



Ref: 168002

16 January 2019

David Wong
Auckland Council
Level 23, 135 Albert Street
Auckland

Dear David,

Re: Fletcher Residential Limited - 90-104 Felton Mathew Avenue, St Johns - Private Plan Change Request

Please find below response to the further information requested in the form of a Memo from Gemma Chuah of Auckland Council received via e-mail dated 12 December 2018.

Further information required:

The following clarifications are required to make an overall recommendation:

- *The supplied specialist reports relating to flooding are not consistent with regards to the extent of the flood plain. Please clarify which information should be relied upon and how the information within these reports interrelate.*

The flood report prepared by Maven Associates supersedes the CKL infrastructure report as Maven's report has been prepared on accurate information based on topographical survey of the site/railway corridor. Refer to Plan C450 & C451 for the extents of flooding caused from ponding at the railway culvert and the extent of overland flow.

Note that the Maven report relies on information from the CKL report in terms of the peak overland flow rate.

- *The Maven infrastructure report states that any new buildings will have the required 500mm freeboard "above the identified flood level". Please clarify which flood level this relates to.*

Minimum freeboard requirements will be required from both the OLFP levels and the flood ponding level from the railway culvert. (RL-22.90m) The existing ground level adjacent to the site slopes down from South to North, therefore the OLFP flood level adjacent to the site will vary along the site.

Minimum floor levels for the future development within the subject site will be set during the land use recourse consent application stage depending on the exact location of future houses and the adjacent OLFP level.

The minimum floor levels will be set from the greater of the RL 22.90m flood ponding level and the adjacent OLFP level, plus the Auckland Council freeboard requirement. In most cases the OLFP level will govern the MFL's

Overland Flow Assessment:

- *The peak overland flow through the site has been extracted from the Tamaki North Catchment Model (as per the OPUS memo attached in the Infrastructure report). Catchment models assume full flow capacity for the piped system. While the applicant has acknowledged the code of practice requirement for reduction in capacity of large diameter pipes (10%) this is not reflected in a subsequent increase to the peak overland flow.*

Opus's model with full flow capacity for the piped system resulted in a peak overland flow rate of 7.54m³/s, as per the CKL memo dated 30 November 2017.

The CKL memo also states that a 1200mm pipe with 10% Blockage has 5.60m³/sec capacity. Using Opus's model if we assume the 1200mm has 10% blockage, the resulting peak overland flowpath is **8.10 m³/sec** (7.54m³/s + 0.56m³/s).

We have remodelled the extents of the OLFP using the new flow rate, refer to Plan C451 & 452.

- *Further, as this pipe is effectively a culvert (with an inlet on the upstream side of Felton Mathews Ave, the code of practice requires a total blockage scenario to be assessed (refer to Section 4.3.9.8) based on the inlet diameter of 1200mm.*

It is considered that a full blockage scenario is not practical in this modelled situation. If Auckland council do consider this an issue then a number of options could be implemented at RC stage, these include installation of a grate on the inlet to avoid a full blockage scenario or the install of a manhole at the culvert inlet with a larger inlet pipe installed upstream (1500mm or similar)

- *No supporting calculations have been provided to support the reduced floodplain shown on the plan C450 - as such this cannot be assessed. Further, Plan C451 shows a reduction in flow width for the proposed overland flow, without demonstrating the additional capacity.*

No calculations have been provided because the reduction in flood plain is a result of confirming the height of the over tipping point (rail way corridor) via topographic survey.

Sections along the OLFP with manning's calculations have now been provided to show reduction in flow width for the proposed OLFP.

- *No Cross sections have been provided as referred to in the report and plans; as such these cannot be assessed.*

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Refer to plan C452 & C453 which has now been added.

- *Section 2. notes that the proposed OLFP will "provide a consistent flowpath depth of 200mm over a greater area" – the Proposed floodplain C451 shows a narrower flow width than existing.*

Refer to sections on C453 demonstrating the flow depth. Additional capacity is achieved by increasing the flow depth up to 200mm for a greater extent than the existing situation.

- *Minor change in OLFP extents proposed for downstream end. It is acknowledged that this is relatively minor, and unlikely to impact any other parties.*

We consider the change in extents of OLFP at the downstream to be minor and are consistent with the natural/ existing levels as confirmed from the topographical survey.



Overland Flow Assessment:

- *No assessment has been undertaken to assess the frequency of overland flow through the site.*

It is expected that any storm event greater than the 10% Annual Exceedance Probability storm event will convey overland flow through the site. Events greater than the 10% AEP are low frequency.

- *There is not mention of access / egress during flooding.*

In accordance with section 4.3.5.6 of SwCOP, the overland flow depth will be limited to 200mm, and therefore it is considered vehicular access can be maintained. Pedestrian access is considered to be available at other various locations of the subject site.

If you require any further information, please don't hesitate to contact the undersigned.

Yours faithfully,

Jignesh Patel
ENGINEER

Attachments:

- Engineering Plans
- Engineering Calculations