## Waikato Land-based Sources

Waikato-based sources are also possible options to support the Auckland market, analogous to the previous supply of Pākiri sand transported via central Auckland to the Waikato region. There are numerous operating sand quarries that currently supply concrete sand in the Waikato region.

In the north Waikato, sand quarries are located at Tūākau and Mercer. These quarries are approximately 40-45km from the Wiri / East Tāmaki industrial hub, 50km from the Penrose / Mt Wellington industrial hub, 65-70km from the Rosebank / Te Atatū / Glendene industrial hub and 75-90km from the Orewa / Silverdale / Albany industrial hub. The quarries are also 10-25km from the growing Pukekohe, Paerata and Drury townships. The Tūākau Quarry reportedly has a 30 year resource consent to extract sand, due to expire in the mid to late 2030s. The consented volume of sand may be 108,000 cubic metres per year, based on available information. While the current output of the Mercer quarry is not published, publicly available information has noted that capital investment to increase capacity was anticipated.

“Waikato River sand” has been reported as having less favourable mineralogy for ready-mix concrete sand. It is understood that there are measures to manage this. The Tūākau and Mercer quarries are owned by Stevensons and Holcim respectively. Both companies manufacture ready-mix concrete and other products. Holcim is a major international cement manufacturer and publicly available information states that its Mercer quarry provides a high-grade sand resource for concrete sand.



Consented navigation channel dredging in Bream Bay (purple shading in main image). Inset shows the recently proposed Bream Bay sand extraction (hatched rectangle) south of the consented channel dredging. After Tonkin+Taylor, 2017 (main image); Tonkin+Taylor, 2025 (inset).

## Auckland Land-based Sources

Several Auckland land-based sand sources could be viable options for sand supply to the northern part of the Auckland region. The land-based sand is more weathered than marine sand, and has a similar mineral composition and grading to the east coast marine sands (i.e. Pākiri and Bream Bay sands). Several of the quarries presently supply or historically supplied sand for concrete manufacture

The existing Tomarata sand quarry produces raw and washed sand, and historically supplied the Auckland concrete industry. The quarry has an existing 35-year consent granted in 2014. The consented extraction volume has been reported as 100,000 cubic metres per year. Two further potential sand quarries have been signalled in the Te Arai, east of Tomarata. Sandglass Ltd hold an existing consent to extract 84,000 cubic metres of sand per year. The 35-year consent was granted in 2008. The sand resource in the area was estimated to be approximately 30,000,000 cubic metres. A development project at Te Ārai, which includes sand extraction of up to 300,000 cubic metres per year, has been listed as a fast-track project, however a consent application has not been lodged at this time. The Tomarata / Te Arai area is approximately 80km from Orewa / Silverdale / Albany industrial hub and 40km from the Warkworth development area.

## Summary

Sand demand and potential sand sources are summarised in the table below in cubic metres per year (m<sup>3</sup>/year). As the table illustrates, the potential annual sand volume available from existing Auckland sources (Taporapora Banks/Kaipara Harbour and Brookby Quarry) is over 1,000,000 cubic metres per year, approximately 170% to 330% of the present ready-mix concrete sand demand in Auckland. Demand for ready-mix concrete sand in Auckland would be unlikely to increase to these levels in the immediate future, which allows a period of time for supply options to be investigated and developed.

Considering further existing and potential land-based and marine sand sources and excluding the recently-proposed Bream Bay sand extraction, the available sand volume could be in excess of 1,100,000 cubic metres year, or 180% to 350% of Auckland's present ready-mix concrete sand demand. Sand sources in north Waikato, which presently supply concrete manufacturers, could also potentially supply sand into the Auckland market in a similar manner to the Pākiri sand that was previously supplied to the Waikato and Bay of Plenty ready-mix concrete industries.

Summary of ready-mix concrete sand demand and sources

Ready-mix concrete sand demand / source	Potential annual volume (m <sup>3</sup> /year)
<b>Demand</b>	
Present Auckland demand	310,000 to 610,000 m <sup>3</sup> /year
<b>Sources</b>	
Taporapora Banks Kaipara Harbour (consented, operating)	Up to 600,000 m <sup>3</sup> /year
Brookby Quarry, Whitford, Auckland (consented, operating)	Up to 420,000 m <sup>3</sup> /year
Tūākau quarry (consented, operating)	Up to 108,000 m <sup>3</sup> /year
Mercer quarry (consented, operating)	Not available
Marsden Point navigation channel, Bream Bay (consented, potential)	Varies; could average up to 220,000 m <sup>3</sup> /year if capital dredging stockpiled
Tomarata quarry (consented, operating)	100,000 m <sup>3</sup> /year
Te Arai quarry (consented, potential)	84,000 m <sup>3</sup> /year
Te Arai quarry (not consented, potential)	300,000 m <sup>3</sup> /year



[www.beca.com](http://www.beca.com)



[linkedin.com/company/beca](https://www.linkedin.com/company/beca)



[facebook.com/BecaGroup](https://www.facebook.com/BecaGroup)

**make  
everyday  
better.**