

Memorandum

To Ulrich Glasner (Queenstown Lakes District Council (QLDC))

Copy Blair Devlin (Vivian + Espie Ltd)

From Tony Gordon

Office Christchurch Environmental Office

Date 22 February 2019

File 6-XQ074.04

Subject Laurel Hills Proposed Residential Development

Background

The purpose of this memorandum is to provide a high-level comment on the Clark Fortune McDonald & Associates (CFMA) memorandum addressed to Tim Allan of Laurel Hills Ltd, dated 18 January 2019. This CFMA memorandum was written following receipt of our January 2019 review of Revision 2 of the 3 Waters Preliminary Assessment (the Assessment).

Wastewater

There were several points raised in our previous memorandums about flows and normal design procedures that sit with QLDC to consider and we will not comment further on these here.

The CFMA memorandum in discussing the available capacity in the system states that the calculated capacity of the limiting pipe for the pipe full scenario is 200 dwellings which exceeds the proposed yield of the development, which is for 156 dwellings. This appears to be referring to the table in Revision 1 of the Assessment where the minimum spare capacity in pipe 001.O-001.P is calculated as being 200 dwelling units. This was subsequently updated in Revision 2 of the Assessment using the QLDC Code of Practice roughness (as Revision 1 of the Assessment used a lower figure) and lower-than-Code of Practice flow figures to give a spare capacity of 284 residential units.

Using the Code of Practice pipe roughness and Code of Practice flows reduces the spare capacity of the limiting pipe to less than 100 dwellings. It is recognised that through further monitoring of actual flows and agreement with QLDC on use of lower-than-Code flows it may be determined that the existing reticulation can carry the additional flows from the development without surcharge.

The Ladies Mile HIF Concept Design Report includes a wastewater pump station south of the proposed development site to service Area 3.2. This area includes the proposed development site. This pump station would provide an alternative solution to the upsizing of any existing reticulation determined to be undersized.

Stormwater

The CFMA memorandum includes calculations of stormwater flows and volumes that explain some of the unsupported statements in the Assessment. Some of the derived numbers are not the same as previously reported although with no significant impact on the general concept proposed.

We commented in our first memorandum about the risks involved in relying on on-site disposal systems. These risks are the same, whether they be chambers that service large parts of the development or smaller units such as the suggested Cirtex SmartSoak™ systems. In our experience if on-site disposal systems are not well planned for regular maintenance, they fail to provide adequate disposal beyond the short term. Some design guidelines advocate assuming only infiltration through the sides of buried galleries, based on the experience of their floors blinding off. Use of larger storage to detain stormwater then release it in a controlled manner, as initially identified in Revision 1 of the Assessment but removed in Revision 2, would be a lower-risk option.

Water Supply

The CFMA memorandum, after stating that “in regards to fire fighting pressure, we do not anticipate any problems” mentions that the Assessment recommended detailed water modelling to determine reticulation sizing and levels of service. The memorandum goes on to state that “this will ensure firefighting standards are met”. This is a statement of confidence that we are not in a position to make further comment on, but any shortfall in pressure, either for domestic demand or firefighting demand that becomes apparent in the recommended modelling could be overcome by boost pumping, as mentioned as a possibility in the Assessment.

Through recent work we have been doing for QLDC we are aware that there are changes to some of the proposed infrastructure that is mentioned in the Ladies Mile HIF Concept Design Report and cited in the Assessment, e.g. the elevation of the proposed new Ladies Mile reservoir is 407m not 423m and the location of the rising and falling mains to service the reservoir are likely to be in Howards Drive rather than Stalker Road. So long as these changes are included in any detailed water modelling carried out, they do not impact the water supply concept in the Assessment.

Summary

As with any concept design, assumptions have had to be made to enable the concept's development. As we have previously identified, some of these assumptions do not align with QLDC's Code of Practice. That doesn't imply that they are necessarily wrong, but one assumes that the Code was written to reduce the risk to QLDC of there being long-term operational or maintenance problems with the infrastructure. QLDC, as the ultimate risk owner, can vary the requirements where the probability and consequences of a risk can be shown to be acceptable. In such instances, it is recommended that QLDC, seek supporting information from the developer showing how the risks will be negated or reduced to an acceptable level, to enable QLDC to make an informed decision.

We have identified risks around the capacity of some sections of the wastewater reticulation, but further monitoring will give a clearer idea of actual flows, and if necessary undersized sections of the existing reticulation could be upgraded, or alternatively a pumped solution as identified in the Ladies Mile HIF Concept Design could be used.

We have identified risks associated with on-site disposal of stormwater. We suggest caution on the part of QLDC in progressing with this proposal. If the developer wishes to pursue on-site disposal as the preferred means of stormwater treatment it is suggested that QLDC seek from the developer the means by which the risks identified will be managed. If these risks cannot be satisfactorily managed, QLDC may wish to ask the applicant to consider an alternative design solution.

We have identified risks associated with meeting firefighting pressures, but the developer has recognised the need for more detailed modelling and has recognised that boost pumping, a practical way of overcoming any deficiency, may be necessary.

In conclusion, there are some risks that QLDC needs to decide are acceptable or not, but we have not identified anything in the 3 Waters Preliminary Assessment that is not capable of being acceptably dealt with as the design for the development progresses.