Memo

TO: Graham Jull

FROM: Alan Hopkins, Queenstown office

CC: Jo Fyfe (JEA)

DATE: 26/02/2023

SUBJECT: Q6270 1 Hansen Road - Worker Accommodation Proposal (Three Waters Feasibility)

BACKGROUND

PPG have previously provided infrastructure assessment and reporting for the owner of 1 Hansen Road in August 2021 to support a subdivision consent application to Queenstown Lakes District Council (QLDC). This memo should therefore be read in conjunction with that previous report to provide relevant background information and location and servicing context.

SCOPE

PPG have been engaged by the owner of 1 Hansen Road to provide additional high level three waters infrastructure assessment to support an application for fast tracked consenting for the development of worker accommodation apartment style units. This assessment is intended to be a high-level concept assessment and precursor to additional three water design and investigation. The proposed development has two possible layout options.

Option 1

Plan 230215 attached shows the proposed smaller scale development which includes two types / sizes of worker accommodation units as described in the schedule on the plan and that results in approximately 465 units. The occupancy multiplier for this type of accommodation unit is intended to be 1.5 people per unit and will therefore result 700 people at full occupancy.

Option 2

Plan 230216 attached shows the proposed larger scale development. This has the same footprint and overall volume of space as the smaller scale development in terms of square meterage, with the key difference being a greater number of smaller units and therefore the total number of units in this scheme being 565 units. Using the same 1.5 multiplier will therefore result in 850 people at full occupancy.

STORMWATER

The original PPG Junction Village Subdivision Infrastructure Report August 2021 recommends on-site stormwater soakage disposal to ground based on identified suitable sub-surface soakage rates. This solution is the recommended solution due to lack of capacity with the nearest branch of the Council network. The proposed impervious areas associated with the Option 1 & 2 worker accommodation designs are similar to those previously assessed within the PPG Junction Village Subdivision Infrastructure Report August 2021. Given that the proposed Option 1 and 2 developments will result in similar impervious areas and therefore similar runoff, the Option 1 & 2 developments can feasibly be serviced for stormwater disposal.

Since the August 2021 assessment was undertaken it has since been confirmed by QLDC and NZTA via the Tahuna Alliance (the Alliance) a large diameter stormwater main is to be installed within SH6 fronting the subject site within the next few years. At this stage the Alliance have only confirm that a low diameter s/w lateral connection will be able to be made available to the 1 Hansen Road site. It is therefore possible that the recommended soakage gallery system could include a partial outlet to the new SH6 large diameter stormwater network. On-site soakage disposal therefore remains feasible and the recommended solution for the Option 1 & 2 developments, possibly assisted in part by minor flows to the new SH6 large diameter stormwater main.

WASTEWATER

The original PPG Junction Village Subdivision Infrastructure Report August 2021 recommends an on-site wastewater pump station feeding to the nearest branch of the Council wastewater network approximately 100m west. The downstream Council network volume has since been checked with QLDC's Property & Infrastructure Department (QLDC P&I) via hydraulic modelling. This modelling has confirmed capacity for flows from the subject site based on a generalised business/commercial zoning wastewater production rate of 0.7 l/s/ha, equating to a total pumped rate of 2.4 l/s.

The maximum wastewater production from the proposed worker accommodation development has been estimated based the QLDC Code of Practice requirements. Option 1 can be feasibly be accommodated based on the current modelled 2.4 l/s pumping rate back into the QLDC network, this would require significant on-site buffering storage and pump/s operating for approximately 20hrs a day. Option 2 however cannot feasibly be accommodated based on the current modelled 2.4 l/s pumping rate back into the QLDC network.

The ability of the Council network to accommodate a greater pumping rate than that currently modelled has therefore been considered. Initial discussions with QLDC P&I's Development Engineer (Richard Powell) have confirmed that the current modelling was only undertaken based on a generic land use, and the modelling did not identify any significant potential network constraints. Therefore, if required additional modelling of pumping rates greater than 2.4 l/s could be undertaken, or alternately off-peak pumping at significantly greater rates could also be considered to accommodate more intensive use of the land.

Based on initial discussion with QLDC, I have a suitable degree of confidence that a design solution is available to accommodate both Options based on a combination of onsite buffering storage and/or increased pumping rates to the Council network. Acknowledging that this may require coordinated increased off-peak pumping.

