

Before the Expert Fast-track Panel

FTAA-2511-1150

Under the Fast-Track Approvals Act 2024 (**FTAA**)

And

In the Matter of an application for approvals by **MCCALLUM BROTHERS LIMITED** for the Te Ākau Bream Bay Sand Extraction Project located at Te Ākau Bream Bay, Northland

Evidence of Paul Donoghue on behalf of McCallum Brothers Limited in Response to Minute 14, Further Information Request

Concrete Suitability

Dated 12 October 2026

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Introduction

1. My name is Paul Donoghue.
2. I am a concrete technologist. I am a Registered Engineering Associate and a NZCE (Civil), I hold a National Diploma Civil Engineering from Technikon Witwatersand, Johannesburg and National Higher Diploma Material Testing from Technikon Pretoria, both from South Africa.
3. I have 40 years' experience as a concrete technologist. Currently I have two roles. The first is Manager Training and Certification for Concrete New Zealand. The second is as an independent concrete plant engineer and concrete consultant.
4. This evidence is provided as part of McCallum Brothers Limited's (**MBL**) response to the Expert Consenting Panel's (**Panel**) request for further information contained in Appendix One to Minute 14 in relation to the Te Ākau Bream Bay Sand Extraction Project (**Project**).
5. I have previously prepared the following material lodged in support of MBL's application:
 - a. Report entitled Supporting Statement of Paul Donoghue in Support of McCallum Bros Limited Application to Fast Track a Sand Extraction Consent from a Site in Te Ākau Bream Bay included as Attachment 20 to the MBL Assessment of Environmental Effects.
 - b. Response to Minute 4, Request for Information (RFI) 1 dated the 14 May 2026.
 - c. Response to Minute 5, RFI 2 dated 22 May 2026.
 - d. Response to Section 53 submissions from interested parties, dated 5 August 2026.

Code of Conduct

6. Although this is not a hearing before the Environment Court, I confirm that:

- a. I have read and am familiar with the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2023 (**Code**); and
- b. I confirm that, as with my previous statements the contents of this response are authored by me and:
 - i. are within my area of expertise (except where I state that I rely upon the technical reports of other expert witnesses provided in support of the application);
 - ii. have been prepared in accordance with the Code; and
 - iii. I have not omitted to consider any material facts known to me that might alter or detract from the opinions expressed.

Scope of Evidence

- 7. My response to the Panel's RFI is limited to Question 2 of Appendix 1 which states;

"At paragraph 72 of Attachment 20 to the application the statement is made that "it is unlikely that the market for manufactured sand in Auckland will exceed 150,000 tonnes per annum within the next 5 years" however no analysis was provided to underpin that estimate. The figure is not resiled from in Mr Donoghue's response to comments. What matters were considered, and what assumptions were relied on, to reach the stated figure".

- 8. In my initial Concrete Suitability Statement (Attachment 20 of the Proposal) at paragraphs 57 to 76 I discuss my experience and understanding of manufactured sand use at the time of writing and in the future in the Auckland concrete market.
- 9. I have summarised in the paragraphs below the matters I considered and the assumptions I relied upon in reaching my conclusion that the market for manufactured sand in Auckland is unlikely to exceed 150,000 tonnes of manufactured sand in the next five years.

The Limitations of Manufactured Sand

10. As I set out in paragraphs 59 to 70 of my original Concrete Suitability Statement (Attachment 20), a significant issue with manufactured sand is the particle size distribution achieved by the manufacturing process. It is not suitable for many concrete mixes, particularly high strength concrete, pumped mixes and self-compacting mixes. The result is that virtually all the concrete plants in Auckland use natural sand for these products. I note that in their Joint Statement, Allied Concrete Ltd and Brookby Quarries Ltd claimed that the Brookby manufactured sand does meet the required particle size distribution standards for virtually all Allied Concrete products and challenged my Figure 3 as inaccurate. I addressed this point at paragraph 34 in my response to Section 53 submissions. I note that no particle size distribution curve or other additional information in support of the Allied/Brookby claim has been put before the Panel.
11. At paragraph 71 of my Concrete Suitability Report I refer to the excessive volume of fine particles in manufactured sand as causing a significantly lower rate of bleed which can lead to surface cracking. In the short term this leads to a standard of surface finish that is not acceptable to customers and in the longer term it can threaten the structural integrity of the concrete if the surface is subject to water ingress.
12. I understand that Allied Concrete Ltd's Penrose plant has recently been experiencing problems with the use of Brookby manufactured sand, particularly in its pump mixes and as a result it has greatly increased its use of natural sand. This is supported by a Statement by Mr Callum McCallum of MBL, who has attached an email from the CEO of the HWR Group, owner of Allied Concrete, that provides verification that this change has occurred. The issues experienced by HWR Group reflect my assessment of the limitations that manufactured sand has in concrete manufacture and inform my estimate of likely future volumes that will be used in the Auckland concrete market.
13. A major limitation on the future use of manufactured sand is its greater cost in contrast to both natural sand and PAP7. In writing my original Concrete

Suitability Report (Attachment 20), I made the assumption that in the absence of any significant benefit arising from the use of manufactured sand as a substitute for natural sand, that Auckland concrete plants are likely to choose the lower cost alternative particularly when, as is the case with natural sand, it is a superior product for all concrete applications. Currently, manufactured sand is approximately 10 to 15% more expensive than natural sand and approximately 33% more expensive than PAP7 (as per the Brookby Quarries Trade price list). Similarly, although manufactured sand has distinct advantages over PAP7 its greater cost is likely to be an ongoing limiting factor in its uptake by the market.

14. All of the considerations and limitations above have informed my assessment as to likely market volumes.

Likely uses of Manufactured Sand

15. In reaching my conclusions that the volume of manufactured sand used by the Auckland market within the next five years will not exceed 150,000 tonnes per annum I took into account the suitability of manufactured sand as a substitute for PAP7, albeit at a higher price. In other words, I accept that there is a potential market for manufactured sand in Auckland but have concluded and maintain that the extent to which it will replace natural sand is very limited. Mr Sawyer takes up this point in paragraphs 30 and 32 of his response to Section 53 submissions and as I read his evidence he supports this conclusion.

16. More specifically I also took into account the following points;

- a. I was aware that a number of concrete manufacturers had undertaken or were undertaking trials with manufactured sand and I assumed that there would be some uptake as a result. In the event, Allied Concrete Penrose advised that it used 64,000 tonnes of Brookby manufactured sand in their last financial year (likely ending March 2026). I am now aware, that this figure has reduced and there appear to be doubts as to whether or not Allied Concrete

will continue to take similar volumes of manufactured sand in the future.

- b. As noted above, I thought it was reasonable to allow for some further uptake of manufactured sand as a replacement for PAP7. This is likely to become more pronounced if the cost difference between the two reduces.
- c. I assumed that the quality of manufactured sand may slightly improve over time and result in some increases in its use in concrete mixes in the future.

17. I found it difficult to attribute specific volumes to any or all of the factors referred to above. My overall conclusion in light of my long and detailed experience of concrete manufacturing in Auckland is that the adoption of manufactured sand will be a slow process and that natural sand will continue to be preferred as an ingredient in the great majority of concrete mixes unless the development of intolerable supply or price pressures makes this commercially impracticable. Having regard to all these factors the figure of 150,000 tonnes per annum was and remains my best estimate of the maximum likely usage of manufactured sand for concrete manufacture within the next five years. In my view, that figure is on the generous side.

Paul Donoghue

12 October 2026