8 October 2021

To:
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Nick Boyes (Planz Consultants)

RE: Technical issues/difficulties experienced with subdivision neighbouring proposed Plan Change 69

1. Overview

PC69 is situated on the southern boundary of Lincoln Township. PC69 will border two newly created subdivisions on the eastern and western side of Springs Road, namely Te Whariki and Verdeco Park respectively.

Verdeco Park started construction in 2019 and is currently still underway with the later stages. Te Whariki had Stage 3 and 4 consented as two separate undertakings. Te Whariki Stage 3 was constructed in 2019-2020, Stage 4 is currently still underway.

Two separate issues appeared with the two subdivisions – Verdeco Park had significant stormwater issues to deal with and Te Whariki had large amounts of organic material present in the subgrade.

2. Verdeco Park

Verdeco Park is situated in a historically very wet area which was prone to flooding due to the presence of overland flow, springs and existing drains. These factors, combined with radically varying soil profiles throughout the subdivision presented a complex problem.

The eastern residential stages of Verdeco Park is reticulated to an infiltration basin and the western rural residential lots either have on-site soakage or is reticulated to a detention basin which discharges to the western drain. The western drain required significant clearing of the banks down to Collins Rd. Potentially the most significant accumulation of water will occur at the point where the western drain reaches Collins Rd. The design of the stormwater system to successfully manage this will require substantial scrutiny.

Verdeco Park will be continued to be assessed throughout the 2 year period prior to taking over the ECan Discharge Consent. Should the system fail the developer is required to rectify it to meet the Consent conditions.

3. Te Whariki

Te Whariki, both Stages 3 & 4, had substantial patches of organic material present in the subgrade. The organic material coupled with the significant variance in ground water levels throughout the year provided a difficult problem to solve. Most notably the effects that the varying ground water will have on the peat that is left in the subgrade.

The most extensive areas of organic material were found in Stage 3. The presence of peat required an ongoing re-design of the pavement structure to ensure that the road was meeting the required deflection standards (of the Benkelman Beam Tests). The continuous failure to meet the necessary specification prompted the design to be peer reviewed (attached to this memo). The resultant outcome was an extended defects liability period on the roads to ensure that the changing groundwater does not further impact the structural stability of the road.

4. Recommendations

To ensure the proposed PC69 can be assessed accurately, it is recommended that updated LiDAR levels are obtained and the 1 in 200 year flood model be updated. This will ensure that the overland flow paths are not impeded and the potential purchasers have an accurate representation at time of Building Consent.

The subgrade present within PC69 will need to be properly investigated and should significant accumulations of peat/organic material be present, a plan should be proposed to remove such layers. The uncertainty surrounding the effects of the varying ground water table on this material poses too large a risk to not be mitigated properly.

5. Conclusion

Verdeco Park and Te Whariki required working through engineering difficulties which if ignored may have caused significant damage to infrastructure and the populous. The risk factors still remain as they are newly built subdivision and as it happens, civil works generally do not fail within 1 or even 2 years. We therefor do not yet have data relating to failed infrastructure and/or maintenance problems.

An extended defects liability period (and associated bonds) is the only surety for Council that if the unforeseen happens and the assets fail, the developer will still be responsible to rectify it.

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