WATER

The subject site fronts State Highway 6 which contains a 355mm and 200mm trunk Council water mains, and Hansen Road which contains a 150mm Council main. As per the original PPG Junction Village Subdivision Infrastructure Report August 2021, the agreed solution with QLDC P&I to service the development is a 200mm main

looping through the site from with the 355mm main on SH6 at the south-western end to the 200mm main on SH6 at the north-eastern end. Based on the 'Empirical guide for principal main sizing' within table 6.2 of the QLDC COP, a 200mm pipe has capacity to accommodate 400 residential lots, which equates to approximately 1200 persons based on the agreed average 3 persons per residential lot. The previously agreed 200mm loop main through the development therefore has sufficient capacity to accommodate proposed Option 1 and 2.

Initial discussions with QLDC's Development Engineer (Richard Powell) have confirmed that the large diameter water mains fronting the site on SH6 have significant capacity to accommodate the proposed Option 1 & 2 demands. Based these discussions I have a suitable degree of confidence that the Option 1 & 2 developments can feasibly be serviced with potable water via the Council supply network fronting the subject site on SH6.

CONCLUSION

Overall based on the above high-level assessment it is deemed that both Option 1 and 2 worker accommodation developments can feasibly be serviced for three waters. Some design complexity may exist with regards to wastewater disposal that can likely be overcome via buffering storage and additional or off-peak pumping to the Council network.

Alan Hopkins
Senior Civil Engineer, CPEng

6609-Junction-Village-Worker-Accom-S1-230210

OPTION #1

CONCEPT DESIGN

	Number of Worker Accommodation Units								
	Block A - 6 levels	Block B - 6 levels	Block C - 6 levels	Block D - 6 levels	Block E - 4 levels	Block F - 3 levels	Block G - 3 levels	Block H - 4 levels	Total # Units
Unit Type (see note *1)	1	2	2	2	1	1	1	1	
Level 0 (See note *2)	0	0	0	0	0	0	0	0	
Level 1	9	17	23	17	15	10	10	17	
Level 2	9	17	23	17	15	10	10	17	
Level 3	9	17	23	17	15	0	0	16	
Level 4	9	17	23	17	0	0	0		
Level 5	9	17	23	17	0	0	0		
Block Totals	**45**	**85**	**115**	**85**	**45**	**20**	**20**	**50**	**465**
Note # 1 Type 1 Units are larger with a small kitchen & work desk. Type 2 Units are smaller with common kitchen & lounge etc									
Note #2 Level 0 (Ground Floor) on all blocks is a mixture of common services (e.g. kitchen / lounge etc) + Retail + Commercial									

Overall Site Plan

MASON&WALES ARCHITECTS

NEW WORKER ACCOMMODATION
1 HANSEN RD • JUNCTION VILLAGE • QUEENSTOWN

Project 6609
Scale: 1:800 @ A3
10 February 2023
SHEET REV S1 03

OPTION #2

CONCEPT DESIGN

	Number of Worker Accommodation Units								
	Block A - 6 levels	Block B - 6 levels	Block C - 6 levels	Block D - 6 levels	Block E - 4 levels	Block F - 3 levels	Block G - 3 levels	Block H - 4 levels	Total # Units
Unit Type (see note *1)	1	2	2	2	2	1	1	2	
Level 0 (See note *2)	0	0	0	0	0	0	0	0	
Level 1	9	17	23	17	30	10	10	35	
Level 2	9	17	23	17	30	10	10	35	
Level 3	9	17	23	17	30	0	0	35	
Level 4	9	17	23	17	0	0	0	0	
Level 5	9	17	23	17	0	0	0	0	
Block Totals	**45**	**85**	**115**	**85**	**90**	**20**	**20**	**105**	**565**
Note # 1 Type 1 Units are larger with a small kitchen & work desk. Type 2 Units are smaller with common kitchen & lounge etc									
Note #2 Level 0 (Ground Floor) on all blocks is a mixture of common services (e.g. kitchen / lounge etc) + Retail + Commercial									

Overall Site Plan

MASON&WALES ARCHITECTS

NEW WORKER ACCOMMODATION
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Project 6809
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10 February 2023
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