

**BEFORE THE HEARINGS PANEL
FOR THE PROPOSED QUEENSTOWN LAKES DISTRICT PLAN**

IN THE MATTER of the Resource Management Act
1991

AND

IN THE MATTER of the Queenstown Lakes Proposed
District Plan

AND

IN THE MATTER of Hearing Submissions Seeking
Amendments to the Planning Maps
covering Queenstown and
Queenstown Rural (Excluding
Wakatipu Basin)

**STATEMENT OF EVIDENCE OF CHRISTOPHER CHARLES HANSEN
ON BEHALF OF**

Middleton Family Trust

(Submitter 338)

Dated 4th June 2017

1.0 QUALIFICATIONS AND EXPERIENCE

- 1.1 My name is Christopher Charles Hansen. I hold a Degree of Bachelor of Surveying from Otago University. I am qualified as Licensed Surveyor and a Member of the New Zealand Institute of Surveyors and the Consulting Surveyors of New Zealand.
- 1.2 I have eighteen years experience as a Surveyor and Land Development Engineer. I have held positions as a Surveyor and Site Engineer in private practice within Queenstown, Whistler British Columbia, Canada & London, England. I am a partner of Clark Fortune McDonald & Associates Limited.
- 1.3 During this time, I have gained experience in Land Development Engineering in many residential and commercial developments. I have personally been involved with the design and construction of numerous land development projects.
- 1.4 I have read the Code of Conduct for Expert Witnesses in the Environment Court's Consolidated Practice Note (2014) and agree to comply with that code. This evidence is within my area of expertise, except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from opinions that I express.

2.0 EXECUTIVE SUMMARY

- 2.1 The proposed re-zoning of the Tucker Beach Residential Area is not considered to have any impacts on the infrastructure network. New infrastructure already exists that can be augmented as required to cater for additional demand.
- 2.2 The infrastructure will be constructed and paid for the by the applicant as the development proceeds. It is anticipated that new infrastructure required would be constructed at little or no cost to QLDC. It is possible that the construction of new infrastructure required for this development could also have a wider network or community benefit by augmenting or providing additional security to existing infrastructure.
- 2.3 The two components of QLDC infrastructure that the development would rely upon on will be the Shotover Waste Water Treatment Plant and the Shotover Country water bore field and treatment plant. Appropriate headworks fees can be levied to mitigate the effects of the additional demand.
- 2.4 Stormwater would be managed for the development on site and is not expected to have any effects on existing infrastructure.
- 2.5 Other non-Council infrastructure and network utilities exist and have capacity to supply this development. Should additional capacity to accommodate the cumulative demand of the residential on the non Council infrastructure be required, it can readily be provided.

3.0 SCOPE OF EVIDENCE

- 3.1 The purpose of this evidence is to assist the Hearings Panel within my expertise as a Surveyor and Land Development Engineering in relation to the submission lodged by Middleton Family Trust (#338) on the Queenstown Lakes Proposed District Plan.
- 3.2 I have been engaged to assess servicing options for a proposed rezoning on land located between Lake Johnson and Tucker Beach. The scope of

work includes examination of existing QLDC as-built records, confirmation of capacity of existing services to determine the adequacy of the existing infrastructure, and recommendation of infrastructure servicing options.

- 3.3 My assessment and recommendations are provided in detail within the report contained in Attachment A to my evidence. My report is preliminary and for the planning map hearings for the QLDC District Plan Review only. Further information and detailed engineering design will be required if development proceeds.

4.0 SUBMISSION 338

- 4.1 The proposal seeks to re-zone land from rural general to low density residential and rural residential activities.
- 4.2 The site is legally described as Lots 2, 4 & 7 D.P.463532 & Sections 42 – 44 Block III Shotover Survey District. The total site area comprises approx 20 ha and is contained in CT's 613707 & 613709.
- 4.3 The site has frontage to Tucker Beach Road and a proposed access connection to Frankton Ladies Mile Highway at the Hawthorne Drive roundabout. The site adjoins the eastern flanks of Queenstown Hill.
- 4.4 The western part of the site contains some relatively flat river terraces interspersed with steep escarpments. The eastern part of the site is undulating and sloping northwards towards the Shotover River.

5.0 WASTEWATER

- 5.1 The Design flows and Existing infrastructure are outlined in Attachment A to my evidence while the proposed servicing includes a new gravity sewer reticulation will be constructed internally to service the residential activity. This would likely be 150mm – 225mm diameter mains.
- 5.2 At the end of the gravity reticulation a new foul sewer pump station will be required. Appropriate storage and standby generation would also be constructed to provide for at least 8 hours emergency storage. More

storage may be required to buffer peak flows if the down stream capacity of the existing network is insufficient.

Required upgrades

- 5.3 Any effects on the QLDC's wider infrastructure being the Shotover Waste Water Treatment Plant will be mitigated by the imposition of headworks fees at the time of connection to Council's service. It is assumed that the Tucker Beach residential area would be levied in a similar manner to Shotover Country under the proposed 2017/2018 Development Contribution policy. This is assumed on the basis that the Shotover Country rate recognises that predominately the treatment component of infrastructure is utilised plus a minor amount of reticulation. The current figure being levied is \$2,628 per residential unit. The additional 1105 residential units under the current levy would net Council $1105 \times \$2,628 = \$2,903,940.00$ ex GST.
- 5.4 Upgrades to the Shotover Waste Water Treatment Plant are currently under construction.

