From: Callum Davison
Sent: Tuesday, 13 August 2024 2:59 pm
To: Laura Clarke
Cc: Mitch Cateley
Subject: PC12 (HCC) - Corner Lake Road & Marama Street

Hi Laura,

Commentary below as requested.

BCD Group Ltd (BCD Group) has been requested to provide high level civil and geotechnical engineering commentary regarding the proposed zone change of the block of land at corner Lake Road & Marama Street (refer figure 1 below) to high density under PC12 (HCC).

BCD Group have reviewed the request and can provide the following high-level commentary:

<u>Civil Engineering Constraints</u>

Topographical/Landform

- The land is considered steep in places. Topographical constraints should be considered when proposing increased density. Global stability, wider retaining (if required), and site-specific retaining, temporary retaining, earthworks, erosion and sediment control all need to be considered in how this landform would be changed by increasing density.

Stormwater

- The land is very close to the wider catchment receiving environment, Lake Rotoroa. Given the proximity to the Lake, the requirement for improved stormwater quality discharge should be considered when considering zoning changes to increase density.
- PC12 calls for onsite water storage for retention and recent advice from HCC indicates they require individual stormwater tanks/storage for detention/soakage/flow mitigation for each title. With topographical constraints, and increased density this would need to be considered achievable. Experience on previous infill development within the City (without topographical constraints) has meant additional land be utilised for stormwater management.
    - Given it is understood the land would be underlain by Hamilton Ash (clay) soakage to ground would not be considered suitable.
- Existing flooding and overland flow paths are present within this portion of land. Based on experience increased density may worsen catchment hydrology.

- Existing & new overland flow paths would need to be appropriately assessed on a wider catchment scale to ensure the management of stormwater overland flow with increased density.

Wastewater

- BCD Groups understanding is that this portion of land is within a constrained wastewater catchment area. Feedback and advice received from Council to date on restrained areas indicate increased density and resulting wastewater flows is not permitted.
    - Flow velocity would be required to be checked to be compliant with increased flows.

Transport

- Increased density could warrant widened access points and additional access points towards Lake Domain drive and Lake Road.
- Intersection at Lake Domain Drive and Lake Road would need to be considered with increased traffic from zoning change.

<u>Geotechnical Engineering Constraints</u>

- Six storey buildings in this setting are likely to involve temporary works in relation to basement excavations, temporary batters, and temporary retaining walls
- Excavations below the groundwater table are likely to require temporary dewatering.
- The effects of dewatering and the addition of large impervious surfaces (basements, retaining walls etc.) have the potential to change the hydraulic characteristics of the slope, consideration should be given to effects on neighbouring properties.
- Heavy foundation solutions such as deep piles or deep soil improvement are likely for supporting six storey buildings in this area. Potential for additional noise/vibration nuisance to surrounding landowners/occupiers in excess of that generated by the currently permitted construction limits.

Ngā mihi | Kind regards,

Callum Davison
Civil Engineer
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