29 April 2024
Job No: 1015514.1000

C J Industries Ltd
34 Hau Road
Motueka 7120

Attention: Des Corrie-Johnson

Dear Des,

Peach Island Gravel Extraction
High Level Climate Change and Natural Hazards Summary - Flooding

CJ Industries is proposing to undertake gravel extraction on the floodplain of the Motueka River, adjacent to Peach Island, in the Tasman District. One of the three gravel extraction borrows is located outside of the Peach Island stopbanks, and, as such, is periodically impacted by flooding. The site and immediate environment are shown in Figure 1 Appendix 1 to Boffa Miskell Landscape Assessment[1].

In providing this advice it is important to note the following, as it provides context for my following assessment:

1) The duration of the proposed resource consent is for 15 years and extraction of gravel from the floodplain will be concluded by 2040 - 2041.
2) It has been demonstrated that the proposed activity does not worsen the existing situation in relation to floodplain hydraulics or flood risk. This would remain the case, even if the frequency of these events increased in accordance with projected climate change related rainfall changes and extreme weather events during the period of consent.
3) CJ Industries volunteers conditions for the ongoing reinstatement of the site during the activity (i.e. continuous backfilling and revegetating of the excavation areas) and following completion of the activity. Therefore, there will be no permanent change in floodplain hydraulics and no exacerbating effects in relationship to longer term climate change trends following the conclusion of the activity.
4) CJ Industries volunteers conditions for the ongoing management of the site in response to extreme weather events (i.e. the removal of equipment and other stores in response to weather warnings), therefore minimising, as much as practicable, the impact of the site becoming inundated.
5) No permanent infrastructure, critical or otherwise or habitable dwellings will be constructed on the floodplain.

Therefore, longer term climate-change prediction horizons (i.e. 2090 or 2130) are irrelevant in the context of the activity and application, instead my focus is on predictions for the 2040 horizon. I

[1] Appendix 1 CJ Industries Fast Track Application prepared by Boffa Miskell.

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acknowledge that climate change and its related impacts on the occurrence on both extreme weather events and on rainfall distributions are likely to alter the frequency at which various river flood flows occur.

Based on published data[2] by the National Institute of Water and Atmosphere (NIWA) the following changes are predicted, these have been summarised in Table 1 below.

Table 1: Zone 4: Regional snapshot of projected climate changes and hazards – covers Northern South Island (Te Wai Pounamu) – covers Marlborough (from Kaikōura north), Nelson (Whakatū) and around to Punakaiki on the West Coast. Includes Tasman, Nelson, Marlborough and Buller District.

Hazard	RCP 4.5	RCP8.5	Extra Information
Increased storminess and extreme winds and rainfall	Intensity of (ex)tropical cyclones projected to increase. Rainfall events see righthand column.	Intensity of (ex)tropical cyclones projected to increase. Rainfall events see righthand column.	- Increases in rainfall intensity projected everywhere. - Moderately extreme daily precipitation (99th percentile of wet days) increases. Very extreme daily precipitation increases in frequency. - Short duration (1-in-100-year, 1hour duration) extreme rainfalls increase +13.6% for every 1˚C increase. Long duration rainfall events (1-in-2-year, 120hour duration) increase +4.8% for every 1˚C increase.
Change in mean annual rainfall	Negligible change in annual rainfall, most change seen at seasonal scale. Small increases in autumn-winter for Tasman and Marlborough; small decreases in winter for Canterbury.	Minimal change in annual rainfall. Increase in winter of 15-20% (interior areas); and decrease in summer of 5-15%.	- The largest rainfall changes by ~2100 will be seasonal rather than annually.
River and flow changes in frequency and magnitude in rural and urban areas	Mean annual flood occurrence stays the same or slightly increases in some areas.	Mean annual flood occurrence slightly increases in most areas.	No research yet on changes to large flood flows and return periods – highly uncertain at this point (all RCPs and time frames). - Increases in Mean Annual Flood occurrence affect most agricultural areas, with only slight reductions in other areas. Percentage increases tend to be greater for the more extreme RCPs (i.e. RCP8.5) and late century (i.e. ~2100).

It has been accepted by CJ Industries that the proposed Stage One works may be periodically inundated by flood flows. Due to the nature of the proposed activity and points 1 – 5 above my

[2] Sourced from Projected regional climate change hazards | NIWA

professional opinion is that there is an acceptable degree of flood risk that can be controlled through conditions of consent as proposed by CJ Industries.

Yours sincerely,

Simon Aiken
Senior Water Resources Consultant

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