

18 December 2024

Resource Assessments
The Department of Planning, Housing & Infrastructure
Attn: Melanie Hollis
By email

Dear Melanie,

RE: FURTHER FLOOD MODELLING ADVICE – HANSON TWEED SAND PLANT EXPANSION DA

Overview

Martens and Associates (**MA**) have been instructed to prepare this supplementary flood modelling advice in relation to the proposed expansion of the Tweed Sand Plant at Altona Road, Cudgen, NSW (the **Site**). This advice has been prepared on behalf of Hanson Construction Materials Pty Ltd (**Hanson**) to address further flood related issues raised by Lindsay McGavin of Tweed Shire Council (Council) in their letter dated 29/11/2024. Specifically, Martens have been instructed to respond to the following items which were originally raised in Council's RFI dated 19/08/2024:

1. Item 5 Dot Point 1;
2. Item 5, Dot Point 3, and;
3. Item 13, Dot Point 2.

This advice should be read in conjunction with the following documents:

1. BMT WBM report *Tweed Valley Flood Study* (2009, the **BMT Flood Study**) prepared for Council and adopted as the regional flood study for the Tweed River catchment.
2. Burchills report *Tweed Sand Plant: Flood & Stormwater Assessment* (2024, REF: BE190043-RP-FSA-07, the **Burchills FSA**), which details the flood assessment methodology, flood model inputs and results of the TUFLOW hydraulic model adopted for this assessment; and
3. MA letter *Flood Model Peer Review – Hanson Tweed Sand Plant Expansion DA* (17/5/2024, REF: P2309845JC05V01, the **MA FMPPR**), which documented a peer review of the hydraulic model prepared by Burchills.
4. MA letter *Supplementary Flood Modelling Advice in Response to Tweed Shire Council Request for Further Information – Hanson Tweed Sand Plant Expansion DA* (5/11/2024, REF: P2309845JC06V01), which responded to certain items in Council's RFI.

Item 5 Dot Point 1

The adoption of the “no change” threshold of +/- 30mm for the cumulative development scenario, whilst utilised in 2014, is considered outdated and not in line with current best practice. It is important to understand the full extent of predicted afflux (within the limits of the model’s accuracy). This 30mm threshold may be concealing more widespread afflux predictions in the 10 – 35mm range in the Cumulative Development Scenario. Revised Cumulative Development Scenario mapping with a +/- 10mm “no change” threshold included should be provided.

Amended afflux mapping was only provided by MA for the scenarios which required the model to be modified and re-run. Updating all afflux maps was not possible within the required response timeframe given MA had only just taken over the flood modelling from Burchills.

Nevertheless, MA considers the adopted 30 mm afflux in the Burchills mapping to be reasonable given the affected land is mostly cane fields, and that no change in the hazard category is predicted. We understand that this threshold was initially adopted in consultation with Tweed Shire Council before Council had adopted a formal position on afflux tolerances and was chosen because the surrounding land was primarily agricultural, and provided that the hazard classification did not increase.

Item 5, Dot Point 3

The proposal severs the “Julius Drain” at the foothills of the Cudgen ridge to the south of the site and incorporates a culvert to allow the drain to tip into the sand extraction lake. It is still not clear if this will result in a decline of drainage conditions in this area. The lake has an overflow weir set at RL 0.7m AHD. The level of relief the existing drain currently provides is not defined. Further information is required to determine if the proposal will result in a decline of drainage conditions (e.g. boggy conditions) in this area.

MA understand that Burchills have previously provided correspondence in relation to this matter and in particular MA would like to highlight the response Burchills provided in Section 1.3.1 of their Flood and Stormwater Assessment report (BE190043-RP-FSA-07). Extracted pages from this report are provided in Attachment A to this advice, with the relevant text highlighted.

Item 13, Dot Point 2

Council requests a cumulative development scenario analysis on flooding in the 1:100 plus climate change.

MA have run a 1% AEP with Climate Change cumulative development scenario, as requested. Mapping is provided, with acceptable afflux thresholds... However, there are some discrepancies to earlier Burchills results that are notable. Whilst the “1% AEP with Climate Change” CDS event is a different event to the “1% AEP” CDS with different model inputs, it is notable that the “1% AEP with Climate Change” CDS afflux pattern is completely free of flood level increases in the vicinity of the site, despite much more sensitive mapping display thresholds. Whereas the Burchills “1% AEP” CDS results predicted significant increases in flood level here.

The apparent discrepancy between the MA mapping of the cumulative design scenario and the Burchills cumulative design scenario is incorrect and has resulted from a misunderstanding of the mapping provided. The MA results shown in the Council letter are for the regional (worst-case) flood event with the cumulative design scenario, while the Burchills results shown are for the local

catchment event with the cumulative design scenario. Therefore, the obvious difference in the results presented in both maps is reasonable, and not a cause for concern.

Please contact our offices if you have any queries regarding this matter.

For and on behalf of

Martens & Associates Pty Ltd

A handwritten signature in black ink, appearing to read 'J Frecker'.

Jonathan Frecker

BEng (Hons1)

Senior Engineer, GIS Lead



**Attachment A - Extracted Pages from Burchills Flood and Stormwater Assessment
(BE190043-RP-FSA-07).**