6.0 STORMWATER

- 6.1 The catchment, existing reticulation, hydrological analysis, runoff quality, management objectives and approaches are outlined in Attachment A to my evidence. In terms of storm water management options I confirm that many options are available to avoid, remedy or mitigate the adverse effects associated with residential development on receiving environments.
- 6.2 For the current project the recommended stormwater management strategy is to provide an integrated treatment train approach to water management, which is premised on providing control at the catchment wide level, the allotment level, and the extent feasible in conveyance followed by end of pipe controls. This combination of controls provides a satisfactory means of meeting the criteria for water quality, volume of discharge, erosion and flood control (if required).

Concept Design

- 6.3 Runoff from undeveloped areas shall be directed around the developed areas via grass swales, and then discharged to ground. This will replicate the pre development runoff scenario for the undeveloped areas. The developed areas will be serviced using a hybrid LID/SUD/Big Pipe design. This will incorporate a combination of grass swales, kerbs, pipework and detention areas.
- 6.4 The development area can be broken into smaller sub-catchments: Separate pipe networks are then proposed - one for each catchment. Each network will discharge to the stream, gully or directly to the Shotover River. Secondary overflow paths will be provided for in swales or road ways. Overflows will discharge to the same locations as the pre-development scenario.

7.0 WATER SUPPLY

- 7.1 The supply design, design flows, fire fighting demand and existing infrastructure are outlined in Attachment A to my evidence. In terms of the concept design to service the proposed development, treated water from the QLDC/Shotover Country scheme could be utilised. The connection point would be the existing 250mmØ water main on the north side of the State highway.
- 7.2 This water would then need to be pumped via booster pump to a higher level water reservoir. A reservoir at an elevation of 5pprox.. 530m would be suitable. This would provide the domestic pressures of between 300kPa & 900kPa to the development area. From the reservoir, gravity reticulation would be installed to service the properties for domestic and fire fighting supply. Internal reticulation would be sized accordingly but is anticipated that mains of 200mmØ would be required if arranged in ring formations where possible.
- 7.3 It is proposed that a new reservoir could be established on a hill to the south of the development at a suitable elevation to service the development. The applicant is able to provide the land necessary for the establishment of a reservoir and is able to provide the land and access required.

- 7.4 The new tank elevation will be very similar to the new Middleton Road tank which is approx. 2km from the development site. There may be opportunities to link the reservoirs to provide security of supply and redundancy in the network.
- 7.5 Sizing of the reservoir should also be carefully considered as this could help eliminate peaks in the demand. This would then allow for a lower peak flow of water to be taken from the existing QLDC system.
- 7.6 Given the proximity of the development to the Shotover River, it may be possible to establish a new bore take from the Shotover aquifer. The new source would also be treated at the source and able to be pumped to the new reservoir or other parts of the QLDC network.
- 7.7 All new infrastructure constructed for this development would then be vested in Council ownership.
- 7.8 The further design and modelling of the infrastructure would need to be undertaken closely with the QLDC to confirm availability of supply. It is anticipated that QLDC water modelling consultants will be needed to carry out this modelling at the next phase of design.

Required upgrades

- 7.9 Any effects on the QLDC's wider infrastructure being the Shotover Country Bore Field and Water Treatment Plant will be mitigated by the imposition of headworks fees at the time of connection to Council's service. It is assumed that the Tucker Beach residential area would be levied the same as Frankton Flats under the proposed 2017/2018 Development Contribution policy. The current figure being levied is \$3,700 per residential unit. The additional 1105 residential units under the current levy would net Council $1105 \times \$2,628 = \$4,088,500.00$ ex GST.

8.0 POWER, TELECOMMUNICATIONS AND GAS

- 8.1 Aurora Energy has high voltage 33kVa network crossing the subject site in two locations.

- 8.2 Further, the Transpower Grid Exit Point (GXP) and substation is located on Frankton Flats. If roading, water and sewer connections are to be made to Frankton Flats, it is likely that Powernet network would also be able to be extended to service the development area.
- 8.3 Either network could supply suitable underground electrical supply to the proposed development. Below is a screen shot from Aurora's GIS showing the existing electrical infrastructure.
- Chorus fibre optic telecommunications cables exist in the north side of the road corridor of State Highway 6. It is anticipated that connection to the network can be made and that the new development would be serviced with fibre to the door.
- 8.4 All infrastructure is underground. All necessary mains will be extended to service the development area as development proceeds. Confirmation from the network owners will be obtained at each stage of development prior to proceeding.
- 8.5 It is not anticipated that there will be any supply or capacity issues for these services and connection will be made available from existing infrastructure at the time of development in accordance with the relevant service provider's specifications.

Chris Hansen

7th April 2017

Attachment A

Services Assessment Report