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30 November 2023

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Technical letter: Response to Council Engineering Comments on 10/11/2023

Dear Adrian

Stellen Consulting was engaged to prepare stormwater management documentation for the proposed development at 50 Condover Street, North Balgowlah.

This statement is written in response to stormwater management comments in the Engineering Referral Response letter dated 10/11/2023 (Application Number: DA2023/0541), and it outlines the feedback to Council Engineering comments regarding stormwater management by Stellen Consulting, rev 6 dated 20/10/2023, and the overland flow path.

. **Item 1.** *The water level and overflow level in the on-site detention system for Lot 1 is above the habitable floor levels of dwellings on Lot 2. Amended stormwater plans need to provide an overland flow path through the Community titled land (or another appropriate path) to safely convey flows from Lot 1 for all events up to the 1% AEP storm. Assume 100% pipe blockage and provide a minimum 300 mm freeboard. Provide a 1D HEC-RAS model to Council for perusal.*

The overland flow path is designed through the community lot. Overflow from the OSD tank at lot 1 will be discharged from the proposed weir opening or the access grated pit and directed through the community lot downstream to Condover Road. A 1D HEC-RAS model has been developed to show that the maximum depth of water is predicted to be 90 mm. The stormwater management plan has been updated to reflect the overland flow path which is 100mm lower than surrounding landscape areas and providing a 300mm wall as freeboard to contain overland flow within the community lot. Please refer to the Updated Stormwater management plan P170945-DR-CV-001-07 dated 30/11/2023 and the Overland Flow Assessment report P170945-LT-FL-001-00 dated 30/11/2023.

Item 2. *Provide habitable floor levels on amended plans. The water level and overflow level in the on-site detention system is to be a minimum of 300 mm below habitable floor levels and 150 mm below garage levels.*

Given the recommendations in the stormwater management plan and overland flow report are incorporated into the design, overland land flows will flow away from habitable areas. floor level and garage area.

In lot 1, the OSD has been designed with Top Water Level (TWL) of 46.33m AHD and an emergency overland flow opening at RL 46.7m AHD under the deck level of RL 47.330m AHD. The building at Lot 1 has a habitable area at RL 47.330m AHD, which is 530mm above the OSD emergency overland flow opening level.

In lot 2, the OSD has been located under the driveway outside the garage. And the driveway falls at 17.5% downstream toward the street. OSD pit is designed to be grated and to allow emergency overland flow downstream through the driveway to the street. Therefore, the risk of overland flow from OSD in lot 2 to impacting the habitable or the garage floor area is minimal.

Item 3. *The on-site detention volume for Lot 2 appears to be deficient. Provide a method of sizing tank that is in compliance with Section 9.3.2 of the Water Management for Development Policy.*

The size of OSD has been reviewed using DRAINS program for urban stormwater system design and analysis, and the findings indicate that the sizing is accurate. However, OSD storage levels are updated stormwater management plan and is consistent with the approach described in Section 9.3.2 of the Water Management for Development Policy. A copy of the model is provided for the Council's perusal.

Item 4. *Drawing No. P170945-DR-SW-005 rev 2.*

i. Detail 4. Provide levels for floor of on-site detention tank that show an absolute minimum slope of 0.5% in all directions.

The stormwater management plans have been updated to add the detail as required. Refer to the updated Drawing No P170945-DR-SW-005 Rev 3, dated 30/11/2023.

ii. Detail 4. The emergency overflow weir appears undersized. Provide a weir capacity analysis assuming full blockage of orifice and 75% blockage of weir for the 1% AEP storm.

The access above the weir opening is designed to be grated and the 300mm freeboard for any habitable floor level is achieved as described above, applying a 75% blockage is unnecessary and excessive given the nature and the quantity of the overland flow In the unlikely situation where peak flows for the 1% AEP and blockage of the weir/opening happen at the same time, the OSD will overflow from the proposed grated access toward the proposed overflow path.

iii. Detail 4. Provide additional access openings to OSD tank in accordance with Section 9.10.3 and Appendix 15 of the Water Management for Development Policy.

Both OSDs at lot 1 and lot 2 have an additional 900 SQ access which should comply with section 9.10.3 and Appendix 15 of the water management for development policy and it also conforms with AS3500.3:2021, that access points are required at 10m intervals.

iv. Detail 5. Provide levels for floor of on-site detention tank that show an absolute minimum slope of 0.5% in all directions.

The stormwater management plans have been updated to add the detail as required. Refer to the updated Drawing No P170945-DR-SW-005 Rev 3, dated 30/11/2023.